file

Official Transcript of Proceedings

Before the

UNITED STATES POSTAL RATE COMMISSION

In the Matter of: POSTAL RATE AND FEE CHANGES

Docket No. R97-1

VOLUME 33

DATE: Tuesday, March 17, 1998

PLACE: Washington, D.C.

PAGES: 17342 - 18178

ANN RILEY & ASSOCIATES, LTD.
1250 I St., N.W., Suite 300
Washington, D.C. 20005
(202) 842-0034

BEFORE THE

POSTAL RATE COMMISSION

- - - - - - - - - - - - - - - - - X

In the Matter of: :

POSTAL RATE AND FEE CHANGES : Docket No. R97-1

- - - - - - - - - - - - - - - - - X

Third Floor Hearing Room
Postal Rate Commission
1333 H Street, N.W.
Washington, D.C. 20268

Volume 33
Tuesday, March 17, 1998

The above-entitled matter came on for hearing, pursuant to notice, at 9:32 a.m.

BEFORE:

HON. EDWARD J. GLEIMAN, CHAIRMAN
HON. W. H. "TREY" LeBLANC, III, COMMISSIONER
HON. GEORGE W. HALEY, COMMISSIONER
HON. GEORGE A. OMAS, COMMISSIONER

ANN RILEY & ASSOCIATES, LTD.
Court Reporters
1250 I Street, N.W., Suite 300
Washington, D.C. 20005
(202) 842-0034

APPEARANCES:

On behalf of the United States Postal Service:

SUSAN DUCHEK, ESQUIRE
ERIC KOETTING, ESQUIRE
RICHARD COOPER, ESQUIRE
MICHAEL TIDWELL, ESQUIRE
ANNE REYNOLDS, ESQUIRE
DAVID RUBIN, ESQUIRE
KENNETH N. HOLLIES, ESQUIRE
SCOTT L. REITER, ESQUIRE
ANTHONY ALVERNO, ESQUIRE
United States Postal Service
475 L'Enfant Plaza West, SW
Washington, D.C. 20260

On behalf of American Business Press:

DAVID STRAUS, ESQUIRE
Thompson Coburn
700 14th Street, NW, Suite 900
Washington, D.C. 20005
(202) 508-1013
fax (202) 508-1010

APPEARANCES: [continued]

On behalf of the Association of Alternate Postal Systems:

BONNIE S. BLAIR, ESQUIRE
Thompson Coburn
700 14th Street, NW, Suite 900
Washington, D.C. 20005
(202) 508-1003
fax (202) 508-1010

On behalf of Nashua Photo, Inc.; District Photo, Inc.; Mystic Color Lab; Seattle FilmWorks, Inc.; ValPak Direct Marketing Systems, Inc.; ValPak Dealers' Association; Carol Wright Promotions:

WILLIAM J. OLSON, ESQUIRE
ALAN WOLL, ESQUIRE
JOHN S. MILES, ESQUIRE
JOHN F. CALLENDER, JR., ESQUIRE
William J. Olson, P.C.
8180 Greensboro Drive, Suite 1070
McLean, VA 22102-3823
(703) 356-5070
fax (703) 356-5085

APPEARANCES: [continued]

On behalf of Readers Digest Association, Parcel Shippers Association:

TIMOTHY J. MAY, ESQUIRE
Patton Boggs, LLP
2550 M Street, NW
Washington, D.C. 20037
(202) 457-6050

On behalf of Advertising Mail Marketing Association:

IAN D. VOLNER, ESQUIRE
Venable, Baetjer, Howard & Civilletti
1201 New York Avenue, NW
Washington, D.C. 20005
(202) 962-4814
fax (202) 962-8300

On behalf of the Dow Jones & Company, Inc.:

SAM BEHRENDS, ESQUIRE
MICHAEL F. McBRIDE, ESQUIRE
LeBoeuf, Lamb, Greene & Macrae
1875 Connecticut Avenue, NW
Washington, D.C. 20009
(202) 986-8018
fax (202) 986-8102

APPEARANCES: [continued]

On behalf of the Major Mailers Association:

RICHARD LITTELL, ESQUIRE
1220 19th Street, NW, Suite 400
Washington, D.C. 20036
(202) 466-8260

On behalf of the Office of Consumer Advocate:

SHELLEY S. DREIFUSS, ESQUIRE
KENNETH E. RICHARDSON, ESQUIRE
Office of the Consumer Advocate
Postal Rate Commission
1333 H Street, NW, Suite 300
Washington, D.C. 20268

On behalf of the United Parcel Service:

JOHN E. McKEEVER, ESQUIRE
Piper & Marbury
3400 Two Logan Square
18th and Arch Streets
Philadelphia, PA 19103
(215) 656-3310
fax (215) 656-3301

APPEARANCES: [continued]

On behalf of Hallmark Cards, Incorporated:

DAVID F. STOVER, ESQUIRE
2070 S. Columbus Street, Suite 1B
Arlington, VA 22206
(703) 998-2568
fax (703) 998-2987

On behalf of ADVO, Inc.:

JOHN M. BURZIO, ESQUIRE
THOMAS W. McLAUGHLIN, ESQUIRE
Burzio & McLauglin
1054 31st Street, NW, Suite 540
Washington, D.C. 20007
(202) 965-4555
fax (202) 965-4432

On behalf of Time Warner, Inc.:

JOHN M. BURZIO, ESQUIRE
TIMOTHY L. KEEGAN, ESQUIRE
1054 31st Street, NW, Suite 540
Washington, D.C. 20007
(202) 965-4555
fax (202) 965-4432

APPEARANCES: [continued]

On behalf of the Direct Marketers Association:

DANA T. ACKERLY, II, ESQUIRE
MICHAEL D. BERGMAN, ESQUIRE
Covington & Burling
1201 Pennsylvania Avenue, NW
Washington, D.C. 20016
(202) 662-5296
fax (202) 778-5296

On behalf of the Newspaper Association of America:

WILLIAM B. BAKER, ESQUIRE
ALAN R. JENKINS, ESQUIRE
MICHAEL YOURSHAW, ESQUIRE
Wiley, Rein & Fielding
1776 K Street, NW
Washington, D.C. 20006
(202) 429-7255
fax (202) 429-7049

ROBERT J. BRINKMANN
Newspaper Association of America
529 14th Street, NW, Suite 440
Washington, D.C. 20045-1402

APPEARANCES: [continued]

On behalf of the McGraw-Hill Companies, Inc.:

TIMOTHY W. BERGIN, ESQUIRE
Squire, Sanders & Dempsey
1201 Pennsylvania Avenue, NW, Suite 500
P.O. Box 407
Washington, D.C. 20044
(202) 626-6608
fax (202) 626-6780

On behalf of the Mail Order Association of America:

DAVID C. TODD, ESQUIRE
Patton Boggs, LLP
2550 M Street, NW
Washington, D.C. 20037
(202) 457-6410
fax (202) 457-6513

On behalf of David B. Popkin:

DAVID B. POPKIN
P.O. Box 528
Englewood, NJ 07631-0528
(201) 569-2212
fax (201) 569-2864

APPEARANCES: [continued]

On behalf of the Magazine Publishers of America:

JAMES R. CREGAN, ESQUIRE
Magazine Publishers of America
1211 Connecticut Avenue, NW, Suite 610
Washington, D.C. 20036
(202) 296-7277
fax (202) 296-0343

On behalf of the Alliance of Nonprofit Mailers:

JOEL T. THOMAS, ESQUIRE
11326 Dockside Circle
Reston, VA 20191
(703) 476-4646
fax (703) 620-2338

On behalf of the National Newspaper Association:

TONDA F. RUSH, ESQUIRE
King & Ballon
P.O. Box 50301
Arlington, VA 22205
(703) 534-5750
fax (703) 534-5751

APPEARANCES: [continued]

On behalf of the National Newspaper Association: [continued]

SENNY BOONE
National Newspaper Association
1525 Wilson Boulevard, Suite 550
Arlington, VA 22209
(703) 907-7900

On behalf of the National Federation of Nonprofits:

CAROLYN EMIGH, ESQUIRE
Nonprofit Service Group
815 15th Street, NW, Suite 822
Washington, D.C. 20005
(202) 628-4380

On behalf of the Florida Gift Fruit Shippers Association:

M.W. WELLS, JR., ESQUIRE
Maxwell W. Wells, Jr., P.A.
105 E. Robinson Street, Suite 201
Orlando, FL 32801
(407) 422-8250
fax (407) 422-8262

APPEARANCES: [continued]

On behalf of the Recording Industry Association of America, and Advertising Mail Marketing Association:

N. FRANK WIGGINS, ESQUIRE
Venable, Baetjer, Howard & Civiletti, L.L.P.
1201 New York Avenue, NW
Washington, D.C.
(202) 962-4957

On behalf of Edison Electric Institute:

R. BRIAN CORCORAN, ESQUIRE
Oliver & Oliver, P.C.
1090 Vermont Avenue, NW, Suite 800
Washington, D.C. 20005
(202) 371-5656
fax (202) 289-8113

On behalf of American Business Press:

STEPHEN FELDMAN, ESQUIRE
Ramsey, Cook, Looper & Kurlander
c/o Thompson Coburn
700 14th Street, NW, Suite 900
Washington, D.C. 20005
(202) 508-1022
fax (202) 508-1010

APPEARANCES: [continued]

On behalf of Douglas F. Carlson:

DOUGLAS F. CARLSON
P.O. Box 12574
Berkeley, CA 94712-3574
(510) 597-9995

On behalf of the Alliance of Non Profit Mailers:

DAVID M. LEVY, ESQUIRE
Sidley & Austin
1722 I Street, NW
Washington, D.C. 20006-3704
(202) 736-8214

On behalf of the National Association of Presort Mailers:

HENRY HART, ESQUIRE
Hazel & Thomas
P.O. Box 820
Alexandria, VA 22313
(703) 838-5153
fax (703) 836-8062

APPEARANCES: [continued]

On behalf of Brooklyn Union Gas Company:

MICHAEL HALL, ESQUIRE
Cullen & Dykman
1225 19th Street, NW
Washington, D.C. 20036
(202) 223-8890

On behalf of Niagara Telephone Company:

TIMOTHY E. WELCH, ESQUIRE
Hill & Welch
1330 New Hampshire Avenue, NW, Suite 113
Washington, D.C. 20036
(202) 775-0070
fax (202) 775-9026

On behalf of the Coalition of Religious Press Associations:

JOHN STAPERT
Associated Church Press
18653 N. 41st Place
Phoenix, AZ 85024-3759
(602) 569-6371
fax (602) 569-6180

APPEARANCES: [continued]

On behalf of the Greeting Card Association:

ALAN R. SWENDIMAN, ESQUIRE
Jackson & Campbell, P.C.
1120 20th Street, NW, Suite 300 South
Washington, D.C. 20036-3437
(202) 457-1645
fax (202) 457-1617

On behalf of LabOne, Inc., Osborn Laboratories, Inc., and Clinical Reference Laboratory, Inc.:

JOSEPH C. BENAGE, ESQUIRE
Hillix, Brewer, Hoffhaus, Whittaker & Wright
2420 Pershing Road
Kansas City, MO 64108-2574
(816) 221-0355
fax (816) 421-2896

C O N T E N T S

C O N T E N T S [continued]

C O N T E N T S [continued]

E X H I B I T S

E X H I B I T S [continued]

EXHIBITS AND/OR TESTIMONY	IDENTIFIED	RECEIVED
Rebuttal Testimony and Exhibits of Donald M. Baron, USPS-RT-1	17715	17715
Cross-Examination Exhibit ADVO-BEX-1	17781	
Cross-Examination Exhibit ADVO-BXE-2	17804	
Rebuttal Testimony and Exhibits of Jon M. Steele, USPS-RT-8	17842	17842
Rebuttal Testimony and Exhibits of Michael D. Bradley, USPS-RT-5	17874	17874
Rebuttal Testimony and Exhibits of Paul Higgins, MPA-RT-2	17984	17984
Rebuttal Testimony and Exhibits of J. Edward Smith, Jr., OCA-RT-1000	18074	18074
Data Collection Document	18102	18102
Rebuttal Testimony and Exhibits of John S. Ying, USPS-RT-4	18136	18136

PROCEEDINGS

[9:32 a.m.]

CHAIRMAN GLEIMAN: Good morning.

Today we continue hearings to receive testimony in rebuttal to the direct cases of participants other than the Postal Service.

We're scheduled to receive testimony of Postal Service Witnesses Sheehan, Miller, Murphy, Baron, Bradley, Steele, and Ying, Magazine Publisher of America Witness Higgins, and OCA Witness Smith.

You should be aware that transcript volume 31 was published with a date of Friday the 13th. That volume contains designated written cross examination and institutional responses.

A few additional written responses continue to trickle in. If participants want these responses incorporated into the evidentiary record, they will have to act promptly.

I would like the evidentiary record closed before initial briefs are submitted, rather than establish a formal procedure for incorporating additional materials into the record or rely on counsel to file appropriate motions on or before March the 27th.

The first two witnesses scheduled for this morning are here to discuss aspects of the OCA proposal for CEM

mail.

This past Friday, March 13th, the Postal Service provided an institutional response answering a question posed from the bench when OCA Witness Willett was on the stand.

Yesterday the Service submitted errata to that response. I'm going to hand two copies of that material, both the response and the errata, to the reporter and direct that these documents be received into evidence and transcribed into the record at this point.

[Response of Witness Willette to Question from Presiding Officer and Errata to Response of Witness Willette to Question from Presiding Officer were received into evidence and transcribed into the record.]

RESPONSE OF THE UNITED STATES POSTAL SERVICE TO QUESTION POSED BY PRESIDING OFFICER DURING CROSS-EXAMINATION OF OCA WILLETTE

QUESTION FROM PRESIDING OFFICER (paraphrased from Tr. 21/10804-05):

Please provide a copy of any studies conducted since Docket No. R90-1 that estimate:

(a) shortpayment or revenue deficiencies as a consequence of the use of either old, outdated, first-ounce First-Class Mail stamps or the use of extra-ounce stamps in place of First-Class stamps

(b) the extent to which First-Class Mail users overpay for additional ounces using the basic First-Class Mail first-ounce stamp, as opposed to a stamp bearing postage equivalent to the additional-ounce rate.

RESPONSE:

In response to interrogatory OCA/USPS-T32-29 (Tr. 19/9052), the Postal Service provided the following estimates of shortpaid revenue within single-piece First-Class Mail:

FY95	Letters	$121,192,000
	Cards	1,205,000
FY96	Letters	$124,221,000
	Cards	1,059,000

In the course of preparing rebuttal testimony in this proceeding, the Postal Service developed estimates of shortpayment and overpayment of postage on single-piece First-Class Mail, based upon information collected during routine Revenue Pieces & Weight (RPW) data collection activity for FY96.

Based upon RPW data for FY96, it is estimated that 0.06 percent (28,932,000 of 47,060,843,000 pieces) of the 1-ounce single-piece First-Class Mail stream was

RESPONSE OF THE UNITED STATES POSTAL SERVICE TO QUESTION POSED BY PRESIDING OFFICER DURING CROSS-EXAMINATION OF OCA WILLETTE

(RESPONSE to Question posed at Tr. 21/10804-05 continued)

shortpaid. It is also estimated that 7.35 percent (477,894,000 of 6,500,538,000) of additional-ounce single-piece First-Class Mail were shortpaid. RPW breaks down these 506,826,000 shortpaid letters as follows:

Number of Letters (000)	Postage on Piece (Cents)	Est. Shortpaid Revenue ($000)
402	5	109
1,036	10	228
24,782	20	2,974
2,712	23	244
477,894	32 or more	120,665
506,826	[Total]	124,221

For FY96, overpayment on single-piece First-Class Mail is estimated to have occurred on 1,099,982 pieces, generating $257,234,000 in overpayment. Generally, overpayment occurs when:

(a) mailers of additional-ounce single-piece mail apply available 32-cent stamps to pay for additional ounces postage, rather than obtain stamps equivalent to the 23-cent additional-ounce rate; and

(b) mailers of single-piece postcards apply available 32-cent stamps, rather than obtain stamps equivalent to the 20-cent postcard rate.

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

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

NOTICE OF THE UNITED STATES POSTAL SERVICE CONCERNING ERRATA TO INSTITUTIONAL INTERROGATORY RESPONSES

On March 13, 1998, the United States Postal Service filed a response to questions directed to it by the Presiding Officer during the cross-examination of OCA witness Willette. The final paragraph of page 2 of that response contains an estimate of the volume of single-piece First-Class Mail on which the postage was overpaid. The figure on that page which reads "1,099,982" should be corrected to read "1,099,982,000".

After discovering the need to make this correction, the Postal Service found two typographical errors contained in earlier-filed institutional interrogatory responses, which already have been designated into the evidentiary record:

The response to OCA/USPS-27 (Tr. 19C/9050) contains an estimate of the percentage of short paid "total First-Class, stamped and metered, single-piece letter mail" -- ".61%". That category should read "total First-Class, stamped and metered, single-piece 1-oz. letter mail" -- and the estimate should read "0.061%".

The response to OCA/USPS-28 (Tr. 19C/9051) contains an estimate of the percentage of short paid "total stamped and metered First-Class Mail" -- "0.96%". That estimate should read "0.95%".

CHAIRMAN GLEIMAN: There are only a few outstanding motions pending at this point, and I intend to rule as promptly as possible on these motions so that we can complete the development of our record.

Last night, the Postal Service provided its response in opposition to Newspaper Association of America motion to compel admission from the United States Postal Service.

I will grant the NNA motion.

The Postal Service objected that the request for admission was not timely, although it was filed on February 17th, the final date for discovery under Rule 2(e).

The Postal Service also claimed that its failure to respond to an earlier NNA discovery request is not germane, because Special Rule 2(b) somehow places a burden on NNA to file a motion to compel.

This argument appears at page 5 of the Service's response.

The Service is incorrect in this regard. The Service has an ongoing obligation to answer discovery requests and to correct the answers to discovery.

Finally, the Postal Service contends that it requires an opportunity to dispute the authenticity and accuracy of the documents before they're received into evidence.

In this instance, NNA is asking the Postal Service to authenticate a Postal Service document.

If the Service finds that the document proffered by NNA is not authentic or it is not an accurate reproduction, it may say so. The Postal Service is to provide its written response or, in any event, its response by close of business tomorrow, March 18th.

Does any participant have a procedural matter to raise before we begin today?

[No response.]

CHAIRMAN GLEIMAN: If not, Mr. Tidwell, you can identify your first witness so that I can swear him in.

MR. TIDWELL: Good morning, Mr. Chairman. The Postal Service calls Robert Sheehan to the stand.

CHAIRMAN GLEIMAN: Mr. Sheehan, could you please stand and raise your right hand?

Whereupon,

ROBERT J. SHEEHAN,

a witness was called for examination by counsel on behalf of the Postal Service and having first been duly sworn, was examined and testified as follows:

CHAIRMAN GLEIMAN: Would you please be seated?

DIRECT EXAMINATION

BY MR. TIDWELL:

Q Mr. Sheehan, I have presented to you two copies of

a document which is entitled "The Rebuttal Testimony of Robert J. Sheehan on Behalf of the United States Postal Service." For purposes of this proceeding, it has been designated as USPS-RT-16.

Was that document prepared by you or under your supervision?

A It was.

Q If you were to give the testimony in that document orally today, would it be the same?

A Yes, with three exceptions.

Q Could you read them for us?

A On page 12, line 19, it reads, "Of the nine cards delivered, one had two" -- it reads "bar codes" -- it should read "ID tags applied." It continues, "One ID tag appeared horizontally and one ID tag appeared vertically."

Q Are those the only changes?

A Yes, they are.

MR. TIDWELL: Mr. Chairman, with those changes, the Postal Service then moves the rebuttal testimony of Mr. Sheehan, which has been designated as USPS-RT-16, into the evidentiary record.

CHAIRMAN GLEIMAN: Are there any objections?

[No response.]

CHAIRMAN GLEIMAN: Hearing none, Mr. Sheehan's testimony and exhibits are received into evidence, and I

direct that they be transcribed into the record at this point.

[Rebuttal Testimony and Exhibits of Robert J. Sheehan, USPS-RT-16, was received into evidence and transcribed into the record.]

USPS-RT-16

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

Postal Rate and Fee Changes, 1997	:	DOCKET NO. R97-1

REBUTTAL TESTIMONY
OF
ROBERT J. SHEEHAN
ON BEHALF OF
UNITED STATES POSTAL SERVICE

TABLE OF CONTENTS

AUTOBIOGRAPHICAL SKETCH

My name is Robert J. Sheehan. I am the District Manager, Customer Services and Sales, for the Atlanta, Georgia District of the Southeast Area of the United States Postal Service. In this capacity, I have overall responsibility for all Postal Service operations in an area which includes nearly 5 million residents and covers approximately 19,000 square miles. The Atlanta District employs more than 15,000 people at its three major plants, 236 post offices and 82 stations.

From July 1994 to September 1996, I served as Manager of In-Plant Operations at USPS Headquarters in Washington, DC. My duties included system-wide responsibility for establishing operations policy and programs within the processing and distribution function and developing strategic plans to improve operational efficiencies for the national network of Airport Mail Centers, Bulk Mail Centers, and Processing and Distribution Centers.

With the reorganization of 1992, I became Area Manager of Processing and Distribution for the Allegheny Area. In that position I was responsible for all mail processing facilities in the states of Pennsylvania, Ohio, Delaware and southern New Jersey, an area encompassing more than 27 million people. The area processing and distribution network consisted of 40 processing and distribution centers, 3 bulk mail centers and 7 airport mail centers.

In January 1990, I assumed the position of Regional Director of Planning, Northeast Region (NER), Windsor, CT. There, I was responsible for the integration of the automation program within the NER. Additionally, I was responsible for the strategic planning function for the Region.

From June 1987 through August 1990, I managed the NER's District Sales Staff of 140 Account Representatives as Regional Manager, Commercial Accounts.

As Postmaster and Sectional Center Manager, Orlando, FL, I was directly responsible for overall postal operations of a large, complex, and expanding

center consisting of 73 associate offices with 4,900 employees. Prior to June 1987, I was Postmaster and Sectional Center Manager, Greensboro, NC.

In April 1978, I became Sectional Center Director, Customer Service, Albany, NY, and was responsible for all delivery, retails sales and customer service operations for over 200 postal facilities. As Customer Engineer at the Springfield BMC, I was the primary point of contact for over 75 major bulk mail customers in a seven state area from 1975 to 1978.

I started with the United States Postal Service in 1968 as a temporary distribution clerk/city letter carrier. I earned a Bachelor's Degree in Business Administration from the University of Portland. I later went on to achieve an MBA from Suffolk University and have attended the Harvard University Program for Management Development.

I. PURPOSE OF TESTIMONY

The first purpose of my rebuttal testimony is to respond to the Office of the Consumer Advocate's (OCA) Courtesy Envelope Mail (CEM) proposal set forth in witness Willette's testimony (OCA-T-400). The second purpose is to address the continuing need for the First-Class Mail nonstandard surcharge, an issue which was raised by Nashua, District, Mystic and Seattle Filmworks witness Haldi (NDMS-T-1). My testimony is confined to the managerial perspective related to these two issues.

II. CEM IS INCONSISTENT WITH IMPROVED PROCESSING TECHNOLOGY AND IS A STEP BACKWARD

The OCA's CEM proposal is inconsistent with the Postal Service's automation and organizational goals. The Postal Service has spent hundreds of millions of dollars to automate letter operations during the past five years. This has drastically reduced the human element from the sortation process. The opportunity for individual letters to be touched by human hands before reaching the delivery unit is constantly diminishing as Delivery Point Sequencing (DPS) volumes continue to increase. As I will explain later in my testimony, a CEM mail processing environment would require additional staffing to manually address potential short paid volumes.[1]

The testimony of rebuttal witness Miller (USPS-RT-17) demonstrates that due to our ongoing technological advances in letter sortation equipment and software, mail processing costs for the various types of single-piece First-Class Mail letters are already converging and will continue to do so.[2] With barcodes placed on hand-addressed letters through Remote Bar Code System (RBCS) processing and the future of image recognition software constantly improving, even hand-addressed envelopes can stay in the automated mail stream from

[1] The costs associated with this additional staffing are estimated by USPS rebuttal witness Miller (USPS-RT-17 at 23).
[2] USPS-RT-17 at 29.

cancellation to carrier. Given these changes in mail processing technology which have occurred since CEM was first proposed in Docket No. R87-1, the Commission should consider whether CEM is an idea whose time has come and gone.

III. EDUCATION RELATED TO SIMPLE POSTAL CHANGES CAN PRESENT SIGNIFICANT CHALLENGES

OCA witness Willette portrays CEM as a "very simple concept."[3] In fact, she dismisses the potential problems that the Postal Service may face in educating consumers by making only passing comments as to how consumers will be educated about this "simple concept." At Tr. 21/10687, beginning at line 16, she casually assumes that "the Postal Service also can educate consumers directly in the same way it informs them about single-piece First Class postage requirements, and variations thereof (such as the additional ounce rate, the nonstandard surcharge, and the single-piece card rate)." At Tr. 21/10689, lines 6-7, she mentions that the Postal Service "might also wish to standardize the CEM message to be imprinted as part of its overall educational efforts." Also, she notes that some envelope providers may elect to advise their customers about a envelope's eligibility for the discounted CEM postage rate.[4]

Historically, when the USPS Board of Governors announces the implementation of new rates arising from an omnibus rate case, an important objective of postal management is to ensure that household mailers are aware of the changes that will affect them most. At the local level, postal managers educate customers through a variety of methods, including lobby displays in post offices and postal customer councils. At the national and local levels, the Postal Service also provides considerable information to television, radio, and daily print media outlets in order to more broadly disseminate information about the various

[3] Tr. 21/10688 at line 8.
[4] Tr. 21/10695 at lines 11-13.

rate and classification changes to the general public. Nevertheless, the media tends to focus its reporting on the single-piece First-Class Mail rate. With some exceptions, anything else is often only partially or incompletely reported. If CEM were approved by the Board of Governors for implementation, the Postal Service would have to undertake considerable effort to minimize the extent to which news reports about "the new bill payer's rate" created confusion among the general public regarding what pieces actually would qualify for CEM. As reliable as the general media are in reporting that the basic rate has increased to 25 or 29 or 32 cents, I am not confident that television, radio, and daily print media news outlets competing for the attention of viewers, listeners, and readers will dwell on the "ins and outs" of Facing Identification Marks (FIMs), barcodes, and other indicia markings.

Witness Willette's opinion that educating the consumer on CEM will not be too difficult conflicts with my experiences in trying to educate consumers about seemingly simple postal related changes.

CEM would require the Postal Service to conduct a massive educational campaign for both its customers and employees, beyond that which ordinarily accompanies a change in rates. It is likely that a customer campaign regarding CEM will require an unprecedented level of communication in terms of detail and frequency. Of course, all of this comes at a significant cost.[5] Witness Miller (USPS-RT-17) addresses the educational approaches and costs that would be incurred by such a campaign.

In my own experience, similar educational efforts that come to mind involve the blanket notification to local postal customers regarding either a change to 911-style addressing or a ZIP Code split. When it is necessary for customers' addresses to change, the information is frequently provided to them by a variety of methods, such as paid advertisements in newspapers and on radio and TV.

[5] Witness Miller provides a cost estimate USPS-RT-17 at 18.

In instances where the address change is in response to the implementation of a 911 emergency response system, notice is usually provided to each residence and business by letter, since the change is specific to their physical address, as opposed to a ZIP Code split that simultaneously has an impact on multiple addresses. In addition, a county or municipal government agency also sends out a preliminary letter that advises affected postal customers of their address changes and instructs them to refrain from using their new physical addresses as their new mailing address until they receive formal notification from the Postal Service, otherwise their mail could be delayed or returned to sender. As straightforward as this precaution may seem, it is always the case that many consumers either overlook or misunderstand or otherwise fail to comply with the notice and begin using their new address before receiving a "green light" from the Postal Service, with predictable consequences.

I also have seen the exact opposite occur when postal customers' addresses change because of a ZIP code split. Instead of customers using the new addresses prematurely, many do not convert to their new addresses within the one-year grace period. As a result, mail continues to be directed to the old addresses long after the changes should have been made. Although correspondence about the ramifications of not adhering to the conversion date for their new addresses was sent to the customer, again it is apparently either overlooked or misunderstood.

Postal customers often have difficulty understanding when they should implement changes to their addresses, despite being provided with very specific and detailed instructions. As a postal manager, I find these situations frustrating, but I understand why they occur. Over the years, I have had the privilege of interacting directly with countless household mailers of various education and income levels, almost all of whom have one thing in common – a preoccupation in an increasingly fast-paced world with things that are not related to the Postal Service. Being a postal customer is not a dominant activity in the lives of most people. There are a lot of demands on their attention. On the other hand, my

job responsibilities fully immerse me in postal matters. The same is probably true of the hundred or so people who may read my testimony and the thousands of postal employees around the nation. But aside from technologically sophisticated mailroom personnel and others in the mailing industry, the rest of the nation tends not to focus on technical postal matters, even things that those of us "in-the-know" believe to be very simple and straightforward. With other things on their minds, the general public tends to prefer that we keep things simple, and they prefer to avoid having to deal with change in their basic relationship with the Postal Service. Notwithstanding the appeal that a discount may have for some, I am certain that in a CEM environment, many of my customers will either avoid or not want to determine which of the multiple envelopes that they receive in a given period can be mailed at the discounted CEM rate, even if the face of qualifying envelopes contained what I thought was a clear CEM indicia.

The implications of presenting the American public with CEM are of serious concern to me. No matter how much time or money we spend educating household customers about this "simple concept," my experience tells me that the message will not get through to everyone or that some part of the message will be misunderstood. Accordingly, there most likely will be some number of customers who will interpret CEM as a new "bill paying rate" and will, therefore, apply the discounted rate to all reply envelopes or bill payments, whether or not they are CEM-eligible. The potential for customers to misunderstand or misuse CEM is not insignificant, and my experience from previous attempts to educate household customers confirms that nothing is as simple as it seems.

IV. SHORT PAID ENFORCEMENT WOULD HAVE TO BE MODIFIED AND WOULD PRESENT A DILEMMA

In the current mail processing environment, trying to find a technological alternative to adding clerks for identification of postage due volumes has proven difficult. Our letter mail processing equipment and software are unable to

determine the specific amount of postage paid by each piece as it goes through our systems. Implementation of CEM would require that the human element would have to be employed more extensively to address short paid mail concerns, despite our efforts to move away from this approach.

Current policy for handling short paid mail has the carrier or box clerk requesting the postage short-fall from the addressee. If short paid mail is in DPS, the likelihood of capturing it is greatly reduced, since no one sees the piece until it gets to the carrier. Today, carriers do not see their DPS letters until they are on the street. If the piece has no postage, it is returned to the sender. The current short paid mail policy focuses at destination and does not address how to notify or educate the originator of the mail piece that actually used the wrong postage. Therefore, in a CEM environment, the policy for handling short-paid mail would have to be revisited and most probably modified to address revenue short-falls primarily at origin. This would be a significant change to current policy. A description of this approach and the estimated costs are reflected in the testimony of witness Miller (USPS-RT-17).

But shifting CEM short paid enforcement away from delivery units to mail origin operations is not a complete answer. Short paid mail will still get through and concentrations of CEM postage on non-qualified mail could be noticed downstream, particularly on courtesy reply envelopes which have not converted to CEM. Local managers would have to consider employing clerks at delivery units where non-CEM remittance mail is concentrated to check for misapplication of CEM postage. There are 28 major postal remittance mail centers across the country that would be greatly impacted. For example, Atlanta handles two million pieces of remittance mail daily for 2000 box holders. If such verification were to be added at major remittance centers, it could increase the potential for ill will from our major remittance recipients anxious to capture the float on incoming remittances. Managers might elect to seek postage due from recipients who would prefer that the burden of short payment be shifted to the senders. Managers might elect to avoid friction with valuable remittance

recipients by not pressing for short paid collections or not returning the mail to senders, crediting them with a "good faith" misapplication of CEM postage to an "almost qualified" mail piece.

On the other hand, if managers take the same lax attitude to short payment resulting from the application of CEM postage to "obviously unqualified" greeting cards and other correspondence, it increases the likelihood that the public will perceive that it really does not matter whether they pay the correct postage. If managers strictly police short payment on greeting cards to reinforce correct mailing practices, it will be necessary to accord the same treatment to "almost qualified" remittances, putting pressure on the Postal Service to supplement detection efforts at origin with additional efforts at destination. These are not simple choices to make. They are not without cost.[6]

V. SHORT PAID ENFORCEMENT COULD UNDERMINE OUR CUSTOMER RELATIONS

I shudder to think of the adverse customer relations consequences that would stem from returning to sender "almost CEM-qualified" mortgage payments because the senders used the wrong denomination stamp and applied insufficient postage to unqualified courtesy reply envelopes, particularly if the return of a payment caused a customer to incur a late payment fee. Given that the use of payment books and peel-off labels for payment, as opposed to courtesy envelopes, is relatively common in the mortgage industry, this is not a far-fetched example. There is significant potential for a degradation in the Postal Service's relationship with the public after we have worked so hard to improve it. The Customer Satisfaction Index (CSI) and Business CSI would certainly take down-turns because of increased confusion and difficulty-of-use. CEM is also contrary to another one of our performance indicators, Ease-of-Use, which is measured by different size customers.

[6] See Exhibit USPS-RT-17D.

Some of the remittance processing centers that are located here in Atlanta have already mentioned to me that they have major concerns about implementing CEM. There is concern about impacts on cash flow to these businesses if any delay is experienced in receiving these payments.

One of my rudimentary concerns about CEM is that our customers apparently prefer the status quo. The simple one-stamp method for sending and receiving mail has been in place for decades. Therefore, it would not be much of a surprise to me if the Postal Service became the target of "if it ain't broke, don't fix it" mockery if CEM were implemented. Coming from Atlanta, a comparison that comes to my mind is when Coca-Cola came out with its *"New Coke"* formula. Consumers did not appreciate a radical change in their favorite soft drink being foisted upon them and the subsequent public backlash forced Coca-Cola to bring back the original *Coke*.

VI. THE NONSTANDARD SURCHARGE IS IMPERATIVE TO ACHIEVING OUR AUTOMATION GOALS

NDMS Witness Haldi, at Tr. 24/12913, lines 3-5, states "Automatability is not static. While the DMM definition of 'non-standard' may not have changed for many years, the capabilities of mail processing technology have changed dramatically." What Witness Haldi fails to recognize is that this very same equipment and any new equipment requirements are based on the current DMM nonstandard mail piece definition. The definition is not obsolete, as witness Haldi seems to suggest.

The nonstandard surcharge is applied to pieces weighing one ounce or less that do not meet standard letter dimensions. The existing equipment affected by the definition ranges from Advanced-Facer Canceler Systems (AFCS), Optical Character Readers (OCR), Delivery Point Bar Code Sorters (DBCS), Carrier Sequence Bar Code Sorters (CSBCS), Letter Mail Labeling Machines (LMLM), various letter trays, tray racks, and tray transport equipment. Length, height, width and aspect ratio all play a part in the machinability of a

piece. Any change to the length and height in the nonstandard definition would have obvious impacts on stacker widths and sort channel heights on the letter processing equipment. For example, given the extensive deployment of DBCSs with 4 tiers of stackers, mail with greater length or height characteristics can not be accommodated.

The width restriction is due to the increased potential for jams and a reduction in throughput, again causing increased handling costs. In addition, tight turns are required within the equipment and there is an increased potential for missorts. With floor space at a premium, tight turning radii are required for the belts transporting the mail through the equipment. In the OCR, belts provide a "delay" so the OCR has sufficient time to interpret the address and access the directory before it goes in front of the barcode printer. All of this occurs in a very tight space within the machine. Thicker pieces can have problems making the tight turns required and can jam the machine. Jams may involve the machine being down for a couple minutes while maintenance or mail processing personnel remove the piece(s) involved. This may result in damage to several pieces that followed the thicker piece through the machine. Damaged pieces also negatively impact customer relations.

If pieces are thicker than ¼", then there also is not enough tension between the two belts for the following mail piece, since the gap between pieces is so short. What occurs is jamming and missorts, because tracking is lost for the following piece since it can shift between the belts.

The aspect ratio comes into play when pieces are traveling through the machine at 8-12 pieces per second. This can cause square pieces to "tumble," resulting in either: (1) a skewed barcode being applied that will not be verified or read on subsequent barcode equipment, or (2) a good barcode that will go through subsequent barcode readers skewed, causing the piece to be rejected. Again, such pieces require handling in more costly manual operations.

Several approaches are used to pull nonstandard size pieces out of the automated mail stream. Letters that go to an AFCS must first pass through a

Revised 3-17-98

Dual Pass Rough Cull machine that pulls out pieces and bundles that are too thick. The feed channel to the AFCS pulls out pieces that are too tall. Operators on the AFCSs, OCRs and BCSs attempt to pull out nonstandard pieces on the feed-end of the equipment. Pieces that are too tall, too long or too thick are fairly easy to recognize. These identified pieces are placed into a tray and designated to go to a manual operation. Aspect ratio is much harder to detect by the operators, especially when loading and jogging mail at over one tray per minute on automation.

Pieces that are over the height, length or thickness maximums are considered flats or parcels, not only for mail processing but also for delivery purposes. City carriers are provided more time for casing and pull-down of flats and parcels than for letters. Rural carriers are paid a higher piece rate for flats and parcels than for letters. All of this results in greater costs for the Postal Service.

At Tr. 24/12884 beginning at line 13, witness Haldi's discusses an experiment where he mailed 10 nonstandard, square greeting cards to himself to see if the delivered cards would evidence any processing problems. The cards are contained in LR-NDMS-1.

Of the nine cards delivered, one had two ~~barcodes~~ I.D. tags applied -- one ~~barcode~~ I.D. tag appeared horizontally and one ~~barcode~~ ID TAG appeared vertically. This indicates that the square card tumbled during processing, as discussed above. The remaining cards show no evidence of processing problems.

Witness Haldi's anecdotal evidence does suggest that the Postal Service might want to re-evaluate the automatability of pieces with low aspect ratios. However, any informative analysis would need to test the full range of nonstandard criteria -- height, length, thickness and aspect ratio – and not be limited to one facet of the definition, as witness Haldi has done.

Other countries have required standardization of mail pieces to a much greater degree than the Postal Service would ever consider. We have attempted to provide a low-cost method of handling for a wide range of sizes. Therefore,

the nonstandard surcharge continues to be a viable incentive for mailers to provide us with letters that are compatible with our processing equipment.

VII. CONCLUSION

Regarding CEM, OCA witness Willette suggests that the Commission should just summarily dismiss concerns that might be raised by the Postal Service. Tr. 21/10703, at lines 11-14. I trust that the Commission, despite our past differences regarding previous CEM proposals, will seriously consider postal management's reservations expressed in this case. I also trust that the Commission will continue to recognize the importance of the First-Class Mail nonstandard surcharge.

CHAIRMAN GLEIMAN: Two participants requested oral cross examination of Witness Sheehan, Nashua District Mystic Seattle and the Office of the Consumer Advocate.

Does any other party wish to cross examine?

[No response.]

CHAIRMAN GLEIMAN: If not, then Mr. Olson, whenever you're ready.

CROSS EXAMINATION

BY MR. OLSON:

Q Good morning, Mr. Sheehan.

A Good morning.

Q William Olson representing Nashua, District, Mystic, and Seattle.

I want to ask you first -- and of course, my cross examination today is going to deal with the Section 6 of your testimony regarding the non-standard first-class surcharge.

A Uh-huh.

Q And first of all, I want to ask you if your testimony is intended to support the continuation of a ~~firs-class~~ First-Class non-standard surcharge with respect to letters, flats, and parcels, obviously non-standard letters, flats, and parcels.

A Non-standard first-class.

Q Which would include letters, flats, and parcels,

correct?

A Well, I think it specifically talks about letters.

Q Well, your -- you obviously refute Dr. Haldi's testimony, NDMS-T-1, correct? Because that's what you're responding to.

A Uh-huh.

Q Okay. And in that testimony, at Table 1 and also through discovery, we obtained some information about the number of pieces of first-class non-standard letters, and I'll just ask you to accept subject to check that the total volume was 383.2 million, and of that, 282.4 million pieces were flats. Do you recall those numbers?

A Subject to check. I don't recall them specifically, no.

Q Okay. That's about 74 percent of the pieces are flats, and again, subject to check, it was about 19 percent letters and about 7 percent parcels, and so, I guess I'm trying to get to the issue as to whether your testimony only deals with non-standard letters or whether it also deals with non-standard flats and parcels.

A What I have prepared really deals with letters and their processing through our automated equipment.

Q Okay. Do you take a position with respect to whether there should be a first-class non-standard surcharge with respect to flats and parcels?

A I don't.

Q Okay. With respect to the -- well, let's just begin with your testimony. Let me ask you to tell us, if you could, what distinguishes a letter from a non-standard letter.

A Well, there's a specific criteria.

One issue is thickness, it's greater than a quarter-of-an-inch thick.

If its aspect ratio is -- exceeds the tolerances of its -- greater than six-and-an-eighth, there's basically a template that could be used to determine whether a piece -- a first-class letter piece is a non-standard piece or it is not.

Q Okay. Well, let's get to that template, because this might help us discuss this, and I've taken a template -- I'm not sure if you have one with you, but I've got one for you -- and I have prepared a photocopy of the front and back of that template and made some markings on it.

MR. OLSON: And Mr. Chairman, with your permission, I'll present this to the witness and to the bench.

THE WITNESS: Okay.

CHAIRMAN GLEIMAN: Mr. Olson, we have someone nominated for that chair, but it's not filled yet, so I don't think we need the extra copy quite yet.

BY MR. OLSON:

Q Mr. Sheehan, first of all, let me confirm that I have the most current version of this template. It's dated in the bottom right, Notice 3A/May 1997. Do you see that?

A Yes, I do.

Q Do you believe this to be the most current version of this template?

A Yes, I do.

Q Okay. When we had some cross examination earlier, I believe I had an earlier version and, thanks to National Postal Forum, now have the new template.

I have also photocopied the front and back of that template.

MR. OLSON: And Mr. Chairman, I guess we'd ask that this be identified as -- or marked as NDMS-XE-1. As we get into this, I'm going to later ask it be put in the record, but I have a reduced size copy so that it can be put in the record without slicing.

CHAIRMAN GLEIMAN: We appreciate your assistance in that regard.

[Cross Examination Exhibit NDMS-XE-1 was marked for identification.]

BY MR. OLSON:

Q Mr. Sheehan, you're obviously familiar with this

letter-size mail dimensional standards template, correct?

A Yes.

Q Okay. Let's go back and discuss, with this in mind, the factor -- the way in which you determine what is a non-standard letter as opposed to a letter.

My question was what distinguishes a letter from being a non-standard letter, and you started to give several factors, and I wonder if you can just go through those and explain them to using the template.

A Okay. If you were to use the template, we place a mail pieced in the bottom left-hand corner. If the mail piece falls within the shaded area, it's a standard piece. If it does not, it's basically a non-standard. There are also some minimum standards.

Q Okay. The first one you just mentioned has to do with the aspect ratio, correct?

A They would, yes.

Q Okay. Anything else that distinguishes a letter from a non-standard letter?

A It has to be able to fit through the slot, which makes it less than a quarter of an inch.

Q Okay. Let me ask you about that standard. Is it not true that that is -- that a letter cannot exceed a quarter of an inch?

A To be considered a standard -- to be so it would

be considered standard, if you would, not standard as in a class of mail but a piece that would qualify -- that would not be charged the non-standard surcharge, yes, it would have to be less than a quarter of an inch.

Q Well, wholly irrespective of whether there is a non-standard surcharge, I'm just -- let me first deal with the issue of what's a letter. Isn't it true that a letter, under the DMM, cannot be more than a quarter of an inch?

A Okay.

Q Is that correct?

A Yes.

Q Okay. So, that doesn't distinguish a non-standard letter from a letter, does it? In other words, it wouldn't be a letter to begin with if it was more than a quarter of an inch, would it?

A Well, I'm not sure we're talking about a processing issue or a definition by classification. Are you asking me what we do with it, or is it, by strict definition in the DMM, a letter piece?

Q No, I'm starting off with the DMM, and the references have to do with C050, called mail processing categories, and they identify letter-size mail as having a minimum and a maximum, and the maximum is -- that I have in front of me, page ~~C49~~ C-49 of DMM Issue 53, dated January 1, 1998 -- is maximum 6 1/8th high, 11 1/2 long, and a 1/4-inch

thick.

A Okay. Yes, that's what the template says.

Q Okay. So, to go back to your testimony, a second ago you said that one of the factors that distinguished a non-standard letter from a letter was the fact that a non-standard letter exceeded a quarter of an inch, correct?

A Yes.

Q And I'm trying to explore with you as to whether that's an accurate statement. Isn't it true, Mr. Sheehan, that all letters must be under a quarter of an inch thick? In other words, that doesn't distinguish a non-standard letter from a letter at all, does it?

A I'm not sure I really understand what you're trying to get at.

Q Well, if it's over a quarter of an inch, it's not a letter. Isn't that correct?

A If it's over a quarter of an inch, it is not processed like a letter. So --

Q Well, let's --

A Then I guess it would be not a letter. Is that --

Q Yes. It would not be a letter. Isn't that correct?

A It would not be processed like a letter.

Q Well, let's deal with the DMM definitions.

A Okay.

Q And just try to apply them. Isn't it true that under the DMM definitions that I've just cited to you, and I have a copy free to look at if you'd like, that if it exceeds a quarter of an inch, it's simply not a letter, wholly irrespective of whether there's a nonstandard surcharge or not?

A All right. By the DMM. You have the reference.

Q Okay. You accept that.

A That's what the DMM says.

Q Okay. And now what else distinguishes a letter from a nonstandard letter?

A Well, we talked about thickness, we talked about aspect ratio, or any of the maximum or minimum standards by size themselves.

Q Okay. What about those maximums. Let's deal with the maximums by size.

A Well, anything greater than 6-1/8 tall is not a letter.

Q Okay.

A According to the template. And --

Q Okay. It's --

A Greater than 11-1/2 long is not a letter.

Q Okay. So we're agreeing then that if it's greater than 6-1/8 inches in height, it's simply not a letter, wholly irrespective of nonstandard; correct? It's just not

a letter.

A It's -- it's a nonstandard letter is our definition I think.

Q Well, I don't -- I'm challenging that.

A I understand.

Q And I'm -- I believe you're not accurately reporting on what we just read in the DMM. What I said was what distinguishes a letter from a nonstandard letter. And I'm suggesting that height -- the height of 6-1/8 inches has nothing to do with the distinction. In other words, if it's more than 6-1/8 inches high, it's not a letter. It doesn't matter whether it's standard or nonstandard.

A Well, that's I guess your interpretation. Ours -- we would call it a nonstandard letter, and then we get into a discussion --

Q In other words --

A Of what the processing of that piece is.

Q Well, let's just stick with the DMM. If it's more than 6-1/8 inches high --

A Um-hum.

Q You say it's a nonstandard letter.

A I guess for the definition -- for the purpose of this definition I'm saying it's a nonstandard letter; right.

Q Okay. But I'm saying to you, isn't it true that it isn't a letter at all?

A I guess you could say that. That's -- if you want to make a definition of -- your definition of what a nonletter is, if it's not a letter, then is it a flat?

Q Well, let me hand you the DMM. It's not my definition.

A Okay.

Q It's page C-49.

CHAIRMAN GLEIMAN: If you need a copy of the DMM, I think we can find one around the corner real fast.

BY MR. OLSON:

Q Okay. Mr. Sheehan, I've handed you a copy of that page of the DMM and I've marked in yellow where the maximum dimensions of a letter are. And I'd ask you to confirm with me that a letter cannot exceed 6-1/8 inches high or 11-1/2 inches wide. Is that correct?

A Yes.

Q Moreover, it cannot exceed one-quarter of an inch of thickness; correct?

A Yes.

Q Okay. So it's not my definition; correct? It's the DMM definition.

A That's what you said; right.

Q Okay. So what I'm going to go back to is my original question as to what distinguishes a letter from a nonstandard letter, and I'm suggesting to you that neither

length nor height nor thickness distinguish a letter from a nonstandard letter as you've testified. And I'd ask you if you would like to reconsider your testimony in view of the DMM in front of you.

A No, I wouldn't. I think a nonstandard letter is one that is as defined by our -- by our processing as one that cannot be processed through our processing equipment, and that's the purpose of the definition.

Q Okay. Let me ask you this. Suppose you have a standard letter -- in other words, a two-ounce letter -- that is seven inches high. Can that be processed on letter equipment?

A No.

Q If it's 7 -- then in what sense is it a letter, according to what you just said?

A Well, according to your definition, it's not a letter, it's a flat.

Q Well, it's not my definition.

A Well, I mean the DMM. You defined a piece that's seven inches tall, then by this definition it's a flat-sized mail piece.

Q So it's not a letter.

A It's a flat if it's seven inches tall.

Q Okay. That's all I'm trying to get at. There are three kinds of -- as I understand it, there are three kinds

of pieces subject to nonstandard surcharges. You can be a letter and subject to a nonstandard surcharge, you can be a flat and subject to the nonstandard surcharge, or you can be a parcel and subject to the nonstandard surcharge. Isn't that correct?

A Yes.

Q Okay. And what I'm getting at is now back to my original question, what distinguishes a letter from a nonstandard letter? And I'm suggesting the answer is aspect ratio, period. Would you accept that?

A Well, that's one criteria. Yes.

Q Okay. What other criteria are there?

A Well, going back to the same thing, the thickness is a criterion to become a nonstandard letter by our definitions.

Q Okay. Let me ask you this. Isn't it true that before a piece can be a nonstandard letter it first has to be a letter?

A I guess.

Q Okay. Well, if these pieces that are seven inches high aren't letters to begin with, what makes you say they're nonstandard letters? Aren't they nonstandard flats?

A Well, I guess you could define the whole piece -- what piece are we talking about, a seven-inch-tall piece that's one inch wide? That's --

Q Well, let's take -- let's take this template and let's say that the piece is one ounce and it is in a 8-1/2-by-11 Tyvek envelope. So it is within the length -- correct?

A 8-1/2 by 11?

Q Yes. It's less than 11-1/2.

A It's less than 11 inches; all right.

Q But it is too tall; correct?

A Right.

Q Because it is greater than 6-1/8 inches tall.

A That's right.

Q And it only weighs one ounce. So it is subject to the nonstandard surcharge; correct?

A Yes.

Q Is it a nonstandard letter?

A By that definition on the surcharge rates, yes.

Q Isn't it true that it's a non-standard piece but not that it is a non-standard letter?

A Letter/piece. By the definitions we are working off this template, we are using terminology "letter." If you'd like to call it a piece, then it's a piece.

Q Well, it's a flat --

A It doesn't fit in the criteria of the template. That's the criteria we are using to determine whether a piece, subject to the non-standard surcharge or not. This

is the guideline. We both agreed to that.

Q Right, but at the beginning I asked you if your testimony dealt with non-standard letters, non-standard flats or non-standard parcels, and you said it dealt with non-standard letters; correct?

A Right, yes.

Q Now I'm asking you to explain for me what you think a non-standard letter is and I'm suggesting your definition is too broad and you're talking about non-standard flats.

A I'm talking about anything that we define as a non-standard letter based on the template you provided me.

Q But isn't it true that if it doesn't fit within these parameters, that it's simply not a letter, irrespective of its weight?

A It's -- this is the letter sized dimensional standard.

Q Right.

A So if it's bigger than this, I guess it's not going to be a letter.

Q Okay. So if it's bigger than that, it can't be a non-standard letter; correct?

A No, it just can't be a letter. It's a flat.

Q Isn't it true that if it is an 8 1/2 by 11 Tyvek envelope weighing one ounce, it could be a non-standard

piece, but it would be a non-standard flat and not a non-standard letter as you have been calling it?

A I didn't call the 8 1/2 by 11 piece a letter. You said it was a piece. You just described a piece of mail that's 8 1/2 by 11, one ounce.

Q ~~If the~~ The piece that I said was seven inches high, you said was a letter, a non-standard letter.

A Well, it wouldn't fit on the template. It exceeds the criteria of the template. This template matches up with the definition you gave me in the DMM on flat mail.

Q So you agree now that if it's seven inches tall, it would not be a letter, so it could not be a non-standard letter?

A If you define a piece of mail, you want me to tell you if it's a flat or letter based on the processing opportunity here? It's based on this template and that's what determines the surcharge.

Q I promise this will be my last chance to try to get the point. I don't think this is major point or a major concession, but I'm simply trying to identify what distinguishes a letter from a non-standard letter. I'm suggesting to you, Mr. Sheehan, that it is not height. It is not length. It is not thickness, beyond these dimensions specified. Rather, it is aspect ratio and aspect ratio alone.

If it didn't fit within these parameters, it wouldn't be a letter, and if it isn't a letter, it cannot by definition be a non-standard letter. Do you see my point?

A Well, I understand what you are saying but I guess I go back to letter sized dimensional mail standard. That's the template we are both holding, so if you want to say just aspect ratio, I couldn't agree with that because thickness is part of that issue according to the standard.

Q But if it's too thick, it isn't a letter, and if it's not a letter, it can't be a non-standard letter.

A Well, it could be within 6 1/8 and 11 1/2 and just be a quarter of an inch thick, which would fall in the letter criteria, letter sized, but be too thick.

Q Well, if it's too thick, it's not a letter.

A No, it's a letter that we surcharge.

Q But it's not a letter if it's more than a quarter of an inch; correct?

A I would argue that if it fits on this template, it could be a letter, by our definition of a letter sized template.

Q But if it doesn't go through this hole, it's more than a quarter of an inch and it's not a letter; correct?

A No. It just means it won't fit through the hole and there's a surcharge for it.

Q I just handed you the DMM. What's the maximum

thickness of a letter?

A Quarter of an inch.

Q What's the size of the hole?

A Quarter of an inch.

Q If a piece won't fit through this, it is greater than a quarter of an inch; correct?

A Right.

Q If it won't fit through this, it's not a letter; correct?

A Well, we are going around on the word, on whether letter or piece. If it fits within the criteria, I understand, but if it fits within this criteria and it's greater than a quarter of an inch, then it's subject to a surcharge.

Q Let's take a look at your testimony and see if we can clarify this. Page ten of your testimony, beginning on line 24, you have a paragraph there where you say the non-standard surcharge is applied to pieces weighing one ounce or less that do not meet standard letter dimensions, and then you identify a number of pieces of equipment. The ~~advanced facer canceler systems~~ Advanced Facer Canceler Systems, are they designed to handle letters or flats or both?

A The advanced facer canceler itself is designed to handle letters.

Q How about the OCR?

A Letters.

Q By OCR, do you mean a piece of mail that reads an address on a piece of mail and it prints the bar code on the piece of mail and then it sorts the piece into a stacker unit?

A Yes, sir.

Q That's designed just for processing letters; correct?

A Yes.

Q Delivery ~~point bar code sorter~~ Point Bar Code Sorter, that's a piece of equipment that deals just with letters; correct?

A Yes, sir.

Q A CSBCS also?

A Yes.

Q I've never heard of an LM --

A LM LM.

Q Is that the way you say it?

A I guess.

Q That's just again obviously I guess for letters; correct?

A Yes.

Q Now, on page 11 on line one, you say any change -- it's the very top line -- any change to the length and height in the non-standard definition would have obvious impacts on stacker widths and sort channel heights on the

letter processing equipment.

For example, given the extensive deployment of DBCS's with four tiers of stackers, mail with greater length or height characteristics cannot be accommodated.

I accurately read that; correct?

A Yes.

Q Let's just take a piece of mail that exceeds the maximum height of a letter, in other words, let's take a piece that's nine inches tall. Now, if a piece is nine inches tall, will that be handled on -- first of all, is it a letter?

A It's too tall to be a letter.

Q So it's not a letter. Would it be handled on an AFCS?

A Possibly.

Q OCR?

A No.

Q DBCS?

A Let me go back. It would not -- if our piece we are talking about is nine inches tall, it would not make it through the AFCS.

Q No to that one, too?

A No to anything on that list.

Q No to DBCS, no to CSBCS, no to LM LM?

A Correct; too tall.

Q The reason it would not go on that equipment is that it is not a letter, it's a flat; correct?

A It would be processed like a flat; yes.

Q It would be processed like a flat because it is a flat; correct?

A It's greater than the letter sized processing criteria.

Q Correct. If that piece that we are discussing is two and a half inches -- excuse me -- two and a half ounces in weight, it would be processed as a flat; correct?

A Depending on the thickness.

Q And not a letter; correct?

A That piece, the nine inch tall piece, you didn't say how long it is, but it's nine inches tall.

Q Nine by 11, I think I said.

A Nine by 11, it now weighs two ounces?

Q Let's say two and a half ounces.

A It would be processed as a flat.

Q One and a half ounces?

A Flat.

Q Half an ounce?

A Probably manually.

Q Is that because of your understanding of how the flat sorting machines work?

A Absolutely, and how we process flats, mail shapes

in general.

Q You do have an opinion as to whether half-ounce, 9 by 11 envelopes would be processed on machinery or not?

A I'm not sure. It's my opinion, yes, but it's really the physical characteristics of the mail piece and the limitations of the equipment and what they are designed to process.

Q Do you know the -- are you familiar with the FSM 1000?

A Yes.

Q Are you familiar with the capabilities of what that machine will process?

A Yes.

Q Have you seen one in operation?

A We have several.

Q Do you have -- have you had the opportunity to see ~~that~~ them handle mail which is considered a flat flimsy or an under one ounce envelope?

A Not specifically.

MR. OLSON: Mr. Chairman, I'm going to hand the witness a page from the 1997 Comprehensive Statement on Postal Operations.

BY MR. OLSON:

Q Page 49, and I'm going to ask you if you can take a look at section (d) in the right-hand column, and if you

could just read with me a brief section there.

It says [a]pproximately 30 percent of the mail stream is flat mail or about 50 billion pieces annually fall into the 'flats' category. Until now, about 25 percent of the flat ~~category~~ mail could not be processed on existing flat-sorting equipment. Problems with stiffness, wrapping (poly), newspapers, flimsies, ~~et cetera,~~ etc. contributed to this performance. These non-machineable flats required mail processing.

"An important addition to the automation/distribution capability is the FSM 1000. This machine, with its channel transport, process~~es~~ virtually all of the previously non-machineable flats...."

Do you see that?

A Yes.

Q Do you have any reason to disagree with that?

A No.

Q Is it your understanding that flimsies are routinely and easily processed on FSM 1000's?

A I wouldn't characterize them as easily processed.

Q I asked you if you disagreed with it and the ~~comprehensive statement~~ Comprehensive Statement on Postal Operations for 1997 said that "[t]his machine with its channel transport, processes virtually all of the previously non-machineable flats," and do you now disagree with that?

A No, but it does say "virtually all."

Q You think -- you are saying that you have no personal observation of FSM 1000's processing flimsies one way or the other?

A I can't say that I've seen them process specifically flimsies. I've seen them process volumes, different sizes of mail. Certainly, different weight categories and different thicknesses.

Q Have you seen FSM 1000's run for literally thousands of pieces at a time without problem of any piece?

A No.

Q You have never seen that?

A No, I've not seen it run that long.

Q What experience do you have watching an FSM 1000?

A Well, I've watched them process mail. I can't say I watched thousands and thousands of pieces go through. I have not seen that much mail go through an FSM 1000.

Q How much time have you spent observing an FSM 1000?

A I think a casual observation of the machines when we accept them, when they run. I'm more inclined in looking at their production numbers when they are done, at my level of responsibility. I'm not a machine operator or line supervisor, so I know they run. I've seen the mail that goes on them.

Your question was have I seen lots of flimsies go through? I can't say I have.

Q Let me ask you if you are familiar with the -- sometimes I see it referred to as the next generation flat sorting machines and sometimes the new generation flat sorting machines. Are you familiar with what's on line for the future?

A Only by name.

Q The same Comprehensive Statement on Postal Operations, and there is other discovery in the record with respect to the procurement of these machines, this talks about ten new generation flat sorters being deployed by the end of ~~fiscal~~ Fiscal Year 1999. Do you have any information on that?

A I don't have any personal information on it, other than I've heard what you have heard, that they are always working on some new technology to --

Q Any reason to believe that the new technology will be less capable of handling flats than the existing technology?

A I sure hope not.

Q Now, take a look at your testimony, if you would, at page ten, lines 20 to 22. After you quote Dr. Haldi, you say, what Witness Haldi fails to recognize is that this very same equipment and any new equipment requirements are based on the current DMM non-standard piece definition.

Is that your testimony today?

A Yes.

Q Are you saying that the design requirements ~~on~~ of the FSM 1000 are based on the DMM nonstandard mail piece definition of flats?

A Yes. That's what it says in the testimony.

Q In other words, was the FSM 1000 designed not to handle under-one-ounce flats?

A I really don't know what it was designed specifically -- the design specs of that machine are.

Q Well, you just --

A I don't know what they are specifically.

Q Okay. Maybe I misunderstand your statement then. You said this very same equipment and any new equipment requirements are based on the current DMM nonstandard mail piece definition.

A Yes.

Q Doesn't that mean that new equipment like the FSM 1000 is based on the First Class nonstandard definition as it currently exists?

A That's what it says; yes.

Q But now I'm asking you if the FSM 1000 was designed not to process under-one-ounce pieces.

A I said I don't know specifically if -- it was designed based on the standards that I'm sure engineering

was provided, which were the standards in the DMM. I think that's what we're saying.

Q Just continuing with flats, isn't it true that the -- first of all, as I said before, you would accept that flats are the largest portion of First Class nonstandard mail, about I think it was 74 percent. Do you recall that?

A That's what you said, subject to check.

Q Right. And nonstandard flats -- what is the distinguishing characteristic of a nonstandard flat? I'm going to suggest that it's -- that it's thinness or flimsiness.

A I'm not sure I could really answer that specifically.

Q Well, it's not aspect ratio; correct?

A Well, once it exceeds the letter size then it becomes a flat.

Q And then aspect ratio does not come into play or --

A Well, apparently not. It becomes the definition of 6-1/8 -- greater than 6-1/8 and 12.

Q Okay.

A Excuse me. The maximum would be 15.

Q Have you had occasion to review Library Reference H-169, which was the field test of the FSM 1000?

A No, I haven't.

Q Do you know where the field test for the FSM 1000 took place?

A No.

Q Okay. Do you -- if I were to suggest to you that that was in Albany, New York, and that the machine was known as the Albany machine, would that refresh your recollection?

A Sure.

Q Okay.

A I worked there once.

Q And that it's my understanding that the machine was manufactured by Siemens, Germany, and brought over here for a six-month test. Would that be something you know or don't know?

A I didn't know it was brought from -- where it came from, but I know they had a test.

Q Do you think that Siemens -- the Siemens engineers that designed the FSM 1000 had in mind the FS -- the DMM definition of a nonstandard flat when it designed its equipment?

A I have no idea what they had in mind.

Q Let me go back to page 11 to the top, and that's where you talk about once a piece is -- you say any change in the length or height in the nonstandard definition would make pieces less able to run on letter equipment.

A Yes.

Q That's a fair paraphrase; correct?

A Yes.

Q Okay. And aren't you really saying any change to the length and height of the definition of a letter would -- would cause problems with letter-handling equipment?

A I guess I'm saying any change in the length and height in the nonstandard definition or off this template is what we're referring to. If you made it seven, that would be a change to the definition. It would make it difficult if not impossible to process on the equipment we have today.

Q Okay. But dealing with, for a second, nonstandard flats, not dealing with pieces that come outside the aspect ratio of that permissible area of gray there on the -- or blue on the form -- but rather pieces that were in fact flats -- I think we agreed before that flats would not be processed on letter equipment; correct?

A Correct.

Q So your rationale at the top of page 11 having to do with changes in the length or height of the definition of a piece of First Class nonstandard mail really doesn't deal with the nonstandard definition, does it? Aren't you really dealing with the definition of a letter? Because in -- aren't you basically saying that nonletters don't work well on letter-sorting equipment?

A We're saying pieces outside 6-1/8 by 11-1/2 --

Q Right.

A And less than a quarter of an inch run best on letters. Those that don't fit with that criteria don't run on those -- that equipment.

Q And that's irrespective of whether the piece happens to be under an ounce or over an ounce; correct?

A It's within that -- if it's within that criteria. As per the chart.

Q You then go on to -- you have a long -- the two next paragraphs where you talk about the width restriction, the thickness, and you say if it's greater than a quarter of an inch, it has more jams on letter equipment; correct?

A Yes.

Q Again, if it was -- if the piece were not a letter but were greater than 6-1/8 or greater than 11-1/2 or greater than 1-1/4 inch -- excuse me, a quarter of an inch thick, it would not be a letter; correct?

A It would not be on that equipment.

Q Okay. It wouldn't be on the equipment at all.

A Right.

Q Right. Okay. Now you do get to the issue of aspect ratio at line 23 and you talk about pieces coming through that could tumble. Do you have a -- you have two possible types of mail that could tumble. One is you said you had a skewed bar code that could be applied or a good

bar code that would later be impossible to read because I guess the piece would lose its orientation. Correct?

A Well, I think what we're saying there is that the piece because of its dimensions would not line up squarely in the equipment and then the bar code -- two things could happen. A bar code could be put on that wouldn't be readable later.

Q Okay. And -- now when mail is moved, letter mail, one of the ways it's moved is that it is simply compressed and picked up and put into another tray; correct?

A Yes.

Q Now if mail is compressed, how does it lose its orientation within the package when it's being compressed?

A I'm not sure it loses its orientation, other than, you know, we take lengths to make sure it's all stay edged so that it can be fed into the next piece of equipment. On edge.

Q If you dropped it or something like that, you could lose orientation, but that would create a problem for the whole --

A Sure.

Q Group, right?

A Yeah.

Q Then you talk at the bottom of 11 about approaches to pull out nonstandard-sized pieces. And you talk about

the -- at the top of page 12 the ~~dual pass rough cull~~ Dual Pass Rough Cull machine that pulls out pieces and bundles that are too thick. By too thick, you mean more than a quarter of an inch?

A Yes.

Q Therefore, they're not letters; correct?

A Therefore, they're taken out of the system.

Q Right, because --

A Because they're too thick.

Q Too thick and they're not letters.

A Well, I don't think at that time we know what they are. We just know they're bigger than a quarter of an inch.

Q Well, they could be --

A They could be either.

Q If it's a bundle, it's certainly not a letter.

A It could be a bundle. It could be a small packet. It could be a flat. It could be almost anything. It won't pass under the rollers.

Q But the one thing we know is that it's not a letter if it won't pass under the rollers because it's greater than a quarter of an inch; correct?

A We know it would qualify for the surcharge if it can't pass under the roller.

Q If it won't go through here it's not a letter; right?

A No, it's a -- it's a surchargeable letter.

Q Forgetting the surcharge, if it won't pass through here, it's not a letter; correct?

A It's a surchargeable letter. I'm not sure why -- this is a template for letter-sized pieces.

Q Go back to the DMM. Isn't the maximum thickness a quarter of an inch?

A Yes.

Q Okay. For a letter.

A Okay.

Q So if it won't go through here, it's not a letter.

A It's a surchargeable letter.

Q Okay.

A It can't be processed on automated equipment.

Q Well, it can't be processed on any kind of letter equipment, because it's not a letter; correct?

A No, just because it's too thick.

Q Which makes it not a letter.

A It means it can't be processed on letter automation. It's processed in a letter case. That must make it a letter.

CHAIRMAN GLEIMAN: Excuse me, Mr. Olson, for interrupting.

Could you tell me what processing in a letter case is?

THE WITNESS: Well, manually sorting mail in a -- manual separation using a 49-hole or separation case.

CHAIRMAN GLEIMAN: Okay.

THE WITNESS: You know, manually -- manually sorting mail. What we refer as the pigeonhole.

CHAIRMAN GLEIMAN: And the only -- what I might call Ben Franklin case.

THE WITNESS: Yes, sir; 49-separation letter-sorting case.

CHAIRMAN GLEIMAN: I just wanted to make sure I understood --

THE WITNESS: I'm sorry.

CHAIRMAN GLEIMAN: Which type of letter sorting you were talking about.

THE WITNESS: Right. The old-fashioned kind.

BY MR. OLSON:

Q Let me ask you to look at line 15, where you discuss Dr. Haldi's greeting-card experiment. You made a change earlier of the word "bar code" to "i.d. tag." Could you explain --

MR. TIDWELL: Are we on page -- which page are we on?

MR. OLSON: The same page, 12, lines 15 through 22 is the section.

BY MR. OLSON:

Q Do you see the changes you made before --

A Sure.

Q I believe they were in lines 19 and 20.

A Yes.

Q Okay. Can you explain the changes to me, please?

A Well, basically the cards I looked at had gone through a remote bar-code sorting system. In that process there's an i.d. tag -- it looks like a bar code, but it's not the same as the one on the front -- sprayed on the back to identify the piece so when the image is matched up with the mail piece the machines can identify it and then apply the correct bar code. And I guess our terminology you get so used to saying bar code, it looks like a bar code, in fact it is called an i.d. tag, and that's what on -- that's what's on the back of the pieces.

Q Is that routinely applied to all pieces?

A All pieces that go through the RBCS systems.

Q Do you have any evidence of manual sorting of the pieces in Dr. Haldi's experiment?

A I couldn't tell. I mean, they looked like they were all bar-coded. So I would assume that once they went through RBCS that they were -- it would appear they were processed through automation.

Q Okay.

A From what you can determine.

Q Sure.

A It looked all right.

Q At line 28, you start with a discussion where you talk about what the standards are in other countries. You say that other countries have required standardization of mail pieces to a much greater degree than the Postal Service would ever consider.

Do you mean that they make more sizes of -- excuse me. They make more different sized pieces non-mailable or they have surcharges?

A I'm not sure whether they -- I think they make them non-mailable, but I'd have to check for you.

Q For example, on this template, a piece that's -- a letter that's under 3 1/2 by 5, would be non-mailable; correct?

A Yes.

Q Do you know if the Royal Mail in Great Britain allows square letters as mailable or with or without a --

A I don't know specifically. We could check. I don't have a template for anyone else other than ourselves.

Q Do you know about Deutsche Post?

A No, I don't.

Q La Poste in France?

A No.

Q Sweden Post in Sweden?

A No.

Q Any specific countries, as to whether they would permit say a square letter?

A I don't think I could tell you of anyone who would permit a square letter, without researching that some more.

Q In other words, you don't know if they could or they would permit it or not permit it without researching it?

A I say my knowledge of their processing, which is limited, they have similar processing capabilities that we do, so I would say it would be difficult at best, but without further researching that, I really couldn't give you a factual answer.

Q I understand. I just want to clarify. You are not --

THE REPORTER: You really couldn't what?

THE WITNESS: I really couldn't determine that without researching it more.

BY MR. OLSON:

Q In other words, you don't know for sure whether any of them declare this non-mailable or whether any of them impose a surcharge?

A I don't know.

Q Let me ask you to just look at this template one more time with me. What I've done is is label -- if you can

look at the one I've marked up, Mr. Sheehan. What I did was in the upper left-hand corner, the pieces that are outside of the gray area there, I called letter area A, because they were what I said was too high. Do you see that?

A Yes.

Q Actually, I took that language from the reverse side of the template, if you turn it over, you see the section where it says "too high?" The bottom left illustration?

A Uh-huh.

Q Do you see that?

A Yes.

Q In the far right-hand side, there's that little triangular shaped area, which I labeled B, which is too long, and that's corresponding to the back side where it says "too long." Do you see that?

A Uh-huh.

Q Then the gray area, those are the ones that are within permissible aspect ratios, not to have the surcharge imposed; correct?

A Yes.

Q The reason I crossed through the bottom section is that's where the 3 1/2 inch height comes in, nothing would be mailable, correct, if it was within the area I've X'ed out? Isn't that correct?

A If it's less than 3 1/2 inches, is that what you are referring to?

Q Yes.

A Yes.

Q Basically, what we are dealing with is whether pieces are permitted to have the upper right-hand corner appear in area A or area B; correct?

A That's what you have been talking about?

Q Right.

A Outside the standard.

Q Let's just talk about B for a second. A piece that is too long, as the terminology is on the back of the template, suppose there was a piece that was -- let's say it was the minimum height, 3 1/2 inches tall, and it was 11 1/2 inches long, for example. That would be outside of aspect ratio; correct?

A 3 1/2?

Q By 11 1/2. Do you see the right-hand corner would be -- the bottom right-hand side of that triangle.

A If it meets the gray area or the blue area, yes.

Q It would be subject to the surcharge; correct?

A Yes.

Q Tell me, if you would, how an ~~advanced facer~~ Advanced-Facer ~~canceler system~~ Canceler System would handle a piece with those dimensions?

A 3 1/2 by 11?

Q By 11 1/2.

A It would go through the dual pass rough cull and into the canceling operation.

Q The ~~advanced facer canceler system~~ Advanced Facer Canceler System is clearly designed to handle a piece that's 11 1/2 inches long; correct?

A Sure.

Q Does it all the time; correct?

A Right.

Q It shouldn't be a problem with this hypothetical piece of 3 1/2 by 11 1/2?

A Right.

Q Suppose --

A I guess my concern would be the thickness. We didn't talk about how thick it was or thin it was. You are asking if it was a hypothetical piece --

Q I'll give you the specs. Let's say it's clearly under a quarter of an inch say, an eighth of an inch or less, 1/16th of an inch, and it was under an ounce.

A I guess my concern is coming from if it's kind of a flimsy and there's potential problems there, but other than that, it seems like it would process through the system.

Q How about the OCR? Clearly, OCR's handle pieces that are 11 1/2 inches long.

A Yes.

Q Any problem with that?

A As long as the read area is available, it probably would work.

Q How about a DBCS?

A I think once you get it through the first piece, let's say it is successfully read and applied to bar code, if it keeps its orientation --

Q There's no orientation problem, is there, with a piece that's too long. That's rather the pieces that are too high or too square; correct?

A Right; yes. Assumably, it could run through the system.

Q The same with the CSBCS?

A Yes.

Q LM LM?

A Yes.

Q The pieces that are in that B, that little triangle, are perhaps less problematic than the ones in A, from what you said, because your testimony, I think, dealt mainly with the issue of this tumbling, maintaining the orientation; correct?

A Yes, it did.

Q Now, if there were a piece that were -- let's deal with 5 x 5. That's the minimum width and greater than the

minimum height, say the 5 x 5 piece. I think that might have been the dimensions of Dr. Haldi's cards. I'm not sure.

A I think so.

Q Is there any problem you can identify for us other than this issue of tumbling?

A Not offhand.

Q Any problem with the AFCS?

A No.

Q The OCR?

A No.

Q DBCS?

A No.

Q CSBCS? LM LM?

A No.

Q In fact you in your testimony say that because of this experiment that -- page 12, line 24 -- the Postal Service might want to reevaluate the automailability -- I'm -- excuse me -- automatability of pieces with low aspect ratios anyway; correct?

A Yes, I do.

Q Okay. Low aspect ratios are ones that are too high, correct, in the A area?

A Yes.

Q Okay. Do you think perhaps they should reevaluate

the ones in the B area also?

A I think we're saying they should evaluate -- suggest that they evaluate automatable pieces, specifically the ones that were cited as an example. If the point is -- we need to test all of them. I don't think -- I think our issue is why limit it to one? If we're going to address it, then we -- we think we'd want to address it fully.

MR. OLSON: Mr. Chairman, we would ask that the cross-examination exhibit that I had marked as NDMS-XE-1 be reproduced in the record not for evidentiary purposes but rather to clarify the understanding of the witness' testimony.

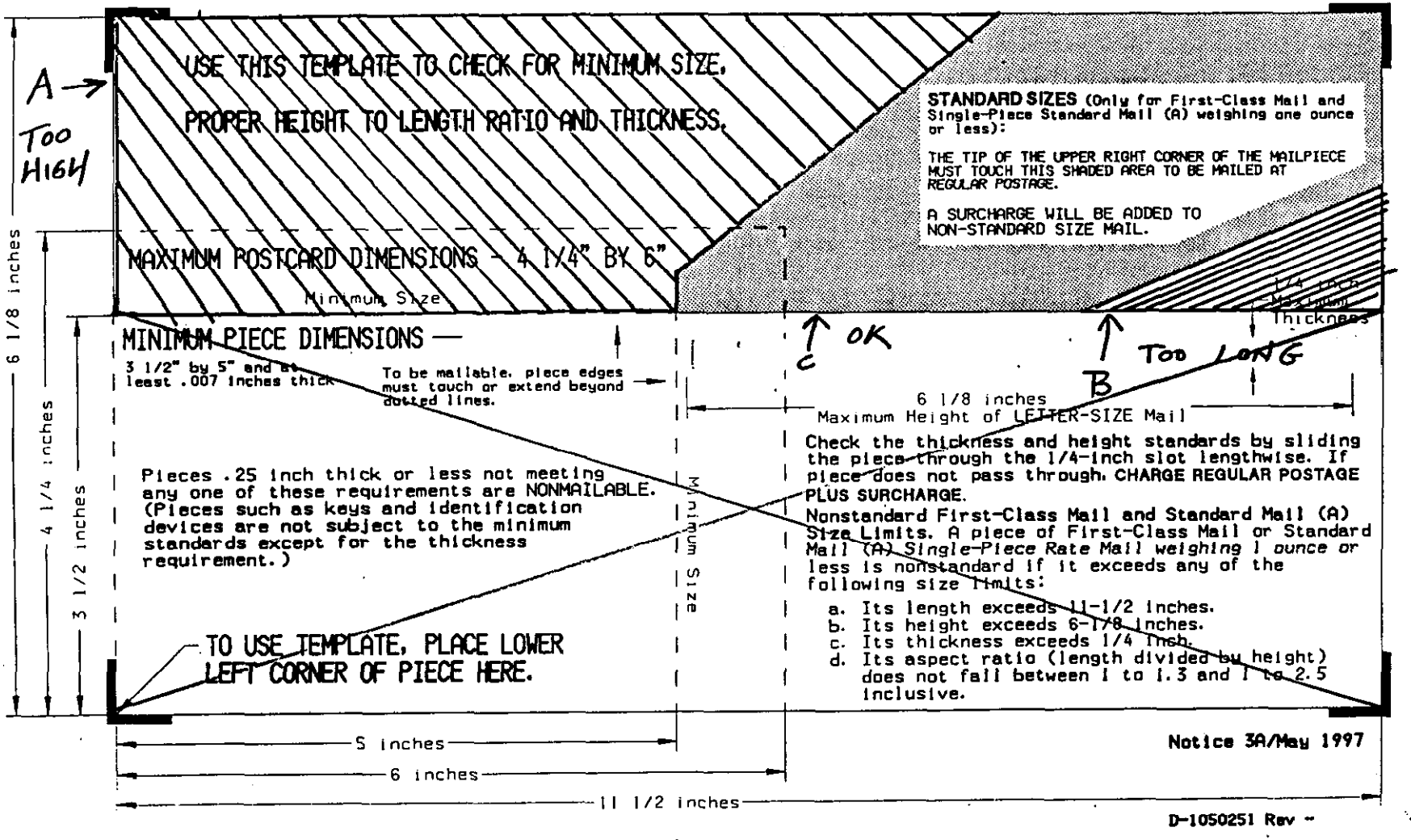
CHAIRMAN GLEIMAN: If you will provide those two reduced-size copies that you said you had to the reporter, I'll direct that the cross-examination exhibit be transcribed into the record.

[Cross Examination Exhibit NDMS-XE-1 was received into evidence and transcribed into the record.]

NDMS-XE-1
PAGE 1 of 2

LETTER-SIZE MAIL DIMENSIONAL STANDARDS TEMPLATE

UNITED STATES POSTAL SERVICE.



Check the thickness and height standards by sliding the piece through the 1/4-inch slot lengthwise. If piece does not pass through, CHARGE REGULAR POSTAGE PLUS SURCHARGE.

Nonstandard First-Class Mail and Standard Mail (A) Size Limits. A piece of First-Class Mail or Standard Mail (A) Single-Piece Rate Mail weighing 1 ounce or less is nonstandard if it exceeds any of the following size limits:

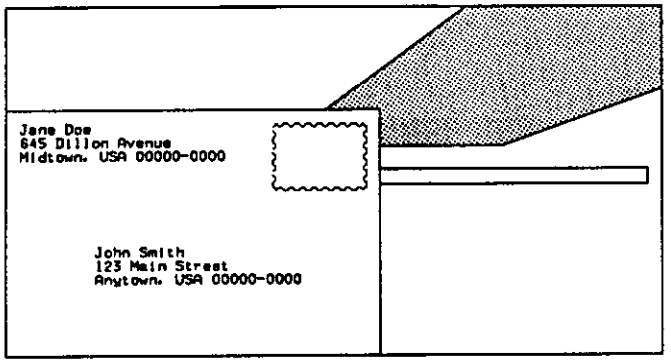
a. Its length exceeds 11-1/2 inches.
b. Its height exceeds 6-1/8 inches.
c. Its thickness exceeds 1/4 inch.
d. Its aspect ratio (length divided by height) does not fall between 1 to 1.3 and 1 to 2.5 inclusive.

Notice 3A/May 1997

D-1050251 Rev -

17422

EXAMPLES OF USING TEMPLATE



WITHIN RATIO

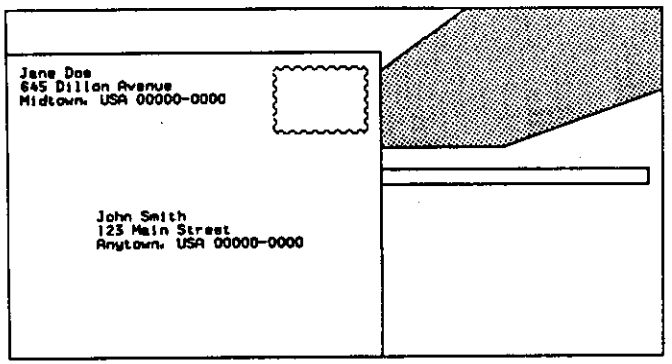
PROCEDURE FOR USE OF TEMPLATE:

1. Align the piece with the lower left corner of this template (just inside the lines).

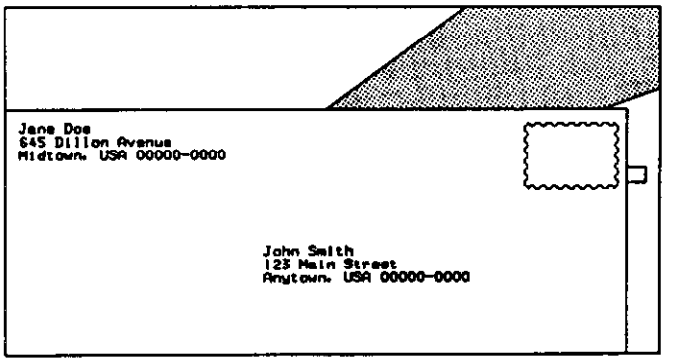
2. The upper and right side of the piece must touch or extend past BOTH the top and right-hand minimum lines. Otherwise, the piece cannot be accepted for mailing.

3. If the piece meets the minimum size, but the upper right corner falls outside the shaded area of the template, or is larger than the template, the piece may be mailed. CHARGE REGULAR POSTAGE PLUS SURCHARGE.

4. If the piece meets all other criteria, check the thickness. If the piece exceeds 1/4 inch in thickness, CHARGE REGULAR POSTAGE PLUS SURCHARGE.



TOO HIGH
(Subject to Surcharge)



TOO LONG
(Subject to Surcharge)

MR. OLSON: And with that, Mr. Chairman, we have no further questions.

Thank you, Mr. Sheehan.

THE WITNESS: You're welcome.

THE CHAIRMAN: Ms. Dreifuss.

CROSS EXAMINATION

BY MS. DREIFUSS:

Q Good morning, Mr. Sheehan, I'm Shelley Dreifuss from the Office of the Consumer Advocate.

A Good morning.

Q Could you turn to your testimony at page 5, please, lines 16 through 18.

There you state that CEM would require the Postal Service to conduct a massive educational campaign for both its customers and its employees beyond that which ordinarily accompanies a change in rates. Is that correct?

A Yes.

Q I'm sorry, I lost my place for a moment.

A That's okay.

Q And then -- but further up on that page you state that I am not -- beginning at line 9 -- I'm not confident that television, radio, and daily print media news outlets competing for the attention of viewers, listeners, and readers will dwell on the ins and outs of facing identification marks -- FIMs, bar codes, and other indicia

markings; is that correct?

A Yes.

Q What kind of experience do you have with media reporting?

A Personal experience? I'm -- as a district manager I've been in front of the media for a variety of different reasons. I've held press conferences. We've responded to media inquiries. I think probably the normal gamut as a district manager of a metropolitan area we have interactions with the media.

Q If the CEM envelope and rate were to be adopted and implemented by the Postal Service, would it be necessary for the media to go into the details of FIM marks, bar codes, et cetera?

A I guess we feel it would, to clearly explain what it's all about and to educate the consumers.

Q Wouldn't a better way to educate consumers be to send them an individual mailing with all the details of using CEM properly?

A Oh, that's certainly another way. I mean, any way to communicate with the consumer. There's a variety of different methods to do. I say there's -- each one has its own value.

Q But for details and examples you wouldn't necessarily trust the media to go into that, you would

prefer to take on the responsibility yourself, that is, the Postal Service would, and provide these details to consumers most likely in the form of a mailing.

A Yes, I'm not sure it's a question of we trust the media in a sense that this is maybe more that can be done in a 30-second or one-minute or two-minute broadcast on the evening news, and since we are in the direct mail business, we feel it's an excellent way to provide more specific and somewhat technical information to people. That's what we tell our customers.

Q Do you believe that household mailers currently are confused about when and how and whether they can use stamps on business reply mail?

A No, I don't think they are.

Q Does the Postal Service have any empirical evidence on the extent to which there is confusion about the use of business reply mail?

A Not that I'm aware of.

Q Does the Postal Service have any empirical evidence on the extent to which -- if there is any confusion -- the extent to which there may be confusion about indications on an envelope that, for example, Post Office will not deliver without postage? Do you have any empirical evidence on that?

A No, not that I'm aware of.

Q Do you believe that the media might find the offering of a cheaper First Class rate, that is, CEM, as newsworthy and most likely will report that new option if it were to be adopted and implemented?

A I've tried giving up guessing what the news media think is worthy. It depends on the events of the day. But certainly if we changed the rates -- I'm sure they have in the past -- you know, give this some coverage. The degree to which or the level of detail I just -- I would just be guessing.

Q Do you think that the utilities offering CEM if they were to choose to do so would also provide information to consumers about the proper use of CEM?

A I don't know. I'm not sure what they would do. I would assume as a provider of a service if they felt that it was in their best interest that they would do something, but I don't -- I don't have any information that says yes, they will, or no, they will not.

Q Could you turn to page 6 of your testimony, please?

A Sure.

Q Lines 10 through 13. There you state it is always the case that many consumers either overlook or misunderstand or otherwise fail to comply with a notice and begin using their new address before receiving a green light

from the Postal Service. Is that correct? Did you state that?

A Yes. Um-hum.

Q Does the Postal Service have any empirical evidence of that?

A No, that I'm aware of.

Q Are you aware of any evidence in the hands of the Postal Service on whether and to what extent consumers underpay postage when a new First Class rate goes into effect?

A I'm aware there -- I've read some information that says we've provided to the Commission some information relative to that. I couldn't quote you chapter and verse on it, though.

Q You're not specifically familiar with what was provided to the Commission.

A I mean, I have some raw numbers, but I don't know if I could reel them off for you. But I know there are some numbers relative to what is short-paid.

Q Right.

A Based on what -- I guess at the request of the Commission, but --

Q Is it your understanding that was sort of the accretion of short-paid mail, not limited to when mail is short-paid --

A No. My knowledge just says there's a number and however we determined that, I'm not really actually sure how we did that.

Q All right. Further down on that page, at lines 14 through 17, you state I have -- I also have seen the exact opposite occur when postal customers' addresses change because of a zip code split. Instead of customers using the new addresses prematurely, many do not convert to their new addresses within the one-year grace period. Is that correct? Did you state that?

A That is correct; yes.

Q In effect what you're saying there is that customers are sometimes slow to make changes that the Postal Service would ask them to make. Is that true?

A Yes.

Q If we extend that reasoning to CEM, doesn't that suggest that if CEM were to be adopted and implemented, customers might be slow to take advantage of the discount? That is, they would continue to apply higher postage than necessary to CEM pieces?

A I really couldn't speak to what I think the consumer would do. I guess our point -- my point here in the testimony would say that we think that something as important as getting your mailing address right -- that we consider that to be very important, and you would assume

that most people would think that's an important issue to have resolved -- don't do it all that well even when we give them specific instructions today is the day it changes, here's why it's going to change, and the rationale behind that, and here's how to go about it. And that's been my experience, having done this several times.

Q Some consumers are slow to make the changes that are available to them, I guess; is that correct?

A Yes, I would say that.

Q Those consumers who are slower to make the changes would then not bother to purchase the discounted CEM stamps, they would just continue to apply the full first class postage, in those cases; is that correct?

A That's probable. Again, our point is some don't take the time or consider it to be pretty routine or not really high on their priority of things to do, can't get their addresses changed timely, a year seems more than reasonable, I guess we questioned, you know, will they take the energy necessary to understand what the changes are in a CEM environment and how to respond to it.

Q On page seven of your testimony, lines 19 through 22, you state that there most likely will be some number of customers who will interpret CEM as a new bill paying rate and will, therefore, apply the discounted rate to all reply envelopes or bill payments, whether or not they are CEM

eligible. You stated that; correct?

A Yes, I did.

Q This is also a possibility for the pre-paid reply mail proposal of the Postal Service, isn't it?

A I'm really not in a position to give you any information on the PRM issue. I'm to talk about the CEM, is what my testimony is about.

Q You are not familiar with the services -- pre-paid reply mail proposal in this case?

A I know we have one. I'm not prepared at this time to discuss that.

Q Well, if you could accept my premise as a hypothetical that these envelopes are somewhat similar, would you then agree that there is as likely to be a misunderstanding about PRM as there would be CEM?

A I don't really have a basis of making that determination on PRM because I'm not familiar with how they are going to structure that nor how we would structure CEM, to give you an answer.

Q Would you agree that if CEM were adopted and implemented, there would be a learning curve for consumers, that at first, there might be a certain amount of confusion, but as time went on, there should be less confusion, and eventually most consumers would use CEM properly? Does that sound probable to you?

A I'm not sure most consumers would use CEM properly. I think with any change, it takes time for people to accept it, to take the action to make the change. However long that takes, I really don't know. I can only speak from my own personal experience, you know, change is never easy. I think to be changed, you have to have a reason and there has to be substantial enough reason to move to action.

I guess -- that's how I view things in my life that have to change.

Q Well, if consumers fail to change, then what they would do is continue their current practice of applying a full first class stamp on their bill payments; isn't that correct?

A That would be the only way they could mail it.

Q So then it might actually take an extended period of time for consumers actually to begin using CEM because of this tendency just to go with the current habits?

A I would imagine it would take time for both the consumer and the mailer to get into any change of this significance.

Q At page ten of your testimony, lines 11 through 13, you state that consumers did not appreciate a radical change in their favorite soft drink being foisted upon them and the subsequent public backlash forced Coca-Cola to bring

back the original Coke. You stated that; correct?

A Yes.

Q Are you aware though that Coke offers many different types of soft drinks, such as Diet Coke, Caffeine Free Coke, Caffeine Free Diet Coke, Cherry Coke --

A Tab.

Q -- and Sprite. Roughly familiar?

A Yes.

Q If consumers don't like change, why is it then that this company does offer new soft drinks from time to time?

A I don't know. I would hope not to be in their marketing department when they tried this though.

Q If Coke decides to offer discounts in the form of coupons or lower prices on existing products, do you think that generates a negative reaction on the part of consumers?

A If they discount their product?

Q Yes.

A No.

Q In other words, if consumers are accustomed to paying one price for a six pack of Coke and then Coke decides for a period of time or maybe even on a permanent basis to lower its price, that generally doesn't generate an unfavorable reaction, does it?

A No.

MS. DREIFUSS: I have no other questions.

CHAIRMAN GLEIMAN: Is there any follow up questions from the bench? Commissioner LeBlanc?

COMMISSIONER LeBLANC: Mr. Sheehan, I just want to clarify something. In your colloquy with Mr. Olson, I believe he asked you if it was more than a quarter of an inch as far as a letter is concerned going through that slit, just to clarify for my knowledge, because I don't want to get lost in semantics. You all were talking and you were going back there and it was a definitional thing.

If it's more than a quarter of an inch thick, and it won't go through the slit, that's still a letter to you, or it's what I called before once, and I've been criticized for saying it, but I used the word "residual" once before. Is it residual? Is it a letter? Is it a flat?

THE WITNESS: If it fell within -- let's say it's less than 6 1/8 and less than 11 1/2, if it's a No. 10 envelope and it was greater than a quarter of an inch --

COMMISSIONER LeBLANC: Kind of a fat thing.

THE WITNESS: Then we would process that as a letter.

COMMISSIONER LeBLANC: You would process it as a letter?

THE WITNESS: It would not go through the automation pieces of equipment that I have in my testimony,

but physically, it would be processed as a letter.

COMMISSIONER LeBLANC: I thought that's what I heard. I just wanted to make sure. Thank you.

CHAIRMAN GLEIMAN: Mr. Sheehan, in response to a question from Ms. Dreifuss, you mentioned that it takes time or it would take time for the consumer and the mailer to change. Who is the consumer and who is the mailer?

THE WITNESS: I guess the consumer would be the recipient of the mail, of the mail piece. I guess in this case we are talking about CEM, the person that gets to use the CEM opportunity. The mailer is the person sending out an envelope that would qualify under this proposal, in my definition.

CHAIRMAN GLEIMAN: The mailer is -- okay. We have people switched around here. I always think of mailers as consumers and consumers as mailers. I understand what you are talking about now.

You think it would take a long time or it would take some time for mailers, your definition, the business folks who are sending out --

THE WITNESS: The utility company, whoever we define as a likely person to offer this type of envelope.

CHAIRMAN GLEIMAN: Do you get courtesy reply envelopes in your mail?

THE WITNESS: Absolutely.

CHAIRMAN GLEIMAN: I get more bills each month than I'd like.

THE WITNESS: Don't we all.

CHAIRMAN GLEIMAN: More often than not, they have courtesy reply envelopes in them. I take it your experience is the same?

THE WITNESS: Sure; absolutely.

CHAIRMAN GLEIMAN: Do you know what major differences would be required between courtesy reply envelopes that you and I currently get and what would be required if were to recommend and the governors were to adopt a CEM proposal?

THE WITNESS: I think we discussed some very specific identification on the piece, so it would be recognizable by the person who was going to use it, for certain, would be the one major change that comes to mind.

CHAIRMAN GLEIMAN: Pre-printed bar codes? FM marks would be the same?

THE WITNESS: Yes, automation compatible mail piece.

CHAIRMAN GLEIMAN: Is there some requirement in existence now that you know of that is going to require CEM -- excuse me -- courtesy reply envelopes to meet certain standards for mailers, that is business companies, utilities and credit card companies and the like?

THE WITNESS: Not that I'm aware of.

CHAIRMAN GLEIMAN: You don't know if in re-classification, there wasn't something in there that said if you want to get automation discounts for your outgoing first class mail, Mr. Business Man or Utility, that you are going to have to meet certain requirements for your reply envelopes?

THE WITNESS: I think there are but I couldn't cite them for you, Chairman. I know of criteria for addressing mail for automation compatibility absolutely in there and I would see specific requirements, if you are going to qualify it, for a certain discounted rate. Those are those very specific issues. There's a whole document on it.

CHAIRMAN GLEIMAN: Some of which may involve perhaps compatibility of reply envelopes?

THE WITNESS: Absolutely; yes.

CHAIRMAN GLEIMAN: So the Postal Service now imposes or may impose some requirements on those people that you call mailers in terms of how they satisfy requirements for reply mail envelopes, either courtesy or business reply envelopes?

THE WITNESS: Yes.

CHAIRMAN GLEIMAN: All right. Thank you. I have no further questions. Any follow up from the bench?

Questions from the bench?

[No response.]

CHAIRMAN GLEIMAN: That brings us to redirect. Mr. Tidwell, we are at that wonderful time again where whether you want it or not, you get your ten minutes with your witness.

MR. TIDWELL: I'll take the ten minutes at any time the Chairman is willing to offer it.

CHAIRMAN GLEIMAN: And more if we'll offer?

MR. TIDWELL: Yes.

CHAIRMAN GLEIMAN: Well, I'll tell you what, we'll give you a little more. We will come back at five after the hour.

[Brief recess.]

CHAIRMAN GLEIMAN: Mr. Tidwell, whenever you're ready.

MR. TIDWELL: Thank you, Mr. Chairman.

CHAIRMAN GLEIMAN: Your witness looks like he's not interested in any redirect; right?

[Laughter.]

MR. TIDWELL: I don't know whether it's by design, but it's literally impossible to hear the buzzer from the OCA office. I don't know whether they like it that way or they arranged for that.

CHAIRMAN GLEIMAN: Most of the Commission staff

has told me they don't like to hear the buzzer, whether it's in the hearing room or anywhere else.

REDIRECT EXAMINATION

BY MR. TIDWELL:

Q Mr. Sheehan, early on in your cross-examination by counsel for Nashua, you got into a discussion of the nonstandard surcharge. I just want to make clear, is it your testimony that what the Postal Service is proposing in this case is a continuation of the nonstandard surcharge in First Class mail as it applies to letters, flats, and parcels, notwithstanding the fact that your testimony is focused on letters?

A That's accurate.

MR. TIDWELL: That's all we have.

CHAIRMAN GLEIMAN: We gave you 13 minutes for that?

[Laughter.]

MR. TIDWELL: Well, like I say, there was cherry Coke down there, there was Tab.

CHAIRMAN GLEIMAN: Is there any recross?

No recross.

Mr. Sheehan, we appreciate your appearance here today. We want to thank you for your contributions to our record. And if there's nothing further, you're excused, sir.

[Witness excused.]

CHAIRMAN GLEIMAN: Our next witness on behalf of the United States Postal Service is Michael W. Miller. My recollection is that Mr. Miller is already under oath in these proceedings, and if not, I'll expect him to tell me otherwise.

So, Mr. Tidwell, you can proceed and introduce your witness' testimony.

MR. TIDWELL: The Postal Service calls Michael W. Miller to the stand.

Whereupon,

MICHAEL W. MILLER,

a witness, was called for examination by counsel for the U.S. Postal Service and, having been previously duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. TIDWELL:

Q Mr. Miller, I've placed before you two copies of a document which is entitled the Rebuttal Testimony of Michael W. Miller on behalf of the United States Postal Service. It's been designated for purposes of this proceeding as USPS-RT-17.

Was that document prepared by you or under your supervision?

A Yes, it was.

Q If you were to give the testimony contained in this document orally today, would it be the same?

A Yes, it would, including the changes that were made and filed on March 13 and March 16.

Q Okay. So with those changes this would be your testimony?

A Yes, it would.

Q And those changes have been incorporated in the two copies before you?

A Yes, they have.

MR. TIDWELL: Mr. Chairman, the Postal Service would move that the Commission enter into the evidentiary record the rebuttal testimony of Mr. Miller in this proceeding.

CHAIRMAN GLEIMAN: Are there any objections?

Hearing none, Mr. Miller's testimony and exhibits are received into evidence, and I direct that they be transcribed into the record at this point.

[Rebuttal Testimony and Exhibits of Michael W. Miller, USPS-RT-17, was received into evidence and transcribed into the record.]

USPS-RT-17

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

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

REBUTTAL TESTIMONY
OF
MICHAEL W. MILLER
ON BEHALF OF
UNITED STATES POSTAL SERVICE

TABLE OF CONTENTS

REBUTTAL TESTIMONY
OF
MICHAEL W. MILLER

AUTOBIOGRAPHICAL SKETCH

My name is Michael W. Miller. I am an Economist in the Product Cost Studies group at the United States Postal Service. Product Cost Studies (PCS) is a branch of the Product Finance department at Headquarters. Prior to joining PCS in January 1997, I was an Industrial Engineer at the Margaret L. Sellers Processing and Distribution Center in San Diego, California.

I have worked on various field projects since joining the Postal Service in February 1991. I was the local coordinator for automation programs in San Diego such as the Remote Bar Coding System (RBCS) and the Delivery Bar Code Sorter (DBCS). I was also responsible for planning the operations for a new Processing and Distribution Center (P&DC) that was activated in 1993. In addition to field work, I have completed detail assignments within the Systems/Process Integration group in Engineering.

Earlier in Docket No. R97-1, I testified before the Postal Rate Commission concerning the Prepaid Reply Mail (PRM) and Qualified Business Reply Mail (QBRM) mail processing cost avoidance.

Prior to joining the Postal Service, I worked as an Industrial Engineer at General Dynamics Space Systems Division where I developed labor and material cost estimates for new business proposals. These estimates were submitted as part of the formal bidding process used to award government contracts.

I earned a Bachelor of Science degree in Industrial Engineering from Iowa State University in 1984 and a Master of Business Administration from San Diego State University in 1990.

I. PURPOSE OF TESTIMONY

The purpose of this testimony is to rebut the testimony of Office of the Consumer Advocate (OCA) witness Willette (OCA-T-400) which advocates that the Postal Rate Commission should recommend the establishment of a Courtesy Envelope Mail (CEM) rate category within First-Class Mail. My testimony, in combination with the testimonies of Mr. Ellard (USPS-RT-14), Dr. Steidtmann (USPS-RT-15), and Mr. Sheehan (USPS-RT-16), explains why the Commission should not recommend a CEM classification to the Governors.

II. INTRODUCTION

The OCA first proposed a Courtesy Envelope Mail (CEM) rate category in Docket No. R87-1. OCA witness Olson attempted to justify that proposal on the basis that CEM resulted "in demonstrable and substantial cost savings compared to other individual First-Class pieces."[1] It was never argued that the American public actually wanted a two-stamp system for their basic First-Class Mail letters. The OCA then followed with CEM proposals in both Docket Nos. R90-1 and MC95-1. In each docket, the Postal Service submitted CEM rebuttal testimony. In Docket No. MC95-1, the Postal Rate Commission recommended a CEM shell classification, but did not recommend a specific rate. The Governors ultimately rejected that recommendation.

In the current case, the Postal Service has proposed Prepaid Reply Mail (PRM). PRM offers consumers two advantages: indirect access to a reduced postage rate of 30 cents and the convenience of not having to use stamps. This convenience feature could reduce the likelihood that the mailing public would switch to bill payment alternatives. The retention of remittance mail offers benefits to all mailers, including non-household First-Class Mail users. If the net contribution for the amount of retained remittance mail exceeded the PRM discount revenue loss, all mailers would benefit.

PRM participation is not a mandatory requirement for current Courtesy Reply Mail (CRM) providers; it is an optional product that businesses can adopt as an added convenience feature for their customers. It is anticipated that the adoption and acceptance of PRM will be a slow and manageable process that can benefit the public while avoiding the problems associated with a two-stamp system.

Despite the fact that the Postal Service proposed this alternative, the OCA has again submitted a two-stamp proposal. The proposed 30-cent CEM rate is based on a cost study in my direct testimony (USPS-T-23) that supported PRM and Qualified Business Reply Mail (QBRM). In response to PRM, witness Willette testified that, "The proposal herein does not contemplate that the Commission adopt CEM as a

[1] Docket No. R87-1, Tr. 20/14968.

replacement for PRM and QBRM. Rather, the CEM proposal enhances the Postal Service proposal..."[2]

In fact, the implementation of CEM would seriously undermine the success of PRM. The candidate mail for both proposals currently exists within the same courtesy reply mail stream. If both were implemented, the rate advantage associated with PRM would vanish, as households could realize the same rate benefit using CEM. Businesses would therefore not be as likely to adopt PRM and the convenience of using the mail system as a bill payment alternative would not be enhanced. If anything, the complications associated with using two stamps could encourage the public to investigate other bill payment alternatives.

Unlike PRM, which would benefit the public while requiring less additional effort on their part, the implementation of CEM would complicate the simple act of mailing letters for every person and organization that uses the nation's mail system. This complication would inhibit the Postal Service's ability to achieve its customer satisfaction goal of improving the ease of use of that system.

CEM could have a negative impact on service, performance, and the public's perception of the mails while generating additional costs for the Postal Service. Therefore, for all of these reasons, the Postal Service opposes CEM. The rebuttal arguments presented in this testimony are as follows:

1. **Complexity:** CEM would complicate the nation's mail system for all parties involved.

2. **Market Research:** A recent survey shows that households do not want a two-stamp system.

3. **Revenue Loss Recovery:** The revenue loss associated with CEM would have to be recovered somewhere.

4. **CEM-Related Costs:** The costs associated with implementing and maintaining a second stamp would also have to be recovered.

5. **Fairness and Equity:** CEM would not fairly and equitably distribute postage costs.

[2] Docket No. R97-1, Tr. 21/10695 at 6-8.

III. CEM WOULD COMPLICATE THE NATION'S MAIL SYSTEM

"CEM is a very simple concept."
—OCA Witness Willette (Docket No. R97-1, Tr. 21/10688 at 11)

A common theme throughout witness Willette's testimony is the claim that CEM is simple. I disagree. The tasks performed by any individual customer or postal employee may not be complex in and of themselves, but the postal system as a whole is incredibly complex. In terms of its impact, CEM would be one of the most extensive rate changes ever implemented. It would complicate the nation's mail system for every person or organization that interacts within that system, including households, businesses, major mailers, as well as the Postal Service.

A. PARTICIPATING HOUSEHOLDS WOULD HAVE TO BUY AND USE TWO STAMPS

In 1995, 96.2% of all households paid at least one bill using the mail.[3] The long-existing one-stamp system has proven to be workable for bill payers. Households know that they can rely on the mail for this relatively uncomplicated service. In a two-stamp environment, this simple system would become complicated because households that participate would have to recognize qualified mail pieces, purchase two different stamp denominations, and use both denominations appropriately.

Confusion Could Prevail: To participate in CEM, households would have to determine which envelopes are qualified for the 30-cent stamp. In order to facilitate that process, businesses would have to mark reply envelopes in a prominent, standardized location. Any lack of standardized CEM markings would hamper efforts to educate the public and increase the potential for confusion. Confused household mailers could make incorrect decisions regarding when each stamp should be used. These decisions could affect how each mail piece is processed and result in delayed or

[3] LR-H-162, page IV-124.

return-to-sender mail. These results, particularly the latter, would adversely affect service and create substantial customer relations problems for the Postal Service.

More Stamp Transactions Would Be Required: The public obtains stamps from a variety of sources. Households can buy stamps from consignment outlets (e.g., grocery stores), from vending machines, and from Postal Service window clerks. If CEM were implemented, this process would become more complicated because some consignment outlets and vending machines would not be able to offer both denominations. As a result, many households would have to make special trips to alternate retail outlets to purchase stamps. Others might require an additional trip to the post office. Finally, some consumers would have to purchase stamps from postal window clerks because the vending machine(s) in a given facility did not have the capacity to offer both stamps. CEM would make purchasing stamps less convenient.

Two Stamps Would Be Less Convenient To Use: A two-stamp system would also be less convenient to use. In a CEM environment, households seeking to minimize their postage would have to ensure that they had sufficient supplies of both stamps. CEM users would need to monitor inventories for both the full-rated single-piece stamp and the CEM stamp. The usage of multiple stamps could become even more complicated in future rate case proceedings if the approved increase for the CEM stamp did not match the approved increase for the full-rated single-piece stamp. In that instance, two non-denomination letter stamps (e.g., "H" and "I") would be required and households would temporarily need four stamps.

The implementation of CEM would complicate matters for households by making it less convenient to use the nation's mail system to pay bills. Household consumers ultimately dictate which bill payment method they use and the complications associated with a second stamp could make various non-mail alternatives appear more attractive.

B. BUSINESSES COULD ENCOUNTER PROBLEMS

Many businesses could also suffer a negative impact because of CEM. For example, consignment outlets that chose to offer both stamps could experience difficulties related to stocking and selling two denominations. Consignment outlet employees could also be plagued by customer inquiries regarding the appropriate use of each denomination. On the other hand, outlets that chose not to offer both stamps could get complaints based on the fact that they do not offer both denominations.

In addition, certain businesses (e.g., mortgage companies, insurance brokers, student loan consolidators, and health care facilities) do not provide prebarcoded reply envelopes to their customers. If household consumers use the CEM stamp in error on mail pieces addressed to these businesses and the mail pieces are returned to sender postage due, businesses could have their mail delayed. On the other hand, if no return address were included on the mail piece, as is often the case, the business could be faced with the decision of either paying the postage due, or having the mail piece (which could include a remittance) forwarded to a mail recovery center.

Finally, like households, businesses also pay bills. Small businesses in particular would experience the same complexities as households in terms of recognizing qualified mail pieces, purchasing two stamp denominations, and using both stamp denominations.

C. MAJOR MAILERS WOULD HAVE TO MODIFY ENVELOPES

Before households and businesses could participate in CEM, large mailers would first have to convert their existing CRM envelopes to a CEM format. Witness Willette believes that these envelopes simply need to "bear an indication" that they are eligible for a CEM discount.[4] This suggestion fails to address the many issues related to reply mail piece design. The conversion process would not be simple by any means and would most likely result in two separate prebarcoded reply mail streams.

The DMM Requires Automation Compatible Reply Envelopes: The Domestic Mail Manual (DMM) currently prohibits outgoing mail pieces that qualify for automation discounts from containing reply envelopes that do not also meet automation compatibility standards.[5] The DMM does not require that the reply envelope be barcoded. Mailers who prefer to use window envelopes with prebarcoded inserts also qualify for automation discounts. When mailings that contain enclosed reply envelopes are brought into a Bulk Mail Entry Unit (BMEU), the agent representing the mailer must certify that the enclosed reply mail pieces bear the proper Facer Identification Mark (FIM) and barcode if they claim discounted automation rates on the outgoing pieces. Because the enclosed reply envelopes cannot be visually verified, compliance is, to an extent, based on an honor system. Of course, over time the Postal Service would generally discover if a customer receiving large amounts of non-compatible reply pieces was improperly claiming automation discounts on the outgoing mail pieces.

In actual practice, postal employees work with mailers that are found not to comply with this DMM requirement -- rather than rejecting, delaying, or assessing higher postage against the mailing. Working with mailers to resolve envelope hygiene problems makes good business sense because the Postal Service can improve the processing characteristics of future reply mail pieces.

Reply Mail Characteristics Vary A Great Deal: The DMM requirements for existing CRM mail pieces are allowed to vary within limits. This variation is allowed because automated equipment can still find and "read" the barcode.[6] A "standardized" reply mail piece is not required because mail processing costs would not be adversely affected by these differences.

Witness Willette states that "the 'transformation' of a CRM piece into a CEM piece would be simple."[7] I disagree. It is difficult to imagine such a wide variety of reply mail pieces being readily "transformed" into uniformly marked mail pieces that CEM users could easily recognize.

---

[4] Docket No. R97-1, Tr. 21/10715 at 13.
[5] DMM 53, Section 810C.8.0.
[6] See Exhibit USPS-RT-17A for a more detailed discussion of reply envelope variation.
[7] Docket No. R97-1, Tr. 21/10688 at 16.

Envelopes Would Have To Be Properly Marked: Witness Willette proposes that all CEM qualified mail pieces should contain a marking on the envelope.[8] She suggests placing this marking in the upper right hand corner in the postage affixation block.[9] This would not be an adequate solution because the stamp would obscure the CEM marking. Postal employees would need the ability to determine CEM qualification after the postage is affixed to the envelope. That determination could not be made simply by looking for the presence of a FIM and barcode. Postal employees could not be expected to determine CEM qualification unless the mail piece explicitly indicated so in a manner not obscured when a stamp was affixed to the envelope.

In fact, all parties would need the ability to make that determination. The CEM marking would need to be placed in a standard location on all envelopes. Finding such a location would not be an easy task. Markings at the top of an envelope could interfere with the return address, the FIM, and/or the stamp(s). Markings at the center of the envelope could interfere with window locations. Those at the bottom could interfere with the barcode clear zone.

An alternative would also have to be found for window envelopes with prebarcoded inserts.[10] In that situation, the envelopes would be marked, but the barcode would only be contained on the insert. Properly marked envelopes could therefore be mailed at the discounted rate (without the insert) to someone other than the envelope provider.[11] Placing the CEM marking on inserts would not solve this problem, as envelope windows are located in a wide variety of places and they are sometimes only large enough to expose the address and/or barcode.

In order to minimize public confusion, a uniform marking location would have to be found for the wide variety of reply envelopes that are sent by hundreds of thousands of businesses to their customers each day. Such a location would be difficult to find given the level of variation that exists among current CRM mail pieces.

---

[8] Docket No. R97-1, Tr. 21/10686 at 4-5.
[9] Docket No. R97-1, Tr. 21/10685 at 6-8.
[10] In Docket No. MC95-1, Library Reference MCR-119, these reply mail pieces represented 33% of all CRM. In the Exhibit USPS-RT-17A study, these reply mail pieces represented 45% of all sampled CRM.
[11] In a one-stamp system, re-addressed reply envelopes (discussed later in this testimony) can cost more to process. However, such pieces would not generally result in revenue protection problems.

Therefore, many reply mail providers would have to modify their envelope designs. I am not suggesting that this would be an impossible task. However, it would be anything but simple. The OCA has failed to specifically address two important issues related to envelope modifications. First of all, the mail piece design requirement has not been determined. The design could be a marking as indicated by witness Willette or it could be a standardized envelope design similar to that used for Business Reply Mail (BRM). In addition, witness Willette failed to discuss whether mailer compliance would be voluntary or mandatory. Regardless of the requirements, the most likely result would be a remittance mail stream where some prebarcoded, FIM A reply mail pieces would be properly marked as CEM qualified, and others would not.

Voluntary Conversion Could Result In Low CEM Volumes: In today's environment, specific reply envelope designs are used for a multitude of reasons other than the simple enclosure of a remittance. As discussed in Exhibit USPS-RT-17A, some reply mail providers also use envelopes to advertise products, list user instructions, and promote efficient remittance processing. Therefore, some reply mail providers may not be inclined to modify their envelope designs to accommodate CEM on a voluntary basis. As a result, the current CRM mail stream would be separated into two distinct prebarcoded mail streams that require different postage rates, yet have identical mail processing cost characteristics.

Enforcing A Mandatory Conversion Would Be Difficult: This same problem would also exist if CEM conversion were to become a mandatory requirement. In that instance, the DMM would have to be changed to require compliance before a mailer could take advantage of automation discounts on the outgoing mailing. Enforcement of a mandatory policy would be likely to provoke a negative reaction, given the fact that many bulk First-Class Mail users have been prebarcoding their enclosed reply mail pieces for years. Others, who have only recently made significant investments to satisfy new DMM reply envelope standards, may resent having to immediately comply with another mandatory change. Many may question why they are being required to constantly enhance CRM envelopes when there is no further advantage obtained by doing so. Conversion of CRM envelopes to CEM would not improve the speed of

delivery in today's mail processing environment, providing little if any opportunity to advance the capture of remittance mail float. In all likelihood, postal employees would work with the mailers to correct any non-compliance issues (as they currently do in regard to reply mail piece automation compatibility), rather than attempting to strictly enforce a mandatory CEM requirement. This would not be an uncomplicated task.

Whether or not CEM conversion is voluntary or mandatory, the most likely result would be a remittance mail stream where some prebarcoded, FIM A reply mail pieces would be properly marked as CEM qualified, and others would not. At the very least, it would take time for the "transformation" to occur as mailers would want to exhaust old envelope inventories rather than "amending" their envelopes, as suggested by witness Willette (Docket No. R97-1, Tr. 21/10691, at 2-14).[12] How long that would take is not known as mailers were not contacted regarding the CEM proposal.[13]

D. CEM WOULD BE DIFFICULT FOR THE POSTAL SERVICE TO ADMINISTER AND ENFORCE

As stated in previous cases, the Postal Service would experience administration and enforcement problems as a result of CEM. Witness Willette suggests that the Commission just dismiss the Postal Service's concerns, but does not discuss those concerns in detail, or elaborate as to why they should be dismissed.[14] The Postal Service would expect to incur costs related to public education campaigns, increased window service transactions, and revenue protection efforts.

In addition, the Postal Service would experience problems related to stamp sales. The current system relies predominantly on one basic stamp denomination for First-Class Mail letters. Under CEM, consumers could use 33-cent stamps, 30-cent stamps, 33-/30-cent stamps, or 30-/3-cent stamps. It is not known at this time which

[12] As a point of comparison, the Postal Service extended the preparation period for the Classification Reform requirement that sack and tray labels be barcoded. This extension allowed customers an additional six months to replace label stock and make internal production adjustments.
[13] Docket No. R97-1, Tr. 21/10750.
[14] Docket No. R97-1, Tr. 21/10703 at 11-14.

combination, if any, would be prevalent. Sufficient quantities of all these stamps would have to be ready at the time of implementation.

Finally, the costs for processing reply mail could increase. For those CRM pieces that do not convert to CEM, the use of two stamps (e.g., 30 and 3 cents) to pay postage could obscure the FIM markings and result in a prebarcoded mail piece being routed to a less efficient operation.

CEM would be one of the most significant rate changes in postal history in terms of the scope of its impact. The nation's mail system would become more complicated for everyone: households, businesses, major mailers, and the Postal Service.

CEM would complicate the simple and basic First-Class Mail rate schedule which has long been relied upon by the general public. This would seem to contradict the spirit of 39 U.S.C. §3622(b)(7), which encourages simplicity of structure for the entire schedule and simple, identifiable relationships between the rates or fees charged the various classes of mail for postal services. In a CEM environment, there would not be a cost difference (sufficient to justify a CEM rate) between prebarcoded reply mail pieces that converted to CEM, and those that did not.

The CEM proposal would also increase the likelihood that the general public could become confused when using the nation's mail system. Incorrect mailing decisions could be made as a result of that confusion and the public's view of the mails could become increasingly negative, making other bill payment alternatives appear more attractive. This is a major concern for the Postal Service, given the importance of the remittance mail stream.

IV. THE PUBLIC DOES NOT WANT A TWO-STAMP SYSTEM

Question: *"What role do you think the preference of households should play in the determination by the Commission to consider a two stamp system for First Class Mail letters?"*

OCA Witness Willette: *"...It should probably play some role. We have based our CEM proposal on the cost savings associated with processing that mail...I wouldn't want the Commission to ignore that."*

Question: *"You wouldn't want the Commission to ignore what?"*

OCA Witness Willette: *"The preference of mailers."*

(Docket No. R97-1, Tr. 21/10774-10775)

Despite her comments that household preferences should be considered, witness Willette admits that the OCA has not conducted any market research in the current rate case which indicates whether the mailing public wants a two-stamp system.[15]

A. PAST MARKET RESEARCH SHOWS A LACK OF SUPPORT

From Docket Nos. R87-1, R90-1, and MC95-1 to the present, one element has been missing from each OCA sponsorship of CEM: the OCA has never directly asked the public whether they want it. In fact, every study conducted thus far contains data which indicate there is a decided lack of support for CEM.

Docket No. R87-1: In this case, the OCA did not use household consumer support as a platform for its initial CEM proposal. The OCA attempted to justify that proposal as a means to provide rate relief to households, to increase barcoded mail volumes, and to prevent future electronic diversion.[16]

---

[15] Docket No. R97-1, Tr. 21/10751.
[16] Docket No. R87-1, Tr. 20/14968-72.

IV. THE PUBLIC DOES NOT WANT A TWO-STAMP SYSTEM

> ***Question:*** *"What role do you think the preference of households should play in the determination by the Commission to consider a two stamp system for First Class Mail letters?"*
>
> ***OCA Witness Willette:*** *"...It should probably play some role. We have based our CEM proposal on the cost savings associated with the processing of that mail...I wouldn't want the Commission to ignore that."*
>
> ***Question:*** *"You wouldn't want the Commission to ignore which?"*
>
> ***OCA Witness Willette:*** *"Preferences of mailers."*
>
> *(Docket No. R97-1, Tr. 21/10774-10775)*

Despite her comments that household preferences should be considered, witness Willette admits that the OCA has not conducted any market research in the current rate case which indicates whether the mailing public wants a two-stamp system.[15]

A. PAST MARKET RESEARCH SHOWS A LACK OF SUPPORT

From Docket Nos. R87-1, R90-1, and MC95-1 to the present, one element has been missing from each OCA sponsorship of CEM: the OCA has never directly asked the public whether they want it. In fact, every study conducted thus far contains data which indicate there is a decided lack of support for CEM.

Docket No. R87-1: In this case, the OCA did not use household consumer support as a platform for its initial CEM proposal. The OCA attempted to justify that proposal as a means to provide rate relief to households, to increase barcoded mail volumes, and to prevent future electronic diversion.[16]

---

[15] Docket No. R97-1, Tr. 21/10751.
[16] Docket No. R87-1, Tr. 20/14968-72.

In rebuttal, USPS witness Rittenhouse cited a 1986 Roper Survey.[17] In that survey, respondents were asked if they would rather have one basic First-Class Mail rate or two separate rates based on specific mail piece characteristics. The single rate was chosen by 62 percent of the respondents.

1988 Tracking Study: In October 1988, the USPS conducted a study which tested consumer reactions to lower CRM rates.[18] When asked an open-ended question about how they felt about a CRM discount, 69 percent of the 1,002 participants responded favorably. However, the percentage of favorable responses decreased when specific discounts were included in the questions. For discounts of five cents (25/20 cent rates) and three cents (25/22 cent rates), the percentage of favorable responses decreased to 66 percent and 49 percent, respectively. Finally, the respondents were asked for their opinions regarding 26/21 cent rates. Even though the discount was still 5 cents, the favorable responses decreased from 66 percent to 21 percent when the full-rated stamp price was increased by a penny. This latter result would seem to suggest that whatever public support might exist for CEM, that support falls sharply once consumers realize that, in order to fund a discount, their rates may have to increase elsewhere.

Docket No. R90-1: OCA witness Thomas presented market research in support of CEM in R90-1.[19] That research relied on several questions that asked respondents about their "likelihood of purchasing a discount stamp" – given various discounts as compared to two different residual rates (31 and 30 cents). The implication was that a "likelihood to purchase" meant that consumers wanted CEM. This study also contained several responses which indicated a decided lack of public support:

---39.4 percent would probably/definitely not purchase (30 cents/27 cents)
---40.2 percent would probably/definitely not purchase (31 cents/27 cents)
---77.3 percent would probably/definitely not purchase (30 cents/29 cents)
---75.5 percent would probably/definitely not purchase (31 cents/29 cents)
---33.2 percent somewhat/strongly agree the difficulty would just not be worth it
---47.6 percent somewhat/strongly agree it would be difficult to learn
---69.5 percent somewhat/strongly agree stamp would be used inappropriately

[17] Docket No. R87-1, USPS-RT-9, page 21 at 1-11.
[18] Docket No. R90-1, USPS Library Reference F-225.
[19] Docket No. R90-1, Tr. 30/15317.

Docket No. MC95-1: In the Classification Reform case, the OCA presented no additional market research to support CEM. The USPS, however, provided the results from a 1991 Rate Change Telephone Survey.[20] That survey once again showed that consumers were not enthusiastic about CEM:

---67-71percent somewhat/very inconvenient to use, buy and maintain two stamps
---45.6 percent somewhat/very unlikely to purchase (29 cents/27 cents)

B. THE OCA PROVIDES NO SUPPORTING RESEARCH IN DOCKET NO. R97-1

In the current case, the OCA has again neglected to provide any data which show that the public wants a two-stamp system. The only survey that ever directly asked consumers which system they wanted was the 1986 Roper survey and those results showed that 62% of the respondents preferred the current one-stamp system.

C. A RECENT USPS SURVEY SHOWS THE PUBLIC STRONGLY PREFERS THE CURRENT ONE-STAMP SYSTEM

On behalf of the Postal Service, witness Ellard recently conducted a market research survey in order to determine whether households preferred a one-stamp or two-stamp system for their First-Class Mail letters. The results of that survey are reflected in his rebuttal testimony in this proceeding (USPS-RT-14).

The Public Does Not Want A Two-Stamp System: Witness Ellard's survey shows that a likelihood to purchase the discounted stamp (if CEM were to be implemented) does not necessarily mean that the public wants to see the Postal Service implement a two-stamp system. The respondents in witness Ellard's CARAVAN® survey were directly asked in Question P9 which system they preferred, a one-stamp system or a two-stamp system. The overwhelming majority preferred the current one-stamp system. The cumulative figure of 60 percent would seem to validate the 62 percent figure from the 1986 Roper Survey discussed earlier.

[20] Docket No. MC95-1, USPS Library Reference MCR-88.

TABLE 1: HOUSEHOLD PREFERENCE FOR ONE OR TWO STAMPS

Question P9:
Household Preference
60% One-Stamp System
38% Two-Stamp System
2% Don't Know

Lower Income Households Prefer A One-Stamp System: In witness Ellard's survey, the households in the two lowest income categories exhibited the strongest preference for a one-stamp system.

TABLE 2: HOUSEHOLD PREFERENCE - LOWER INCOME LEVELS

Question P9:	**Question P9:**
< $15,000	**$15,000 - $25,000**
Household Preference:	**Household Preference:**
72% One-Stamp System	63% One-Stamp System
26% Two-Stamp System	32% Two-Stamp System
2% Don't Know	4% Don't Know

Witness Willette said in her testimony, "We would note that low income households as well as those on *low* fixed incomes might find saving between four and five dollars a year attractive."[21] They might indeed. But it is doubtful that lower income households would ever mail enough reply envelopes to save such an amount. The CARAVAN® survey shows that the mean number of reply mail envelopes mailed per month decreases as the income level decreases.

In fact, based on the results from Question P2, where respondents were asked the number of payments they mailed per month using a reply envelope, it looks doubtful that the average household in any income category would save four to five dollars annually. It should also be noted that some reply envelopes would not be prebarcoded and therefore would not qualify for a CEM rate. In addition, some prebarcoded reply envelopes probably would not be converted from CRM to CEM. In both cases, the potential savings would be less than that shown in Table 3.

[21] Docket No. R97-1, Tr. 21/10693 at 16-17.

16

TABLE 3: AVERAGE REPLY ENVELOPES MAILED BY INCOME LEVEL

Question P2: Income Level	Avg. No. CRM Mailed Per Mo.	Average Annual Savings
< $15K	4.4	$ 1.32
$15K-$25K	5.8	$ 1.74
$25K-$35K	6.2	$ 1.86
$35K-$50K	7.9	$ 2.37
> $50K	9.1	$ 2.73

The Possibility Of Other Rate Increases Affects System Preference: It is noteworthy that the preference question was asked a second time of those respondents who said they preferred a two-stamp system in Question P9. They were asked if they still wanted two stamps if such a system contributed, to some extent, to an increase in the rates for regular First-Class Mail letters. After being informed of a possible "push-up" elsewhere, 66 percent of those respondents that originally had preferred a two-stamp system switched to the one-stamp system.

The impact of the two preference questions is significant. When the respondents who switched from a two-stamp to a one-stamp system in question 10 are combined with those respondents who preferred a one-stamp system initially in question 9, the figures show that 86 percent of the total respondents prefer a one-stamp system when they are made aware that their rates could increase elsewhere.

TABLE 4: COMBINED RESULTS FROM PREFERENCE QUESTIONS

Combined Questions P9/10: Household Preference
86% One-Stamp System
12% Two-Stamp System
2% Don't Know

The Postal Service agrees with the OCA that household preference should be considered in regard to CEM. Household consumers have spoken through this survey and the overwhelming majority prefer a one-stamp system. These survey results clearly indicate that CEM is not a desirable classification from the point of view of the user, within the meaning of U.S.C. §3623(c)(5).

TABLE 3: AVERAGE REPLY ENVELOPES MAILED BY INCOME LEVEL

Question P2: Income Level	Avg. No. CRM Mailed Per Mo.	Average Annual Savings
< $15K	4.4	$ 1.58
$15K-$25K	5.8	$ 2.09
$25K-$35K	6.2	$ 2.23
$35K-$50K	7.9	$ 2.84
> $50K	9.1	$ 3.28

The Possibility Of Other Rate Increases Affects System Preference: It is noteworthy that the preference question was asked a second time of those respondents who said they preferred a two-stamp system in Question P9. They were asked if they still wanted two stamps if such a system contributed, to some extent, to an increase in the rates for regular First-Class Mail letters. After being informed of a possible "push-up" elsewhere, 66 percent of those respondents that originally had preferred a two-stamp system switched to the one-stamp system.

The impact of the two preference questions is significant. When the respondents who switched from a two-stamp to a one-stamp system in question 10 are combined with those respondents who preferred a one-stamp system initially in question 9, the figures show that 86 percent of the total respondents prefer a one-stamp system when they are made aware that their rates could increase elsewhere.

TABLE 4: COMBINED RESULTS FROM PREFERENCE QUESTIONS

Combined Questions P9/10: Household Preference
86% One-Stamp System
12% Two-Stamp System
2% Don't Know

The Postal Service agrees with the OCA that household preference should be considered in regard to CEM. Household consumers have spoken through this survey and the overwhelming majority prefer a one-stamp system. These survey results clearly indicate that CEM is not a desirable classification from the point of view of the user, within the meaning of U.S.C. §3623(c)(5).

V. THE CEM REVENUE LOSS WOULD HAVE TO BE RECOVERED

"I have not taken a formal position on the recovery of the $219 million."
—OCA Witness Willette (Docket No. R97-1, Tr. 21/10735)

OCA witness Sherman contends that PRM could mislead household consumers into thinking that reply mail service is free.[22] That same argument could also be applied to the OCA's proposed CEM rate, since the revenue loss associated with that rate would have to be recovered elsewhere. That loss could be recouped in a variety of ways, but, one way or another, consumers would ultimately shoulder the burden. And it has already been demonstrated through market research that when households are made aware of that fact, the overwhelming majority prefer a one-stamp system.

The revenue loss issue has been presented as a rebuttal argument in Docket Nos. R87-1[23] and R90-1[24].[25] In each docket, the OCA has avoided taking a stand as to how the losses should be recovered. In Docket No. R97-1, witness Willette concludes that, "At 30 cents per piece, CEM mail will travel under a rate that is more closely aligned with costs than consumers' current alternative, the First Class single-piece rate."[26] If aligning rates with costs were truly a cornerstone of CEM, the OCA's proposal would include a provision that recommends a higher single piece rate for letters that cost more to process (e.g., handwritten). Such a provision has not been included in witness Willette's proposal.

CEM would not create any new cost benefits that would, in any way, offset the corresponding revenue loss. In fact, the Postal Service would incur additional costs in order to implement and maintain a two-stamp system. Those costs would also have to be recovered.

---

[22] Docket No. R97-1, Tr. 26/13763.
[23] Docket No. R87-1, USPS-RT-9, pages 13-14.
[24] Docket No. R90-1, Tr. 39/21066.
[25] Footnote Deleted - 3/13/98.
[26] Docket No. R97-1, Tr. 21/10714 at 2-4.

17

V. THE CEM REVENUE LOSS WOULD HAVE TO BE RECOVERED

"I have not taken a formal position on the recovery of the $219 million."
---OCA Witness Willette (Docket No. R97-1, Tr. 21/10735)

OCA witness Sherman contends that PRM could mislead household consumers into thinking that reply mail service is free.[22] That same argument could also be applied to the OCA's proposed CEM rate, since the revenue loss associated with that rate would have to be recovered elsewhere. That loss could be recouped in a variety of ways, but, one way or another, consumers would ultimately shoulder the burden. And it has already been demonstrated through market research that when households are made aware of that fact, the overwhelming majority prefer a one-stamp system.

The revenue loss issue has been presented as a rebuttal argument in Docket Nos. R87-1[23], R90-1[24], and MC95-1[25]. In each docket, the OCA has avoided taking a stand as to how the losses should be recovered. In Docket No. R97-1, witness Willette concludes that, "At 30 cents per piece, CEM mail will travel under a rate that is more closely aligned with costs than consumers' current alternative, the First Class single-piece rate."[26] If aligning rates with costs were truly a cornerstone of CEM, the OCA's proposal would include a provision that recommends a higher single piece rate for letters that cost more to process (e.g., handwritten). Such a provision has not been included in witness Willette's proposal.

CEM would not create any new cost benefits that would, in any way, offset the corresponding revenue loss. In fact, the Postal Service would incur additional costs in order to implement and maintain a two-stamp system. Those costs would also have to be recovered.

---

[22] Docket No. R97-1, Tr. 26/13763.
[23] Docket No. R87-1, USPS-RT-9, pages 13-14.
[24] Docket No. R90-1, Tr. 39/21066.
[25] Docket No. MC95-1, Tr. 36/16326.
[26] Docket No. R97-1, Tr. 21/10714 at 2-4.

VI. CEM WOULD FORCE THE POSTAL SERVICE TO INCUR SUBSTANTIAL ADDITIONAL COSTS.

"While the Postal Service has long objected to CEM on such bases as the 'two stamp' problem, I would observe that the Commission dismissed such operational objections to CEM in Docket No. MC95-1, as well it should here."
—OCA Witness Willette (Docket No. R97-1, Tr. 21/10703 at 11-14)

If CEM were implemented, the Postal Service would incur substantial additional costs that it would not normally incur. Some costs are easier to quantify than others.

TABLE 5: QUANTIFIABLE CEM-RELATED COSTS (MILLIONS)

Description	Initial Costs	Annual Costs
Education	$ 33	——
Window Services	——	$ 17
Revenue Protection	——	$ 66 - $ 255
Total	$ 33	$ 83 - $ 272

A. A MULTIMEDIA PUBLIC EDUCATION CAMPAIGN WOULD BE REQUIRED

The Postal Service estimates that it would be necessary to spend approximately $33 million to implement a multimedia campaign designed specifically to explain CEM to the general public.

In R90-1, OCA witness Thomas acknowledged that the Postal Service would have to educate the public about CEM.[27] The Postal Service agrees with that assessment. Because CEM involves a change in household consumer behavior, the Postal Service would need to use television, radio, and newspaper advertisements ($19 million) to educate the public about CEM.[28] As a compliment to that campaign, at least one CEM-specific direct mailing ($11 million) would need to be sent to every household and business in the United States. Finally, CEM-specific brochures ($3 million) would need to be prominently displayed in postal retail lobbies. These costs would not be incurred in the absence of CEM.

[27] Docket No. R90-1, Tr. 30/15355-58.

The education process would also involve additional costs that cannot easily be quantified. For example, some time would have to be spent explaining CEM to the postal workforce. All employees would have to know how CEM works and be able to answer customer inquiries. It would be especially important for employees who maintain regular customer contact (e.g., carriers and window service clerks) to be able to answer CEM questions. In addition, employees would have to be told how to identify short paid mail. Informal training on the workroom floor is currently provided using "stand up talks" that supervisors sometimes give to employees at the beginning of their shifts. Initially, these established "information sharing" sessions would be used for training. If problems were detected, however, a more intensive approach would have to be used and formal training would be required, generating additional systemwide expenses.

To some degree, the magnitude of internal training and all other education efforts would be directly related to the success of the implementation plan. First, an implementation date would have to be determined. Second, all qualifying CEM mail pieces would have to be marked properly by the implementation date. Any non-compliance would hamper education efforts.

As I indicated earlier, it is doubtful that all CRM would convert to CEM. In that case, it would always be difficult for carriers and/or window service clerks to explain to customers why a CEM stamp could be placed on one prebarcoded, FIM A mail piece, but could not be placed on a similar mail piece. The explanation that mail pieces must be properly marked would be the technically correct answer, but a technically correct answer may not undo the damage caused by negative customer perceptions.

---

[28] Exhibit USPS-RT-17B, page 1.

B. WINDOW SERVICE TRANSACTIONS WOULD INCREASE

The addition of a second basic single-piece First Class Mail stamp for letters would increase the number of stamp sales transactions performed by postal window clerks. The costs associated with this increase are estimated to be $17 million annually.[29]

Past market research has indicated that household consumers would need to make additional trips to the post office in a CEM environment. In Docket No. MC95-1, *Library Reference* MCR-88, 42.6% of the survey respondents indicated that additional trips would be required. More trips would translate into increased window service costs. These costs are summarized in Exhibit USPS-RT-17C.

In assessing the impact that CEM would have on window service operations, it is also necessary to discuss costs that cannot easily be quantified. One such cost would involve the possible diversion of stamps sales transactions from alternative sources such as consignment outlets and ATMs to postal retail outlets. Many households currently purchase stamps through these alternative sources (73 million transactions annually)[30] and would have to make additional trips to the post office, to the extent that their stamp demands were not satisfied alternatively. Additional workhours would be required to handle transactions that come back to post offices. Each window service stamp transaction currently costs the Postal Service 39 cents.[31]

In addition, some stamp sales transactions would be diverted back to postal window clerks from vending machines. Currently, 9,060 (24 percent) of the Postal Service's total 37,631 vending machines are Booklet Vending Machines (BVM).[32] These machines offer one item -- stamp booklets.[33] They cannot hold more than one type of booklet. Some retail lobbies contain more than one BVM and could theoretically carry both stamps. Other lobbies could not.

---

[29] Exhibit USPS-RT-17C, page 1.
[30] Estimated FY 1997 stamp sales transactions managed by Amplex Corporation, the administrator of the USPS stamps on consignment program.
[31] Exhibit USPS-RT-17C, page 1.
[32] Vending Equipment Service System, National Vending and Machine Report, Fiscal Year 1997.
[33] Footnote Deleted - 3/13/98.

Those with one BVM could only offer one type of stamp. Therefore, some customers who might have purchased their stamps using vending machines would end up purchasing stamps through a window clerk. This system would become further complicated at times when large volumes of greeting cards (e.g., the December holidays) would be sent by household consumers. BVMs that usually stocked CEM stamps would probably be changed to stock the full-rated single-piece stamp during these seasonal periods. As a result, the planning associated with stamp sales would become more complicated under CEM.

Finally, window service costs would also be affected by customer inquiries related to CEM (i.e., "when do I use each stamp?"). This fact would be especially obvious during CEM implementation. Each independent CEM inquiry transaction could cost the Postal Service 67 cents.[34] Each CEM inquiry transaction that was part of another transaction (e.g., stamp sales) could cost the Postal Service 35 cents.[35]

Overall, the implementation of the CEM proposal would increase window transaction costs. These costs would decrease somewhat in the long term. Initially, however, the CEM proposal could have a dramatic impact on window service as consumers adjusted to the new system.

C. REVENUE PROTECTION COSTS WOULD BE SIGNIFICANT

With the current one-stamp system, it is uncommon for the public to underpay postage for one-ounce letters. If CEM were implemented, that situation would change. The opportunity for confusion would be great and the percentage of short paid mail would increase. The magnitude of that increase, however, is not known. As a result, revenue protection costs (Exhibit USPS-RT-17D) were calculated for various short paid mail percentages.[36] These costs would be significant. For example, if the short paid mail percentage increased from the current 0.06 percent to 2 percent, the Postal

[34] Exhibit USPS-RT-17C, page 2.
[35] Exhibit USPS-RT-17C, page 3.

Those with one BVM could only offer one type of stamp. Therefore, some customers who might have purchased their stamps using vending machines would end up purchasing stamps through a window clerk. This system would become further complicated at times when large volumes of greeting cards (e.g., the December holidays) would be sent by household consumers. BVMs that usually stocked CEM stamps would probably be changed to stock the full-rated single-piece stamp during these seasonal periods. As a result, the planning associated with stamp sales would become more complicated under CEM.

Finally, window service costs would also be affected by customer inquiries related to CEM (i.e., "when do I use each stamp?"). This fact would be especially obvious during CEM implementation. Each independent CEM inquiry transaction would cost the Postal Service 67 cents.[34] Each CEM inquiry transaction that was part of another transaction (e.g., stamp sales) would cost the Postal Service 35 cents.[35]

Overall, the implementation of the CEM proposal would increase window transaction costs. These costs would decrease somewhat in the long term. Initially, however, the CEM proposal could have a dramatic impact on window service as consumers adjusted to the new system.

C. REVENUE PROTECTION COSTS WOULD BE SIGNIFICANT

With the current one-stamp system, it is uncommon for the public to underpay postage for one-ounce letters. If CEM were implemented, that situation would change. The opportunity for confusion would be great and the percentage of short paid mail would increase. The magnitude of that increase, however, is not known. As a result, revenue protection costs (Exhibit USPS-RT-17D) were calculated for various short paid mail percentages.[36] These costs would be significant. For example, if the short paid mail percentage increased from the current 0.06 percent to 2 percent, the Postal

[34] Exhibit USPS-RT-17C, page 2.
[35] Exhibit USPS-RT-17C, page 3.

Service would incur costs on the order of $96 million annually.[37] To minimize these costs, the Postal Service would concentrate its detection efforts at the point of entry to the postal system - the originating Processing and Distribution Centers (P&DC).

For purposes of CEM enforcement, this method would be preferred over the reliance on carriers to identify short paid mail. In today's Delivery Point Sequencing (DPS) environment, carriers would not have an opportunity to inspect many mail pieces until they are out on the street. At that point, they would be riffling through multiple bundles (e.g., DPS letters, cased letters, flats, and saturation mailings) as they walked between delivery points, organizing the mail for the next address. Their attention would be primarily focused on the address, not on the stamp. This would be especially true for substitute carriers who are delivering mail for another carrier's permanent route.

By concentrating identification efforts at originating operations, the Postal Service could attempt to minimize the mail processing costs and service problems related to short paid mail. Therefore, the best place to detect short paid mail would be when it enters these facilities as "collection" mail.

Collection mail is "dumped" from hampers onto conveyor belts that cull mail and ultimately feed Advanced Facer Canceler Systems (AFCS). In an ideal environment, the AFCS would be used to trap short paid mail, as it currently cancels 86 percent of all collection mail.[38] The Postal Service has attempted to determine whether the AFCS could be used to isolate the presence of a CEM stamp on a non-qualified envelope. We have concluded that no technical solution is currently possible. A detailed discussion of AFCS operations and an explanation of why the AFCS cannot be used to feasibly trap short paid mail are found in Exhibit USPS-RT-17E.

Short Paid Mail Would Be Isolated Manually: Since short paid mail cannot be captured using automation, it is estimated that two level 6 clerks would be required at each originating plant to sample and record mail after it has been sorted by the AFCS.

---

[36] The short paid percentage for additional-ounce First-class Mail letters (7.35% as per FY 96 RPW) was used as a ceiling, since it also represents a situation that involves the usage of two different stamp denominations. 478 Million Short Paid Pieces (> 1 oz.) / 6.5 Billion Total Pieces (> 1 oz.) = 7.35 percent.
[37] FY 96 RPW: 29 Million Short Paid Pieces (< 1 oz.) / 47 Billion Total Pieces (< 1 oz.) = 0.06 percent.
[38] FY 97 MODS: 29 Billion AFCS (Operation 015) Pieces / 33.6 Billion Total Cancellations = 86 percent.

This additional staffing would cost $38 million annually, regardless of the magnitude of the increase in the short paid mail percentage.[39]

The revenue protection clerks would perform two functions. First, they would identify the extent to which short paid mail was a problem in a CEM environment. They would sample mail from the different AFCS machines and record the volume of short paid mail. This data would be collected nationwide to determine the extent to which the public understands CEM. The Postal Service would evaluate the results, attempt to reinforce proper usage (e.g., send a second direct mailing to households and businesses), and develop an enforcement plan. If short paid mail proved to be a major problem, the revenue protection strategy might have to be re-evaluated and additional staffing could be required at the originating plants, as well as at other plants. If additional staffing were required, revenue protection costs would increase.

The revenue protection clerks would also perform a second function as an integral part of the enforcement plan. Depending on the scope of the problem, these clerks might be retained to isolate and identify mail that contained inadequate postage. They would be the most likely means for capturing short paid mail. As it would not be possible for these clerks to sample every canceled mail piece, this method would not result in all short paid mail being found. Only a portion of short paid mail would be captured. For the 2 percent short paid example, the annual costs for returning this mail would be $58 million.[40]

Identified Short Paid Mail Would Be Returned To Sender: After being identified, short paid mail would be forwarded to a postage due unit. The postage due clerks would rate the mail piece and forward it to a manual outgoing primary operation (030). The 030 clerks would then sort the mail to the ZIP Code level before it would be sent back to the delivery unit.[41] At the delivery unit, accountable clerks would process the mail before the carrier picked it up for return to sender. Following delivery, the carrier would return the funds and clear the paperwork with the clerk.

---

[39] Exhibit USPS-RT-17D, page 1.
[40] Exhibit USPS-RT-17D, page 3.

The summary table in Exhibit USPS-RT-17D shows that the costs of identifying and returning short paid mail always outweigh the corresponding revenue losses. Accepting these revenue losses would not be an adequate solution. The Postal Service would have to spend the money to reinforce proper CEM usage.[42] In the current system, it is difficult to underpay the postage for First-Class letters weighing less than one ounce. With CEM, it would be much easier.

D. OTHER COSTS ARE NOT AS EASILY QUANTIFIED

In addition to the costs related to education, window services, and revenue protection, the Postal Service would incur other costs which are not easily quantified.

Stamp Costs Could Increase: As I discussed earlier, households could use 33-cent stamps only, 30-cent stamps only, 33-/30-cent stamps, or 30-/3-cent stamps. The mix of stamps that the public would ultimately use is not known. The Postal Service would have to ensure that sufficient quantities of 33, 30, and 3 cent stamps were available at the time CEM was implemented. The amount of stamps produced in advance of CEM implementation would be greater than the amount normally produced. Therefore, additional costs related to inventories, planning, and distribution would be incurred.

It would be expected that these costs would eventually be eliminated as the Postal Service adjusted to stamp demand, but that might not necessarily be true if a large percentage of consignment outlets chose to offer only one stamp. In that situation, the inventories in postal Stamp Distribution Centers (SDC) could ultimately increase. In addition, the average cost per stamp could increase if the Postal Service required smaller batches of more stamp types, as stamp costs are driven by production volumes.

---

[41] For purposes of cost determination, it was assumed that the vast majority of mail being returned would fall within the local service area of the originating plant. In some cases, that might not be true and additional handlings would be required.

[42] OCA witness Thomas agreed that reinforcement was necessary (Docket No. R90-1, Tr. 30/15357-58).

Re-Addressed Reply Envelopes Could Become A Problem: Reply envelopes that are provided to consumers are sometimes used for purposes other than their original intent. For example, some people do not always mail their remittances in reply envelopes and, rather than waste them, use them to mail something else. This situation causes problems that ultimately increase mail processing costs.

First of all, re-addressed envelopes are problematic because they have FIM markings, but the preprinted barcode does not correspond to the new address. This mail would therefore be separated as barcoded mail on the AFCS and would immediately be processed on a Bar Code Sorter (BCS). Re-addressed reply envelopes that contain no barcodes or have obliterated barcodes would be rejected on the BCS. They would then have to be routed through the RBCS network.[43]

At that point, the re-addressed reply envelopes that did not have barcodes should be processed successfully. However, those with obliterated barcodes would not. These latter mail pieces would end up being processed on a Letter Mail Labeling Machine (LMLM), so that a label could be placed over the barcode area. Barcodes would then be applied on the LMLM labels when the letters are reprocessed on the Output Sub System (OSS). These additional steps increase mail processing costs beyond what would have normally occurred, had the address been handwritten on a clean, white envelope (assuming the handwriting did not extend into the barcode clear zone).

Finally, those re-addressed envelopes that contain barcodes that are not obliterated would be successfully processed on the BCS and, rather than being delivered to the new address, would be delivered to the original reply mail provider. Once identified, these envelopes would then have to be rerouted through the entire postal system until they successfully reach the intended addressee.

When a reply envelope is re-addressed, it can cause service delays for the sender of the mail piece. In addition, the Postal Service receives complaints from the

[43] In comparison, a normal handwritten envelope would have been less costly to process because it would have been routed directly to RBCS after having its image lifted on the AFCS.

original reply envelope providers that receive this mail. To some degree, this problem already exists today.

The scope of this problem could increase in a CEM environment due to the envelope changes related to that proposal. These changes would be especially problematic for window envelopes that do not contain barcodes on the envelope itself. Under the CEM proposal, these envelopes would be marked as CEM qualified. Therefore, the public could mistakenly conclude that the envelope itself is what saves the Postal Service money. In reality, the prebarcoded insert is what saves mail processing costs and if the insert is no longer used, there are no savings. If the public makes this mistake and uses these envelopes for purposes other than originally intended, the envelopes would actually cost more to process, despite the fact that they were mailed at the CEM rate. As stated, these envelopes would cost more to process than a normal handwritten envelope.

The public may have the best of intentions when they use reply envelopes for something other than their original purposes. However, in a CEM environment, the public could mistakenly assume that the characteristics of the envelope, rather than the presence of a specific barcode that corresponds to a specific delivery address, are why a discounted postage rate is being offered. Therefore, the level of envelope misuse could increase and the Postal Service would incur additional costs. Consumers would ultimately pay for these additional costs and would also suffer from the consequences related to service delays.

In order to implement CEM, the Postal Service would incur costs for public education, additional window service transactions, and revenue protection. Some costs are more easily quantified than others. However, they should not be ignored, as suggested by witness Willette. The CEM proposal involves many unknowns (e.g., short paid percentage) which could increase the cost estimates presented in this testimony. These costs need to be recovered in addition to the revenue loss that was forecast by the OCA.

In regard to the revenue loss, witness Willette estimated that the maximum reduction would be $219 million.[44] Witness Ellard's market research shows that 61 percent of the respondents were very or somewhat likely to purchase the discounted stamp. Taking into account the likely percentage of CEM usage, a revenue loss of $134 million would be a more plausible projection.

In order to implement and maintain CEM, I have shown that the Postal Service could spend $146 million in the first year alone.[45] It would not make financial sense for the Postal Service to spend over $146 million to realign $134 million worth of postage costs. I believe that there is insufficient justification for a special CEM classification within the meaning of U.S.C. §3623(c)(2), in light of this cost/benefit analysis.

[44] Docket No. R97-1, Tr. 21/10692 at 7.

[45] The total quantifiable costs for education ($ 33 million), increased window service transactions ($ 17 million), and revenue protection ($ 96 million). This latter figures assumes that 2% of the mail would be short paid and includes costs for the revenue protection clerks ($ 38 million) and postage due operations ($ 58 million).

VII. CEM WOULD NOT FAIRLY AND EQUITABLY DISTRIBUTE POSTAGE COSTS

"The adoption of CEM as a classification is long overdue. At 30 cents per piece, CEM mail will travel under a rate that is more closely aligned with costs...."
—OCA Witness Willette (Docket No. R97-1, Tr. 21/10714 at 2-4)

In Docket No. MC95-1, Postal Service witness Alexandrovich explained why the implementation of a CEM discount would not promote fairness and equity within the rate schedules for First-Class Mail.[46] The Postal Service maintains that position with respect to the current CEM proposal.

A. CEM WOULD BE DISTINCTLY ONE-SIDED

Witness Alexandrovich's concerns were also shared by the Governors, who cited the lack of fairness and equity as one of the critical reasons why they were rejecting the CEM recommendation before them in Docket No. MC95-1:

> Our last concern, however, goes beyond the state of the record in this proceeding, and addresses the more general issue of fairness and equity. The CEM rate category has been advanced by its proponents as a means of allowing household mailers to obtain a direct and tangible rate benefit from the postal automation program. Yet household mailers already have benefited from automation. The savings realized from automation processing of household mail have been averaged with other costs of First-Class Mail, and used to mitigate overall First-Class rate increases.
>
> We believe that to be fair, given the cost profile of typical household mail. When households use the CEM envelope provided by others to pay a bill (or for some other return correspondence), the letter they mail has relatively low cost. For the rest of their letters, however, sent in their own envelopes, often with handwritten addresses, the households continue to deposit relatively high cost mail. Each of these two disparate types of mail constitutes approximately one-half of the typical household's mail. Under the current rate and classification structure, the costs of all household mail are averaged with the generally low costs of business mail, to create one base letter rate applicable to both. While the Postal Service is not convinced that such a structure serves the best interests of any of its customers, in past years, this arrangement worked to at least the short-run advantage of household mailers, as noted in our discussion of this topic in Docket No. R90-1.

[46] Docket No. MC95-1, Tr. 36/16324-27.

> As we understand the CEM discount concept, it would offer households the new advantages of deaveraging for their low cost mail, and the continuing advantages of averaging for their high-cost mail. We are not convinced that such a ratemaking scheme is either fair or equitable. Unless households were called upon to pay higher rates which reflect costs of their mail that is not sent in reply envelopes (an approach advocated by no one in this case), a proposal such as CEM that would nevertheless allow them to pay lower rates which reflect the lower costs of their reply mail seems distinctly one-sided.[47]

Witness Willette states that, "A second factor to consider is that the Postal Service's past resistance to CEM means that consumers using prebarcoded courtesy reply envelopes have been overpaying the 'correct' postage on their bill payments for a number of years."[48] Assuming this to be true, witness Willette neglects to mention that those same consumers have also been underpaying the "correct" postage on their high-cost mail (e.g., hand-addressed envelopes) for a number of years. As the Governors stated, CEM "seems distinctly one-sided." Deaveraging should not be conducted on a one-sided basis. As with its predecessor proposals, the OCA's latest CEM proposal is not, in the view of the Postal Service, fair and equitable, within the meaning of U.S.C. §3623(c)(1).

B. SINGLE PIECE MAIL PROCESSING COSTS ARE CONVERGING

In Docket No. R87-1, the OCA attempted to justify CEM on cost savings grounds.[49] That docket, however, occurred before the Postal Service proceeded to implement its Corporate Automation Plan (CAP). Since that time, several automation programs have been implemented in the field which have reduced mail processing costs. As a result, the mail processing costs for the different single-piece mail types are converging. The Postal Service is currently making plans to implement additional programs which will further contribute to that trend. This convergence is illustrated below in the chart on page 30 (see Exhibit USPS-RT-17F for cost models).

---

[47] Decision of the Governors of the United States Postal Service on the Recommended Decisions of the Postal Rate Commission on Courtesy Envelope Mail and Bulk Parcel Post, Docket No. MC95-1 at 5 (March 4, 1996).
[48] Docket No. R97-1, Tr. 21/10704 at 10-12.
[49] Docket No. R87-1, OCA-T-500, page 13 at 11-12.

EXHIBIT USPS-RT-17F:
MAIL PROCESSING COST CONVERGENCE
FIRST-CLASS SINGLE PIECE

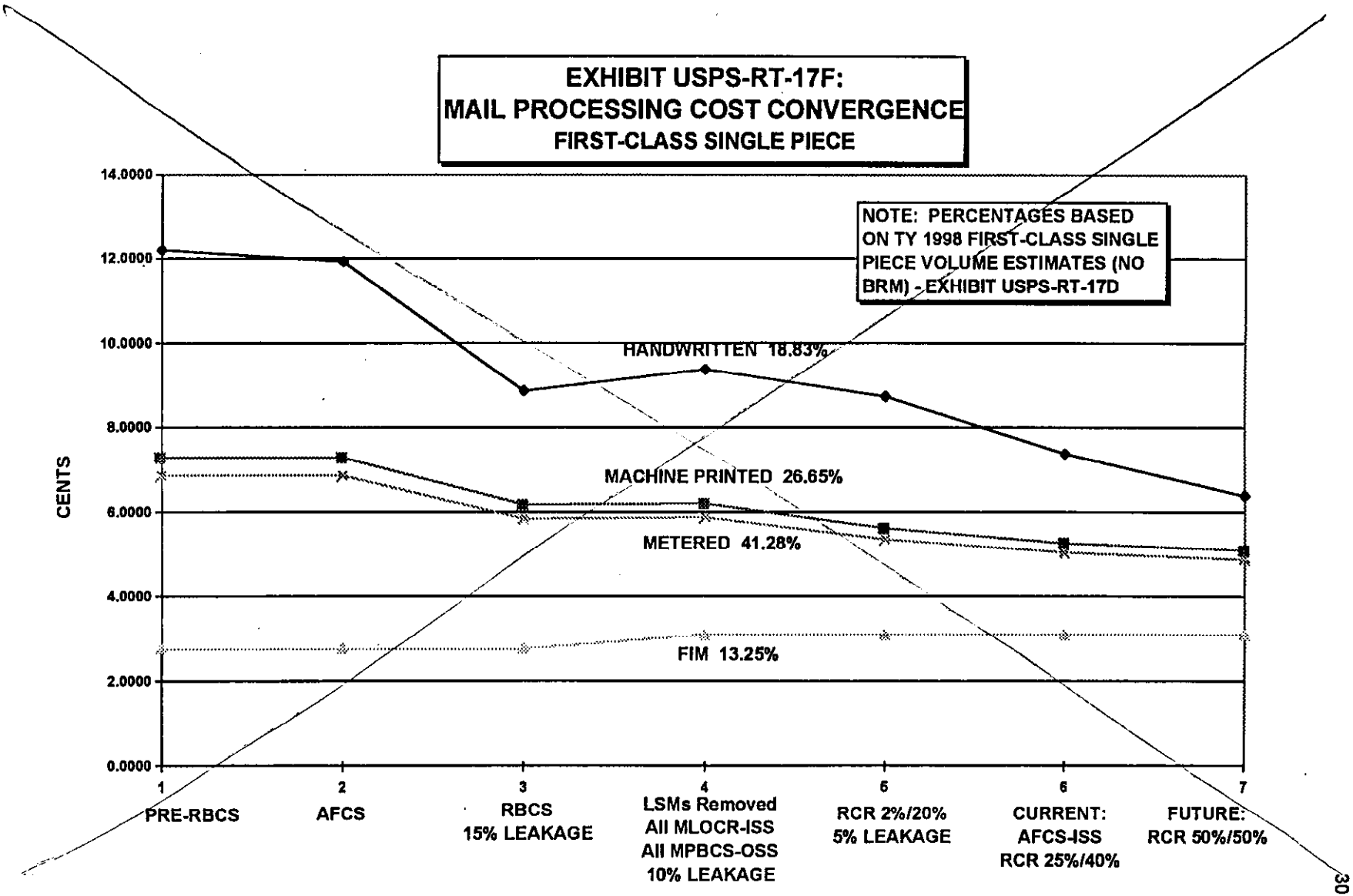
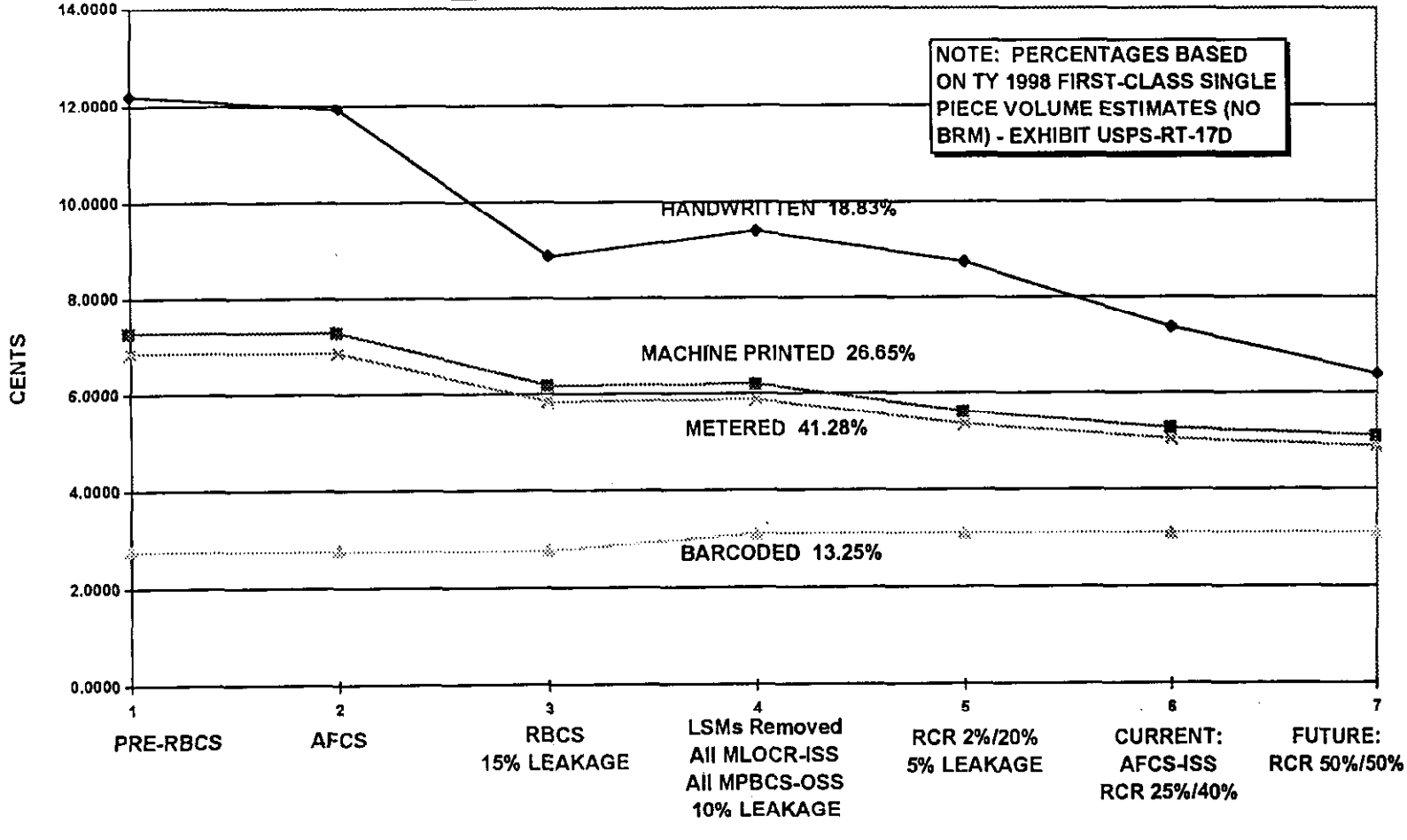


EXHIBIT USPS-RT-17F:
MAIL PROCESSING COST CONVERGENCE
FIRST-CLASS SINGLE PIECE



Revised-3/16/98

The models were created to demonstrate the cost differences between various mail types as they are processed through a large automated facility (or facilities, in the case of non-local mail). These costs should not be viewed as all-inclusive single-piece costs. The inputs for the models are the same as those used in Docket No. R97-1 and, in some cases, Docket No. MC95-1. I have attempted to show how these costs would be affected (in current terms) if we removed equipment and reverted to earlier processing strategies. This analysis was based on my experiences working as an industrial engineer on automation deployment projects. A discussion of the specific models can be found in Exhibit USPS-RT-17G. These models show that a CEM rate is less appropriate in today's operating environment. Furthermore, that trend will continue as automation hardware and software continue to improve.

C. CEM WOULD CREATE INEQUITIES

CEM would also create inequities that currently do not exist. From witness Ellard's CARAVAN® survey (USPS-RT-14), it was shown that 37 percent of the respondents were not likely to purchase both stamps. CEM would therefore create a situation where those households could be perceived as paying more than their fair share of postage.

In addition, there would be revenue losses and CEM-related costs which must be recovered. If those costs were not recovered through the single-piece rates, other entities could end up paying to fund CEM. Ironically, it could end up being the same businesses that have provided the reply envelopes to households. It is assumed, however, that businesses would pass any additional costs they incur on to consumers in order to maintain their financial position.

CEM is not a classification that is "long overdue" as claimed by witness Willette. If there were ever a time when this proposal might have been necessary, and even worked, it certainly is not now.

VIII. CONCLUSION

The Postal Service is not the only organization to be confronted with a "CEM" experience. Other examples serve to illustrate what happens when proposals are implemented without proper regard for consumers. In the first example, a recent front-page article in The Washington Post stated that:

> As the April 15 tax-filing deadline draws near, tax preparers and accountants report that many Americans are confused, frustrated and irritated by the complexity of many of the tax cuts passed with such fanfare last year.[50]

The primary source of this confusion, frustration and irritation concerns the recent tax changes made to Schedule D: Capital Gains and Losses. As part of the Taxpayer Relief Act of 1997, Congress introduced a four-tiered capital gains tax, as a means of cutting taxes and stimulating investment. As a result, the Internal Revenue Service (IRS) had to revise Schedule D, expanding it from 23 to 54 lines to accommodate a capital gains tax that can now be 10 percent, 20 percent, 25 percent, or 28 percent, depending on the taxpayer's income, the type of asset, and when it was sold. As the article stated, "Even one of the principal architects of the new tax law agrees that it is too complex" (Congressman Bill Archer, R-Texas). The public and the IRS are now having to deal with the aftermath of those complexities.

This example parallels the CEM proposal, which the OCA has offered without properly considering the affect it would have on the public or the agency responsible for implementing it.

In another example, policy makers enacted a change which also did not bode well with the American public. In this instance, the United States Mint had to deal with the consequences.

---

[50] Crenshaw, Albert "True To Form, Tax Time Gets Harder," The Washington Post, Saturday March 7, 1998.

VIII. CONCLUSION

The Postal Service is not the only organization to be confronted with a "CEM" experience. Other examples serve to illustrate what happens when proposals are implemented without proper regard for consumers. In the first example, a recent front-page article in The Washington Post stated that:

> As the April 15 tax-filing deadline draws near, tax preparers and accountants report that many Americans are confused, frustrated and irritated by the complexity of many of the tax cuts passed with such fanfare last year.[50]

The primary source of this confusion, frustration and irritation concerns the recent tax changes made to Schedule D: Capital Gains and Losses. As part of the Taxpayer Relief Act of 1997, Congress introduced a four-tiered capital gains tax, as a means of cutting taxes and stimulating investment. As a result, the Internal Revenue Service (IRS) had to revise Schedule D, expanding it from 23 to 54 lines to accommodate a capital gains tax that can now be 10 percent, 20 percent, 25 percent, or 28 percent, depending on the taxpayer's income, the type of asset, and when it was sold. As the article stated, "Even one of the principal architects of the new tax law agrees that it is too complex" (Congressman Bill Archer, R-Texas). The public and the IRS are now having to deal with the aftermath of those complexities.

This example parallels the CEM proposal, which the OCA has offered without properly considering the affect it would have on the public or the agency responsible for implementing it.

In another example, policy makers enacted a change which also did not go over well with the American public. In this instance, the United States Mint had to deal with the consequences.

---

[50] Crenshaw, Albert "True To Form, Tax Time Gets Harder," The Washington Post, Saturday March 7, 1998.

Fact: In 1979, the U.S. Mint began striking a new dollar coin, based on a projected $30 million in Treasury Savings.[51] Problems immediately occurred because consumers confused the new coin with the quarter. In fact, there was no market research which showed that household consumers even wanted the coin. The coin was basically forced into circulation.[52] Consumers eventually voiced their opposition to the use of coin dollars. In addition, the vending machine industry could not fully accommodate the change. As a result, production of the Susan B. Anthony dollar was stopped in 1981. Despite the fact that it is no longer produced, the Anthony dollar remains popular with coin collectors. The $30 million dollar savings never materialized, as the projection was based on a reduction in demand for the dollar bill that never occurred.

There are also parallels between the Susan B. Anthony dollar and the proposed CEM stamp. If CEM were implemented, the Postal Service could endure a similar experience, as illustrated in the following hypothetical scenario.

Fiction?: In 1998, the U.S. Postal Service began printing a new stamp based on a projected $219 million in household postage savings. Problems immediately occurred because the public was confused as to when the stamp should actually be used. In fact, there was no market research which showed that household consumers even wanted the stamp. The stamp was basically forced into circulation. Consumers eventually voiced their opposition to the use of two stamps. In addition, reply envelope providers and the nation's postal system could not fully accommodate the change. As a result, production of the CEM stamp was stopped in 2001. Despite the fact that it is no longer produced, the CEM stamp remains popular with stamp collectors. The $219 million savings never materialized, as postage rates had to be increased elsewhere to cover the corresponding revenue loss and USPS implementation costs.

---

[51] Orzano, Michele. "Anthony Dollars: A Woman Scorned." *Coin World*, 1997. Http://www.collect.com/coinworld/infovault/collector/78anthonydollars.html.

[52] Highfill, John W. *The Comprehensive U.S. Silver Dollar Encyclopedia*, Highfill Press, Inc., 1992, pages 757-759.

The United States Postal Service has made significant strides in recent years by surpassing several performance milestones and improving its relationship with the public. CEM threatens to undermine those gains. The Postal Service would be especially vulnerable in the arena of public opinion. CEM could have a negative impact on the Postal Service's relationships with household consumers, major mailers, small businesses, and consignment outlets. CEM is not a simple concept, nor would it be simple to implement. The arguments against CEM, however, are both simple and compelling:

1. CEM would complicate the nation's mail system for all parties involved.

2. Households do not want a two-stamp system.

3. The revenue loss associated with CEM would have to be recovered.

4. The costs associated with implementing and maintaining a second stamp would also have to be recovered.

5. CEM would not fairly and equitably distribute postage costs.

The United States Postal Service believes that these issues must be given serious consideration when evaluating the impact that CEM would have on the nation's mail system.

EXHIBIT USPS-RT-17A: REPLY MAIL PIECE VARIATION

Revised-3/13/98

This exhibit describes the mail piece variation that currently exists within the First-Class Courtesy Reply Mail (CRM) stream. Reply mail pieces can be found in a variety of shapes, sizes, and colors. Some envelopes contain preprinted addresses and barcodes, while other mail pieces uses envelope windows that expose the delivery address and/or barcode. In addition, envelope windows can be found in a variety of sizes, shapes and locations. Even the markings within the postage affixation block vary a great deal. Some of these markings might simply say "Place Stamp Here," while others instruct the user that "The Post Office Will Not Deliver Without Proper Postage." In many different ways, the mail piece characteristics for prebarcoded, Facer Identification Mark (FIM) "A" reply envelopes vary a great deal.

Reply mail pieces are allowed to vary within limits because postal automation can still find and "read" the barcode that corresponds to the delivery address. Therefore, the use of "standardized" CRM designs is not necessary. In addition, many reply envelope providers use the envelope for reasons other than the simple enclosure of a remittance.

For example, many mailers use the envelope itself as an advertising medium. Department stores frequently use their envelopes to advertise products. Sweepstakes entries often include graphics that are designed to encourage the envelope user to apply. Many businesses also include their logos, mottoes, or other advertisements designed to promote the organization as a whole.

Other envelope providers might use the mail piece to provide instructions. As an example, some envelopes contain checklists designed to ensure that the reply envelope user has included the statement and check. In addition, many reply envelopes contain instructions about how to notify the envelope provider of an address change.

Finally, many providers also use specific envelope designs to enhance the efficiency of their remittance processing operations. For example, envelopes can be used to collect information from the employee that actually processes the remittance once it is received by the envelope provider (e.g., "For Official Use Only" blocks). Also, many mailers use window envelopes because it is possible to use one standard

envelope design when sending reply mail to multiple processing locations (e.g., the addresses on inserts, rather than the envelope itself, would be modified). Also, it is my understanding that the use of windows can assist processors because the remittance processing equipment in some locations can quickly sort the statements and checks because it is known where they are located relative to the front of the mail piece (assuming they were inserted correctly).

In order to analyze the extent to which reply envelopes vary, I conducted an analysis of FIM A mail at the Merrifield Processing and Distribution Center (P&DC) on Wednesday March 4, 1998.

This analysis involved the random sampling of FIM A mail pieces from all the Advanced Facer Canceler Systems (AFCS) at the Merrifield plant. A total of 1,280 pieces were sampled. This analysis was not statistically valid by any means, but did show that a wide variety of reply envelopes are currently distributed by businesses to their customers.

This mail was divided into six categories: 1.) preprinted envelopes, 2.) barcoded window envelopes, 3.) window envelopes with barcoded inserts, 4.) envelopes with barcoded labels, 5.) envelopes with no barcodes, and 6.) re-addressed reply envelopes.[1]

Preprinted Envelopes: A little less than 25% of the envelopes sampled contained both preprinted addresses and barcodes directly on the envelope. The addresses for these mail pieces were usually centrally located. These mail pieces exhibited a wider variety of fonts and font sizes in the address area compared to other envelope types. This variation was possible because the barcodes were always located in the barcode clear zone (lower right hand corner of the envelope) which a Bar Code Sorter (BCS) would scan first. Therefore, the specific address characteristics would not have an impact on mail piece readability. In addition, many preprinted envelopes also used the envelope itself to advertise (e.g., sweepstakes entries) and therefore contained graphics on many different sections of the mail piece. The

[1] See results on page 5.

presence of graphics also did not affect mail piece readability because the graphics did not interfere with the barcode.

Barcoded Window Envelopes: The overwhelming majority of FIM A envelopes were window envelopes. In this survey, nearly 74% of the envelopes sampled had some form of envelope window.[2]

However, there were many different types of window envelopes. In this survey, 29% of the window envelopes had a barcode printed directly on the envelope. Like preprinted envelopes, these barcodes were always located in the lower right hand corner, within the limits of the barcode clear zone. The windows were used to expose the destinating address and, in some cases, a second barcode. The location for these windows, however, was not in a standardized area. Some windows were located close to the left edge of the mail piece and some were situated closer to the right edge. In addition, some were located closer to the top while some were placed closer to the bottom of the mail piece. These variations were possible, because the windows did not interfere with the barcode. These envelopes also contained some graphics directly on the envelope, but to a lesser extent than preprinted envelopes.

Window Envelopes With Barcoded Inserts: The largest percentage of mail pieces sampled in this survey, consisted of window envelopes with barcoded inserts (nearly 45%). When barcodes are located in the address block, the Wide Area Bar Code Reader (WABCR) would be relied upon to "read" the barcode. The locations of the windows (i.e., address block) could vary, but the barcode had to be in specific locations relative to the address. In this survey, the barcodes were found either directly above the first address line (14%) or directly below the last address line (31%). These envelopes rarely contained any graphics outside of those located within the return address block (upper left corner of the mail piece).

Barcoded Labels: A small number of envelopes were sampled which had barcoded labels attached to the envelope (less than 1%). These labels contained

[2] In Docket No. MC95-1, Library Reference MCR-119, 62% of the envelopes in the reply mail study were window envelopes.

barcodes which were located either above or below the destinating address (also printed on the label).

No Barcodes: A small percentage of mail (also less than 1%) was found to have the correct FIM A marking, but no corresponding barcode. These envelopes usually had windows and, in all cases, the insert was properly positioned; there simply was no barcode on either the envelope or the insert.

Re-Addressed Reply Envelopes: Of the entire 1,280 piece sample, one envelope was found where a reply envelope had been used for something other than its original purpose (discussed in page 25 of my testimony). This particular envelope was a window envelope where the window was located in the left center section of the mail piece. No address could be seen on the insert. The insert appeared to be something other than the intended statement, bill, or remittance. The user had written an address by hand to the right of the window. The return address block contained an address for a mortgage company which had been crossed out. The user had then written a different return address next to it by hand.

Like the results of the reply mail study conducted in MC95-1 (Library Reference MCR-119), this survey shows that reply mail piece characteristics vary a great deal. For the most part, these variations do not affect mail processing costs because most machines are equipped (with features like the WABCR) to accommodate that variation. As a result, it would be very difficult to find a standard location for a "Courtesy Envelope Mail (CEM) qualified" marking that could accommodate the wide variety of CRM envelopes that exist in today's processing environment.

EXHIBIT USPS-RT-17A: REPLY MAIL PIECE VARIATION
MERRIFIELD P&DC SAMPLE - 3/4/98

Mail Piece Type	Volume	%	Description	Volume	%		
FIM A/Preprinted Envelopes	313	24.45%	Preprinted Address/Barcode	313	24.45%		
FIM A/Window Envelopes	944	73.75%	Window Envelopes/Barcoded Envelope	371	28.98%		
			Window Envelopes/Barcoded Insert	573	44.77%		
			Barcode Above Address			174	13.59%
			Barcode Below Address			399	31.17%
FIM A/Barcoded Labels	10	0.78%	Barcoded Labels	10	0.78%		
FIM A/No Barcode	12	0.94%	No Barcode	12	0.94%		
FIM A/Re-addressed	1	0.08%	Re-addressed Reply Envelope	1	0.08%		
TOTAL	1280	100.00%		1280	100.00%		

EXHIBIT USPS-RT-17B: EDUCATION COSTS

EXHIBIT USPS-RT-17B: EDUCATION COSTS

			(1)
A. TELEVISION, RADIO, AND NEWSPAPER ADVERTISING			$19,298,700
Network Television		$11,934,500	
Prime/Prime News	$9,532,600		
Evening News	$1,383,400		
EMI	$1,018,500		
Network Radio		$3,153,500	
R.O.S.			
Newspapers		$4,210,700	
Top 25 Markets			

B. DIRECT MAILING (2 OUNCE LETTER)

(2)	(3)	(4)	(5)
Number of Delivery Pts	Printing Cost Per Piece	Postage Cost Per Piece	Total Cost
130,000,000	$0.04	$0.044	$10,963,550

C. POINT-OF-PURCHASE BROCHURES

(6)	(7)	(8)	(9)
Number of P.O.'s, Stations and Branches	Printing Cost Per Brochure	Avg Qty Per Retail Unit	Total Cost
38,019	$0.04	2,000	$3,041,520

TOTAL EDUCATION COSTS **$33,303,770**

(1) Cohn and Wolfe Estimate (see page 2)
(2) FY 97 USPS Annual Report
(3) Young Rubicam estimate (see page 2)
(4) USPS-29C, p.3. Standard A Saturation Letter ECR Cost
(5) (2) * [(3) + (4)]

(6) FY 97 USPS Annual Report
(7) Young Rubicam estimate (see page 2)
(8) USPS Estimate
(9) (6) * (7) * (8)

Cohn & Wolfe Estimate: In order to properly educate consumers, assuming CEM were to be implemented, the United States Postal Service would have to conduct a multi-media campaign. In order to determine what the details and costs of such a campaign might be, the Postal Service requested that the public relations firm of Cohn & Wolfe estimate the costs required to educate the public about the CEM stamp using television, radio, and newspaper advertising. The schematic media plan provided by Cohn & Wolfe showed that those cost would be approximately $20 million.

Young Rubican Estimate: The Postal Service also requested two per-piece cost estimates from the public relations firm of Young Rubican. The first cost estimate was for printing a direct mailing that would be sent to every household and business in the United States. The second cost estimate was for printing posters that would be prominently displayed in postal retail lobbies. Both the direct mailing and the posters would be designed to explain CEM implementation to the general public.

Cohn & Wolfe Estimate: *In order to properly educate consumers, assuming* CEM were to be implemented, the United States Postal Service would have to conduct a multi-media campaign. In order to determine what the details and costs of such a campaign might be, the Postal Service requested that the public relations firm of Cohn & Wolfe estimate the costs required to educate the public about the CEM stamp using television, radio, and newspaper advertising. The schematic media plan provided by Cohn & Wolfe showed that those costs would be approximately $19 million.

Young Rubican Estimate: The Postal Service also requested two per-piece cost estimates from the public relations firm of Young Rubican. The first cost estimate was for printing a direct mailing that would be sent to every household and business in the United States. The second cost estimate was for printing posters that would be prominently displayed in postal retail lobbies. Both the direct mailing and the posters would be designed to explain CEM implementation to the general public.

EXHIBIT USPS-RT-17C: WINDOW SERVICE COSTS

EXHIBIT USPS-RT-17C: WINDOW SERVICE COSTS

(1)	(2)	(3)	(4)
Number of Households	% Households Requiring Additional Trips to Purchase Stamps	Average Additional Trips Per Year	Total Number of Additional Transactions
99,600,000	42.60%	1	42,429,600

INCURRED COST OF ONE STAMP PURCHASE TRANSATION.

(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Mean Time for Single Component Transaction (seconds)	Seconds to Hour Conversion	Window Clerk Wage Rate ($/hour)	Misc Volume Variable Costs	Variability Factor	Waiting Time Adjustment	Piggyback Factor	Incurred Cost of Transaction ($)
54.40	0.000278	$ 25.55	1.075	46.12%	1.434	1.41856	$ 0.3893

ANNUAL COST FROM STAMP PURCHASE TRANSACTIONS.

(13)
Annual Cost
$16,516,253

(1) The Household Diary Study, Fiscal Year 1996, page II-3
(2) Docket No. MC95-1, Library Reference MCR-88, page 18
(3) USPS Estimate (1 trip per year used as conservative estimate)
(4) (1) * (2) * (3)
(5) LR-H-167, page 160
(6) 1/60 min/sec * 1/60 hr/min
(7) LR-H-146, page VIII-2
(8) The overhead and uniform allowance of Component 3.2 is considered volume variable with respect to window clerk activity costs. The miscellaneous volume variable cost factor is calculated by dividing overhead ($124.0 million) and uniform costs ($7.8 million) by total window clerk activity costs ($1,762.0 million). The result is calculated as follows: ($124.0 + $7.8) / $1,762.0 = 0.075. See Docket No. R97-1, Alexandrovich WP B3, W/S 3.2.1.
(9) Docket No. R97-1 USPS-T-21, page 23
(10) The waiting time factor is calculated by dividing total window clerk waiting time ($276.5 million) by total attributable window service costs ($637.8 million). The result is calculated as follows: ($276.5) / ($637.8) = 0.434. See Docket No. R97-1, Alexandrovich WP B3, W/S 3.2.1.
(11) LR-H-77, page 62, line 6
(12) (5) * (6) * (7) * (8) * (9) * (10) * (11)
(13) (4) * (12)

EXHIBIT USPS-RT-17C: WINDOW SERVICE COSTS
INCURRED COST OF ONE INQUIRY TRANSACTION.

(1) Mean Time for Inquiry Transaction (seconds)	(2) Seconds to Hour Conversion	(3) Window Clerk Wage Rate ($/hour)	(4) Misc Volume Variable Costs	(5) Variability Factor	(6) Waiting Time Adjustment	(7) Piggyback Factor	(8) Incurred Cost of Transaction ($)
61.93	0.000278	$ 25.55	1.075	100.00%	1.000	1.41856	$ 0.6703

(1) LR-H-167, page 160
(2) 1/60 min/sec * 1/60 hr/min
(3) LR-H-146, page VIII-2
(4) The overhead and uniform allowance of Component 3.2 is considered volume variable with respect to window clerk activity costs. The miscellaneous volume variable cost factor is calculated by dividing overhead ($124.0 million) and uniform costs ($7.8 million) by total window clerk activity costs ($1,762.0 million). The result is calculated as follows: ($124.0 + $7.8) / $1,762.0 = 0.075. See Docket No. R97-1, Alexandrovich WP B3, W/S 3.2.1.
(5) An inquiry is considered to be 100 percent variable.
(6) An inquiry is not considered to incur any total window clerk waiting time costs.
(7) LR-H-77, page 62, line 6
(8) (1) * (2) * (3) * (4) * (5) * (6) * (7)

EXHIBIT USPS-RT-17C: WINDOW SERVICE COSTS
INCURRED COST OF AN INQUIRY IN A MULTICOMPONENT TRANSACTION.

(1) Incremental Time for Inquiry Transaction (seconds)	(2) Seconds to Hour Conversion	(3) Window Clerk Wage Rate ($/hour)	(4) Misc Volume Variable Costs	(5) Variability Factor	(6) Waiting Time Adjustment	(7) Piggyback Factor	(8) Incurred Cost of Transaction ($)
32.69	0.000278	$ 25.55	1.075	100.00%	1.000	1.41856	**$ 0.3538**

(1) LR-H-167, page 237
(2) 1/60 min/sec * 1/60 hr/min
(3) LR-H-146, page VIII-2
(4) The overhead and uniform allowance of Component 3.2 is considered volume variable with respect to window clerk activity costs. The miscellaneous volume variable cost factor is calculated by dividing overhead ($124.0 million) and uniform costs ($7.8 million) by total window clerk activity costs ($1,762.0 million). The result is calculated as follows: ($124.0 + $7.8) / $1,762.0 = 0.075. See Docket No. R97-1, Alexandrovich WP B3, W/S 3.2.1.
(5) An inquiry is considered to be 100 percent variable.
(6) An inquiry is not considered to incur any total window clerk waiting time costs.
(7) LR-H-77, page 62, line 6
(8) (1) * (2) * (3) * (4) * (5) * (6) * (7)

EXHIBIT USPS-RT-17D: REVENUE PROTECTION COSTS

EXHIBIT USPS-RT-17D: REVENUE PROTECTION COSTS
SHORT PAID MAIL COST SUMMARY

(1)	(2)	(3)	(4)	(5)	(6)
% Short Paid	Revenue Clerk Costs	Postage Due Costs	Total Annual Costs	Total Possible Short Paid Volume	Maximum Revenue Loss
1.00%	$37,614,012	$28,079,270	**$65,693,282**	228,813,655	**$6,864,410**
2.00%	$37,614,012	$57,950,834	**$95,564,846**	472,232,437	**$14,166,973**
3.00%	$37,614,012	$87,822,398	**$125,436,411**	715,651,219	**$21,469,537**
4.00%	$37,614,012	$117,693,962	**$155,307,975**	959,070,001	**$28,772,100**
5.00%	$37,614,012	$147,565,526	**$185,179,539**	1,202,488,783	**$36,074,663**
7.35%	$37,614,012	$217,763,702	**$255,377,714**	1,774,522,921	**$53,235,688**

(1) Estimated Percent Shortpaid. 7.35% = FY96 RPW % short paid for FCM weighing over 1 ounce.
(2) From Individual Cost Sheets
(3) From Individual Cost Sheets
(4) (2) + (3)
(5) From Individual Cost Sheets
(6) (5) * $0.03

EXHIBIT USPS-RT-17D: REVENUE PROTECTION COSTS

(1) 1.00% SHORT PAID

A. REVENUE PROTECTION CLERKS

(2) No. Of Plants	(3) Average Clerks/Plant	(4) Wage Rate	(5) Piggyback Factor	(6) Annual Cost
259	2	$25.45	1.372	$37,614,012

B. POSTAGE DUE COLLECTION

(7) FCSP Handwritten/Machine Printed Volume =	24,341,878,200
(8) Current % Short Paid (FCM < 1 Ounce) =	0.06%
(9) Total Additional Short Paid Single Piece Mail Volume =	228,813,655
(10) Sampling Productivity =	2,241
(11) Amount Sampled=	2,414,543,040
(12) Additional Short Paid Mail Pieces Identified=	22,696,705

Operation Description		Pieces Per Hour	(17) Wage Rate	(18) Cents Per Piece	(19) Piggyback Factor	(20) Cents Per Piece	
Outgoing Postage Due Unit	(13)	244	$25.45	10.4345	1.372	14.3161	
Outgoing Primary (Operation 030)	(14)	662	$25.45	3.8444	1.372	5.2745	
Destinating Postage Due Unit	(15)	69	$25.45	36.6480	1.372	50.2811	
Carrier Costs	(16)	64	$26.08	40.9456	1.315	53.8435	
						$1.2372	(21)
					Annual Cost	$28,079,270	(22)

(1) Estimated Short Paid Percentage
(2) AFCS Plants
(3) 1 Clerk to sample handwritten mail (AFCS Stackers 3,4)
1 Clerk to sample machine printed mail (AFCS Stackers 5,6)
(4) LR-H-146
(5) LR-H-77
(6) (2) * (3) * (8 hrs/day) * (5 days/wk) * (52 wks/yr) * (4) * (5)
(7) Handwritten/Machine Printed Volume [Item (7)] from page 9
(8) FY 96 RPW
(9) (7) * [(1) - (8)]
(10) MODS FY 97 Op. 029 (Riffle) Productivity
(11) (2) * (3) * (8 hrs/day) * (5 days/wk) * (52 wks/yr) * (10)
(12) (11) * [(1) - (8)]

(13) Docket No. MC95-1, Library Reference MCR-76, page 5-30.
1/0.0041 hrs/pc = 244 pcs/hr (rating a letter postage due)
(14) LR-H-113 (manual outgoing primary sortation)
(15) Docket No. MC95-1, Library Reference MCR-76, page 5-30.
1/(0.0086+0.0078 pcs/hr) = 69 pcs/hr (prep, accept, and clear)
(16) Docket No. MC95-1, Library Reference MCR-76, page 5-39.
1/(0.0079+0.0078 pcs/hr) = 64 pcs/hr (deliver, collect, and clear)
(17) LR-H-146
(18) (17) * 100 / (13-16)
(19) LR-H-77
(20) (18) * (19)
(21) SUM [(20)]
(22) (21) * (12)

EXHIBIT USPS-RT-17D: REVENUE PROTECTION COSTS

(1) 1.00% SHORT PAID

A. REVENUE PROTECTION CLERKS

(2) No. Of Plants	(3) Average Clerks/Plant	(4) Wage Rate	(5) Piggyback Factor	(6) Annual Cost
259	2	$25.45	1.372	$37,614,012

B. POSTAGE DUE COLLECTION

(7) FCSP Handwritten/Machine Printed Volume =	24,341,878,200
(8) Current % Short Paid (FCM < 1 Ounce) =	0.06%
(9) Total Additional Short Paid Single Piece Mail Volume =	228,813,655
(10) Sampling Productivity =	2,241
(11) Amount Sampled=	2,414,543,040
(12) Additional Short Paid Mail Pieces Identified=	22,696,705

Operation Description		Pieces Per Hour	(17) Wage Rate	(18) Cents Per Piece	(19) Piggyback Factor	(20) Cents Per Piece	
Outgoing Postage Due Unit	(13)	244	$25.45	10.4345	1.372	14.3161	
Outgoing Primary (Operation 030)	(14)	662	$25.45	3.8444	1.372	5.2745	
Destinating Postage Due Unit	(15)	69	$25.45	36.6480	1.372	50.2811	
Carrier Costs	(16)	64	$26.08	40.9456	1.315	53.8435	
						$1.2372	(21)
					Annual Cost	$28,079,270	(22)

(1) Estimated Short Paid Percentage
(2) AFCS Plants
(3) 1 Clerk to sample handwritten mail (AFCS Stackers 3,4)
1 Clerk to sample machine printed mail (AFCS Stackers 5,6)
(4) LR-H-146
(5) LR-H-77
(6) (2) * (3) * (8 hrs/day) * (5 days/wk) * (52 wks/yr) * (4) * (5)
(7) Handwritten/Machine Printed Volume [item (7)] from page 9
(8) FY 96 RPW
(9) (7) * [(1) - (8)]
(10) MODS FY 97 Op. 029 (Riffle) Productivity
(11) (2) * (3) * (8 hrs/day) * (5 days/wk) * (52 wks/yr) * (10)
(12) (11) * [(1) - (8)]

(13) Docket No. MC95-1, Library Reference MCR-76, page 5-30.
1/0.0041 hrs/pc = 244 pcs/hr (rating a letter postage due)
(14) LR-H-113 (manual outgoing primary sortation)
(15) Docket No. MC95-1, Library Reference MCR-76, page 5-37.
1/(0.0066+0.0078 hrs/pc) = 69 pcs/hr (prep, accept, and clear)
(16) Docket No. MC95-1, Library Reference MCR-76, page 5-39.
1/(0.0079+0.0078 hrs/pc) = 64 pcs/hr (deliver, collect, and clear)
(17) LR-H-146
(18) (17) * 100 / (13-16)
(19) LR-H-77
(20) (18) * (19)
(21) SUM [(20)]
(22) (21) * (12)

Revised-3/16/98

EXHIBIT USPS-RT-17D: REVENUE PROTECTION COSTS

(1) 2.00% SHORT PAID

A. REVENUE PROTECTION CLERKS

(2) No. Of Plants	(3) Average Clerks/Plant	(4) Wage Rate	(5) Piggyback Factor	(6) Annual Cost
259	2	$25.45	1.372	$37,614,012

B. POSTAGE DUE COLLECTION

(7) FCSP Handwritten/Machine Printed Volume = 24,341,878,200
(8) Current % Short Paid (FCM < 1 Ounce) = 0.06%
(9) Total Additional Short Paid Single Piece Mail Volume = 472,232,437
(10) Sampling Productivity = 2,241
(11) Amount Sampled= 2,414,543,040
(12) Additional Short Paid Mail Pieces Identified= 46,842,135

Operation Description		Pieces Per Hour	(17) Wage Rate	(18) Cents Per Piece	(19) Piggyback Factor	(20) Cents Per Piece	
Outgoing Postage Due Unit	(13)	244	$25.45	10.4345	1.372	14.3161	
Outgoing Primary (Operation 030)	(14)	662	$25.45	3.8444	1.372	5.2745	
Destinating Postage Due Unit	(15)	69	$25.45	36.6480	1.372	50.2811	
Carrier Costs	(16)	64	$26.08	40.9456	1.315	53.8435	
						$1.2372	(21)
					Annual Cost	$57,950,834	(22)

(1) Estimated Short Paid Percentage
(2) AFCS Plants
(3) 1 Clerk to sample handwritten mail (AFCS Stackers 3,4)
1 Clerk to sample machine printed mail (AFCS Stackers 5,6)
(4) LR-H-146
(5) LR-H-77
(6) (2) * (3) * (8 hrs/day) * (5 days/wk) * (52 wks/yr) * (4) * (5)
(7) Handwritten/Machine Printed Volume [item (7)] from page 9
(8) FY 96 RPW
(9) (7) * [(1) - (8)]
(10) MODS FY 97 Op. 029 (Riffle) Productivity
(11) (2) * (3) * (8 hrs/day) * (5 days/wk) * (52 wks/yr) * (10)
(12) (11) * [(1) - (8)]

(13) Docket No. MC95-1, Library Reference MCR-76, page 5-30.
1/0.0041 hrs/pc = 244 pcs/hr (rating a letter postage due)
(14) LR-H-113 (manual outgoing primary sortation)
(15) Docket No. MC95-1, Library Reference MCR-76, page 5-37.
1/(0.0066+0.0078 hrs/pc) = 69 pcs/hr (prep, accept, and clear)
(16) Docket No. MC95-1, Library Reference MCR-76, page 5-39.
1/(0.0079+0.0078 hrs/pc) = 64 pcs/hr (deliver, collect, and clear)
(17) LR-H-146
(18) (17) * 100 / (13-16)
(19) LR-H-77
(20) (18) * (19)
(21) SUM [(20)]
(22) (21) * (12)

Revised-3/16/98

EXHIBIT USPS-RT-17D: REVENUE PROTECTION COSTS

(1) 3.00% SHORT PAID

A. REVENUE PROTECTION CLERKS

(2) No. Of Plants	(3) Average Clerks/Plant	(4) Wage Rate	(5) Piggyback Factor	(6) Annual Cost
259	2	$25.45	1.372	$37,614,012

B. POSTAGE DUE COLLECTION

(7) FCSP Handwritten/Machine Printed Volume =	24,341,878,200
(8) Current % Short Paid (FCM < 1 Ounce) =	0.06%
(9) Total Additional Short Paid Single Piece Mail Volume =	715,651,219
(10) Sampling Productivity =	2,241
(11) Amount Sampled=	2,414,643,040
(12) Additional Short Paid Mail Pieces Identified=	70,987,565

Operation Description		Pieces Per Hour	(17) Wage Rate	(18) Cents Per Piece	(19) Piggyback Factor	(20) Cents Per Piece	
Outgoing Postage Due Unit	(13)	244	$25.45	10.4345	1.372	14.3161	
Outgoing Primary (Operation 030)	(14)	662	$25.45	3.8444	1.372	5.2745	
Destinating Postage Due Unit	(15)	69	$25.45	36.6480	1.372	50.2811	
Carrier Costs	(16)	64	$26.08	40.9456	1.315	53.8435	
						$1.2372	(21)
					Annual Cost	$87,822,398	(22)

(1) Estimated Short Paid Percentage
(2) AFCS Plants
(3) 1 Clerk to sample handwritten mail (AFCS Stackers 3,4)
1 Clerk to sample machine printed mail (AFCS Stackers 5,6)
(4) LR-H-146
(5) LR-H-77
(6) (2) * (3) * (8 hrs/day) * (5 days/wk) * (52 wks/yr) * (4) * (5)
(7) Handwritten/Machine Printed Volume [item (7)] from page 9
(8) FY 96 RPW
(9) (7) * [(1) - (8)]
(10) MODS FY 97 Op. 029 (Riffle) Productivity
(11) (2) * (3) * (8 hrs/day) * (5 days/wk) * (52 wks/yr) * (10)
(12) (11) * [(1) - (8)]

(13) Docket No. MC95-1, Library Reference MCR-76, page 5-30.
1/0.0041 hrs/pc = 244 pcs/hr (rating a letter postage due)
(14) LR-H-113 (manual outgoing primary sortation)
(15) Docket No. MC95-1, Library Reference MCR-76, page 5-37.
1/(0.0066+0.0078 hrs/pc) = 69 pcs/hr (prep, accept, and clear)
(16) Docket No. MC95-1, Library Reference MCR-76, page 5-39.
1/(0.0079+0.0078 hrs/pc) = 64 pcs/hr (deliver, collect, and clear)
(17) LR-H-146
(18) (17) * 100 / (13-16)
(19) LR-H-77
(20) (18) * (19)
(21) SUM [(20)]
(22) (21) * (12)

EXHIBIT USPS-RT-17D: REVENUE PROTECTION COSTS

(1) 4.00% SHORT PAID

A. REVENUE PROTECTION CLERKS

(2) No. Of Plants	(3) Average Clerks/Plant	(4) Wage Rate	(5) Piggyback Factor	(6) Annual Cost
259	2	$25.45	1.372	$37,614,012

B. POSTAGE DUE COLLECTION

(7) FCSP Handwritten/Machine Printed Volume =	24,341,878,200
(8) Current % Short Paid (FCM < 1 Ounce) =	0.06%
(9) Total Additional Short Paid Single Piece Mail Volume =	959,070,001
(10) Sampling Productivity =	2,241
(11) Amount Sampled=	2,414,543,040
(12) Additional Short Paid Mail Pieces Identified=	*95,132,998*

Operation Description		Pieces Per Hour	(17) Wage Rate	(18) Cents Per Piece	(19) Piggyback Factor	(20) Cents Per Piece	
Outgoing Postage Due Unit	(13)	244	$25.45	10.4345	1.372	14.3161	
Outgoing Primary (Operation 030)	(14)	662	$25.45	3.8444	1.372	5.2745	
Destinating Postage Due Unit	(15)	69	$25.45	36.6480	1.372	50.2811	
Carrier Costs	(16)	64	$26.08	40.9456	1.315	53.8435	
						$1.2372	(21)
					Annual Cost	$117,693,962	(22)

(1) Estimated Short Paid Percentage
(2) AFCS Plants
(3) 1 Clerk to sample handwritten mail (AFCS Stackers 3,4)
1 Clerk to sample machine printed mail (AFCS Stackers 5,6)
(4) LR-H-146
(5) LR-H-77
(6) (2) * (3) * (8 hrs/day) * (5 days/wk) * (52 wks/yr) * (4) * (5)
(7) Handwritten/Machine Printed Volume [item (7)] from page 9
(8) FY 96 RPW
(9) (7) * [(1) - (8)]
(10) MODS FY 97 Op. 029 (Riffle) Productivity
(11) (2) * (3) * (8 hrs/day) * (5 days/wk) * (52 wks/yr) * (10)
(12) (11) * [(1) - (8)]

(13) Docket No. MC95-1, Library Reference MCR-76, page 5-30.
1/0.0041 hrs/pc = 244 pcs/hr (rating a letter postage due)
(14) LR-H-113 (manual outgoing primary sortation)
(15) Docket No. MC95-1, Library Reference MCR-76, page 5-37.
1/(0.0066+0.0078 hrs/pc) = 69 pcs/hr (prep, accept, and clear)
(16) Docket No. MC95-1, Library Reference MCR-76, page 5-39.
1/(0.0079+0.0078 hrs/pc) = 64 pcs/hr (deliver, collect, and clear)
(17) LR-H-146
(18) (17) * 100 / (13-16)
(19) LR-H-77
(20) (18) * (19)
(21) SUM [(20)]
(22) (21) * (12)

EXHIBIT USPS-RT-17D: REVENUE PROTECTION COSTS

(1) 5.00% SHORT PAID

A. REVENUE PROTECTION CLERKS

(2) No. Of Plants	(3) Average Clerks/Plant	(4) Wage Rate	(5) Piggyback Factor	(6) Annual Cost
259	2	$25.45	1.372	$37,614,012

B. POSTAGE DUE COLLECTION

(7) FCSP Handwritten/Machine Printed Volume =	24,341,878,200
(8) Current % Short Paid (FCM < 1 Ounce) =	0.06%
(9) Total Additional Short Paid Single Piece Mail Volume =	1,202,488,783
(10) Sampling Productivity =	2,241
(11) Amount Sampled=	2,414,543,040
(12) Additional Short Paid Mail Pieces Identified=	119,278,426

Operation Description		Pieces Per Hour	(17) Wage Rate	(18) Cents Per Piece	(19) Piggyback Factor	(20) Cents Per Piece	
Outgoing Postage Due Unit	(13)	244	$25.45	10.4345	1.372	14.3161	
Outgoing Primary (Operation 030)	(14)	662	$25.45	3.8444	1.372	5.2745	
Destinating Postage Due Unit	(15)	69	$25.45	36.6480	1.372	50.2811	
Carrier Costs	(16)	64	$26.08	40.9456	1.315	53.8435	
						$1.2372	(21)
					Annual Cost	$147,565,526	(22)

(1) Estimated Short Paid Percentage
(2) AFCS Plants
(3) 1 Clerk to sample handwritten mail (AFCS Stackers 3,4)
1 Clerk to sample machine printed mail (AFCS Stackers 5,6)
(4) LR-H-146
(5) LR-H-77
(6) (2) * (3) * (8 hrs/day) * (5 days/wk) * (52 wks/yr) * (4) * (5)
(7) Handwritten/Machine Printed Volume [item (7)] from page 9
(8) FY 96 RPW
(9) (7) * [(1) - (8)]
(10) MODS FY 97 Op. 029 (Riffle) Productivity
(11) (2) * (3) * (8 hrs/day) * (5 days/wk) * (52 wks/yr) * (10)
(12) (11) * [(1) - (8)]

(13) Docket No. MC95-1, Library Reference MCR-76, page 5-30.
1/0.0041 hrs/pc = 244 pcs/hr (rating a letter postage due)
(14) LR-H-113 (manual outgoing primary sortation)
(15) Docket No. MC95-1, Library Reference MCR-76, page 5-37.
1/(0.0066+0.0078 hrs/pc) = 69 pcs/hr (prep, accept, and clear)
(16) Docket No. MC95-1, Library Reference MCR-76, page 5-39.
1/(0.0079+0.0078 hrs/pc) = 64 pcs/hr (deliver, collect, and clear)
(17) LR-H-146
(18) (17) * 100 / (13-16)
(19) LR-H-77
(20) (18) * (19)
(21) SUM [(20)]
(22) (21) * (12)

EXHIBIT USPS-RT-17D: REVENUE PROTECTION COSTS

(1) 7.35% SHORT PAID

A. REVENUE PROTECTION CLERKS

(2) No. Of Plants	(3) Average Clerks/Plant	(4) Wage Rate	(5) Piggyback Factor	(6) Annual Cost
259	2	$25.45	1.372	$37,614,012

B. POSTAGE DUE COLLECTION

(7) FCSP Handwritten/Machine Printed Volume =	24,341,878,200
(8) Current % Short Paid (FCM < 1 Ounce) =	0.06%
(9) Total Additional Short Paid Single Piece Mail Volume =	1,774,522,921
(10) Sampling Productivity =	2,241
(11) Amount Sampled=	2,414,543,040
(12) Additional Short Paid Mail Pieces Identified=	176,020,188

Operation Description		Pieces Per Hour	(17) Wage Rate	(18) Cents Per Piece	(19) Piggyback Factor	(20) Cents Per Piece	
Outgoing Postage Due Unit	(13)	244	$25.45	10.4345	1.372	14.3161	
Outgoing Primary (Operation 030)	(14)	662	$25.45	3.8444	1.372	5.2745	
Destinating Postage Due Unit	(15)	69	$25.45	36.6480	1.372	50.2811	
Carrier Costs	(16)	64	$26.08	40.9456	1.315	53.8435	
						$1.2372	(21)
					Annual Cost	$217,763,702	(22)

(1) Estimated Short Paid Percentage
(2) AFCS Plants
(3) 1 Clerk to sample handwritten mail (AFCS Stackers 3,4)
1 Clerk to sample machine printed mail (AFCS Stackers 5,6)
(4) LR-H-146
(5) LR-H-77
(6) (2) * (3) * (8 hrs/day) * (5 days/wk) * (52 wks/yr) * (4) * (5)
(7) *Handwritten/Machine Printed Volume [item (7)] from page 9*
(8) FY 96 RPW
(9) (7) * [(1) - (8)]
(10) MODS FY 97 Op. 029 (Riffle) Productivity
(11) (2) * (3) * (8 hrs/day) * (5 days/wk) * (52 wks/yr) * (10)
(12) (11) * [(1) - (8)]

(13) Docket No. MC95-1, Library Reference MCR-76, page 5-30.
1/0.0041 hrs/pc = 244 pcs/hr (rating a letter postage due)
(14) LR-H-113 (manual outgoing primary sortation)
(15) Docket No. MC95-1, Library Reference MCR-76, page 5-37.
1/(0.0066+0.0078 hrs/pc) = 69 pcs/hr (prep, accept, and clear)
(16) Docket No. MC95-1, Library Reference MCR-76, page 5-39.
1/(0.0079+0.0078 hrs/pc) = 64 pcs/hr (deliver, collect, and clear)
(17) LR-H-146
(18) (17) * 100 / (13-16)
(19) LR-H-77
(20) (18) * (19)
(21) SUM [(20)]
(22) (21) * (12)

EXHIBIT USPS-RT-17D: REVENUE PROTECTION COSTS

(1) 7.35% SHORT PAID

A. REVENUE PROTECTION CLERKS

(2) No. Of Plants	(3) Average Clerks/Plant	(4) Wage Rate	(5) Piggyback Factor	(6) Annual Cost
259	2	$25.45	1.372	$37,614,012

B. POSTAGE DUE COLLECTION

(7) FCSP Handwritten/Machine Printed Volume =	24,341,878,200
(8) Current % Short Paid (FCM < 1 Ounce) =	0.06%
(9) Total Additional Short Paid Single Piece Mail Volume =	1,774,522,921
(10) Sampling Productivity =	2,241
(11) Amount Sampled=	2,414,543,040
(12) Additional Short Paid Mail Pieces Identified=	176,020,188

Operation Description		Pieces Per Hour	(17) Wage Rate	(18) Cents Per Piece	(19) Piggyback Factor	(20) Cents Per Piece	
Outgoing Postage Due Unit	(13)	244	$25.45	10.4345	1.372	14.3161	
Outgoing Primary (Operation 030)	(14)	662	$25.45	3.8444	1.372	5.2745	
Destinating Postage Due Unit	(15)	69	$25.45	36.6480	1.372	50.2811	
Carrier Costs	(16)	64	$26.08	40.9456	1.315	53.8435	
						$1.2372	(21)
					Annual Cost	$217,763,702	(22)

(1) Estimated Short Paid Percentage
(2) AFCS Plants
(3) 1 Clerk to sample handwritten mail (AFCS Stackers 3,4)
1 Clerk to sample machine printed mail (AFCS Stackers 5,6)
(4) LR-H-146
(5) LR-H-77
(6) (2) * (3) * (8 hrs/day) * (5 days/wk) * (52 wks/yr) * (4) * (5)
(7) Handwritten/Machine Printed Volume [item (7)] from page 9
(8) FY 96 RPW
(9) (7) * [(1) - (8)]
(10) MODS FY 97 Op. 029 (Riffle) Productivity
(11) [2) * (3) * (8 hrs/day) * (5 days/wk) * (52 wks/yr) * (10)
(12) (11) * [(1) - (8)]

(13) Docket No. MC95-1, Library Reference MCR-76, page 5-30.
1/0.0041 hrs/pc = 244 pcs/hr (rating a letter postage due)
(14) LR-H-113 (manual outgoing primary sortation)
(15) Docket No. MC95-1, Library Reference MCR-76, page 5-30.
1/(0.0066+0.0078 pcs/hr) = 69 pcs/hr (prep, accept, and clear)
(16) Docket No. MC95-1, Library Reference MCR-76, page 5-39.
1/(0.0079+0.0078 pcs/hr) = 64 pcs/hr (deliver, collect, and clear)
(17) LR-H-146
(18) (17) * 100 / (13-16)
(19) LR-H-77
(20) (18) * (19)
(21) SUM [(20)]
(22) (21) * (12)

EXHIBIT USPS-RT-17D: FY 96 FIRST-CLASS SINGLE PIECE VOLUMES

Mail Type	% Total	FY 96 ODIS SUBTOTAL	CATEGORY	FY 96 ODIS VOLUME		COMMENTS
BRM	1.82%	1,078,386,301	Permit, with FIM Mark	1,031,806,580		
			Permit, with no Fim Mark	46,579,721		
Metered	40.52%	23,970,152,791	Metered with no FIM Mark	23,970,152,791		
Barcoded	13.00%	7,692,464,340	Govt, with FIM Mark	190,670,602		
			Metered, with FIM Mark	516,897,414		
			Permit, with FIM Mark	99,748,265		BRM Subtracted Out
			Stamped, with FIM Mark	6,885,148,059		
Machine Printed	26.16%	15,474,594,761	Govt, with no FIM Mark	432,431,294	(1)	
			Permit, with no FIM Mark	3,506,409,872	(2)	BRM Subtracted Out
			Stamped, with no FIM Mark	11,535,753,595	(1)	
Handwritten	18.49%	10,936,444,813	Govt, with no FIM Mark	395,152,734	(1)	
			Stamped, with no FIM Mark	10,541,292,079	(1)	
TOTAL FC Single Piece	**100.00%**	**59,152,043,006**		**59,152,043,006**		

(1) Volumes split between machine printed/handwritten using FY 97 AFCS densities (34.8% / 31.8%)
(2) Assumed all to be machine printed

EXHIBIT USPS-RT-17D: TY 1998 FIRST-CLASS SINGLE PIECE VOLUME ESTIMATES

TEST YEAR VOLUME = 54,517,802,000 (1)

Mail Type	(2) % Total	(3) (No BRM) % Total	(4) TEST YR SUBTOTAL	
BRM	1.82%	---	993,900,597	
Metered	40.52%	41.28%	22,092,221,627	
Barcoded	13.00%	13.25%	7,089,801,577	
Machine Printed	26.16%	26.65%	14,262,244,385	
Handwritten	18.49%	18.83%	10,079,633,815	
TOTAL FC Single Piece	100.00%	---	54,517,802,000	(5)
TOTAL FC Single Piece (Excluding BRM)	---	100.00%	53,523,901,403	(6)
Total Handwritten and Machine Printed Mail Volume			24,341,878,200	(7)

(1) USPS-T-32, Workpapers I, page 6.
(2) (4) / (5)
(3) (4) / (5)
(4) [FY 96 Mail Type % (From Page 8)] x (1)
(5) Sum [(4)]
(6) Sum [(4), excluding BRM volume]
(7) Machine Printed Volume + Handwritten Volume

EXHIBIT USPS-RT-17E: AFCS OPERATIONS

This exhibit provides a detailed description of AFCS operations. Based on those operations, it is then discussed why the AFCS itself cannot be used to trap short paid mail.

A. AFCS OPERATIONS

Collection mail first moves through a series of separators, channels, and levelers. Mail that does not meet machinability standards would be culled into awaiting storage containers. Remaining pieces would be resting on their "long edges" and "faced" into one of four directions.

This mail then travels through the inverter module and ultimately ends up being faced in one of two directions, referred to as "trail" (facing forward with the stamp on the bottom) and "lead" (facing away with the stamp on the bottom). After a letter enters the inverter, it is first scanned by a trailing indicia detector followed by a leading indicia detector. These "indicia" detectors can identify the presence of meter marks, stamps, or FIM marks. If no indicia is found, the mail piece is turned upside down.

The mail then enters the enricher module where it passes by a second set of detectors and photocells. These detectors recognize the presence of indicia as well as specific FIM types. For mail pieces that were inverted, the detectors again check for indicia and, if none are found, the mail pieces are rejected. The photocells can distinguish between meter marks and stamps. FIM, meter, and stamp signals are generated by these devices and used later in cancellation and sort decisions.

While also in the enricher module, letters pass by a series of detectors and image scanners which determine whether a mail piece is script (handwritten) or imprint (machine printed). This information is also recorded and used in sort decisions later. Depending on how the AFCS is programmed, script and/or imprint mail will then be labeled with a Remote Bar Code System (RBCS) ID tag and have its image lifted. These images are routed directly to the Remote Computer Read (RCR) system before being transmitted through telephone (T1) lines, if necessary, to the Remote Encoding Center (REC).

After passing through the enricher module, letters are canceled. At this point, the system has recorded which letters actually require a cancellation mark. There are

two separate dies, one for the leading edge mail pieces and one for the trailing edge mail pieces. If no indicia were detected earlier, the mail piece would not be canceled.

The final step is sortation. Mail is sorted into one of seven bins: trailing FIM A and C (bin 1), leading FIM A and C (bin 2), trailing script (bin 3), leading script (bin 4), trailing imprint (bin 5), leading imprint (bin 6), and reject (bin 7).

B. NO TECHNICAL SOLUTIONS

The Postal Service attempted to determine whether the AFCS could be used to isolate the presence of a CEM stamp on a non-qualified mail piece. It became apparent that no technical solution was possible.

AFCS photocells can identify indicia because they can detect the presence of phosphor (stamps) and fluorescent ink (meter marks). Phosphor readings vary depending on the image design and stamp printing methods. Suppliers must produce stamps within an acceptable phosphor reading. If the phosphor reading is too low, or is masked by darker images, the equipment will reject the mail piece. If the phosphor reading is too high, the equipment will be "blinded" and will not be able to properly detect the presence of indicia on any mail piece until it readjusts itself.

Therefore, CEM stamp phosphor levels could not be adjusted so that the AFCS would be able to differentiate between a 33-cent and 30-cent stamp. The AFCS only detects the presence of phosphor within a specified level; it can not determine the actual phosphor reading. This same problem exists with meter photocells. With millions of meters in operation throughout the United States, the AFCS was designed to detect the presence of fluorescent ink, not an actual fluorescence reading. Therefore, the intensity of these indicia can not be adjusted so that the AFCS could recognize short paid mail. Any attempts to protect revenue in subsequent operations would meet limited success as the AFCS would have already sorted collection mail into separate mail streams that would require processing on a wide variety of equipment.

In today's operating environment, the only way short paid mail could be identified through automation would be to have a machine that could weigh each letter and determine whether adequate postage had been applied. A machine could not simply look for a specific indicia or stamp as mailers have many payment options (e.g.,

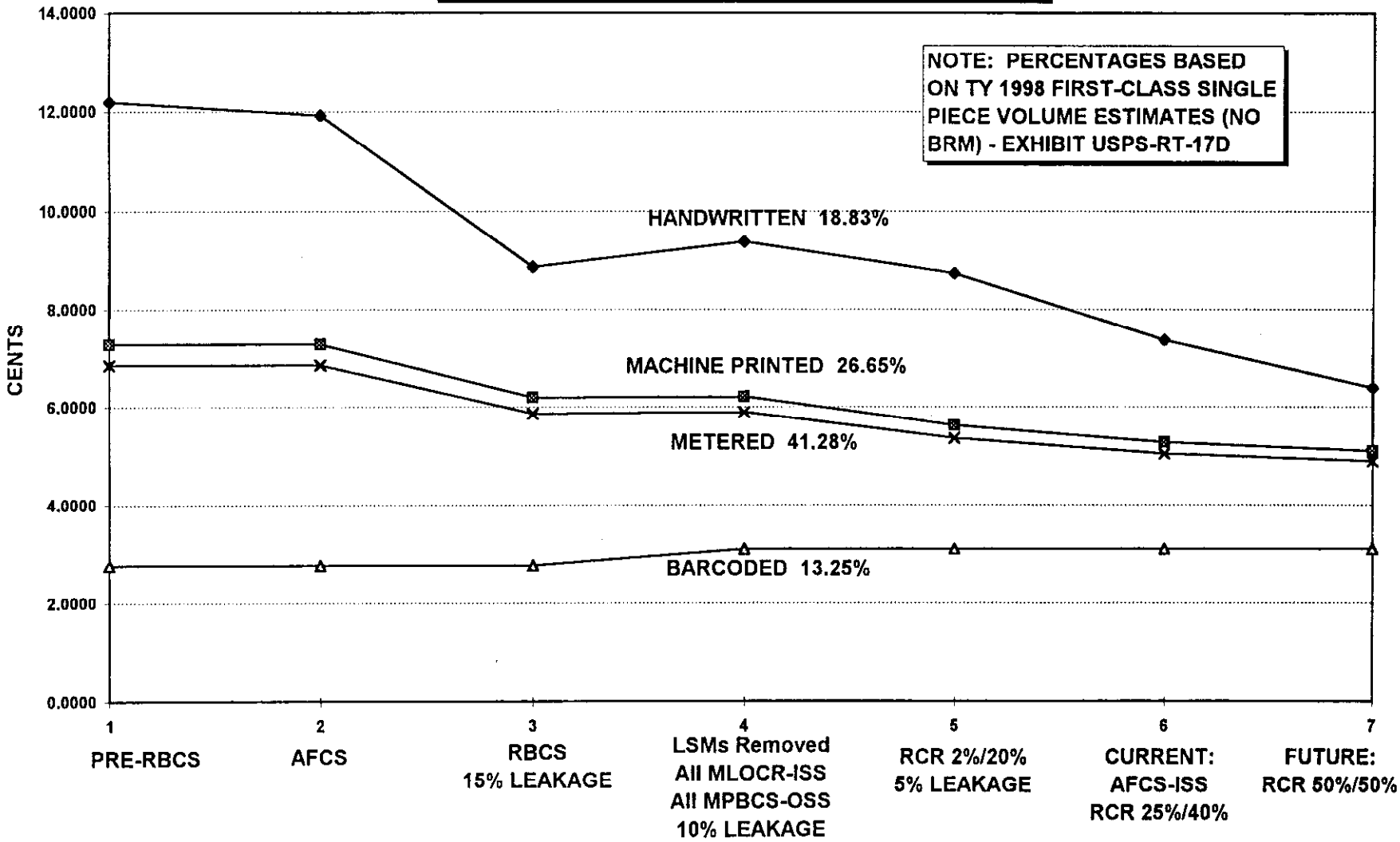
using multiple stamps). Some organizations and countries have experimented with developing revenue protection technology, but it currently is not available.[1] Even if the AFCS could be modified, such an endeavor would be costly.[2] In today's operating environment where mail receives much less human contact, the only way short paid mail would be detected is through non-automated means.

[1] As per Engineering.

[2] Retrofitting the AFCS to have image lift capabilities cost the Postal Service over $100 million. Even if the revenue protection technology were available, the costs would undoubtedly be greater as additional stackers, detectors, etc., would be required. More than likely, a new machine would be required.

EXHIBIT USPS-RT-17F: MAIL PROCESSING COST CONVERGENCE MODELS

EXHIBIT USPS-RT-17F:
MAIL PROCESSING COST CONVERGENCE
FIRST-CLASS SINGLE PIECE



Revised-3/16/98

17516

EXHIBIT USPS-RT-17F: MAIL PROCESSING MODEL UNIT COST SUMMARY

MODEL NO.	MODEL DESCRIPTION	HANDWRITTEN	MACH PRINT	METERED	BARCODE
1	PRE-RBCS ENVIRONMENT	12.1918	7.2828	6.8497	2.7715
2	AFCS DEPLOYMENT	11.9184	7.2828	6.8497	2.7715
3	RBCS DEPLOYMENT/15% LEAKAGE	8.8653	6.1907	5.8603	2.7715
4	LSMs REMOVED/ALL MLOCR-ISS/ALL MPBCS-OSS/10% LEAKAGE	9.3735	6.2094	5.8906	3.1004
5	RCR DEPLOYMENT (FINALIZATION 2% HW, 20% MP), 5% LEAKAG	8.7256	5.6121	5.3544	3.1004
6	AFCS-ISS RETROFITS, RCR MODIFICATIONS (25% HW, 40% MP)	7.3686	5.2696	5.0473	3.1004
7	FUTURE RCR MODIFICATIONS (50% HW, 50% MP)	6.3872	5.0984	4.8937	3.1004

EXHIBIT USPS-RT-17F:
MAIL PROCESSING COST CONVERGENCE
FIRST-CLASS SINGLE PIECE

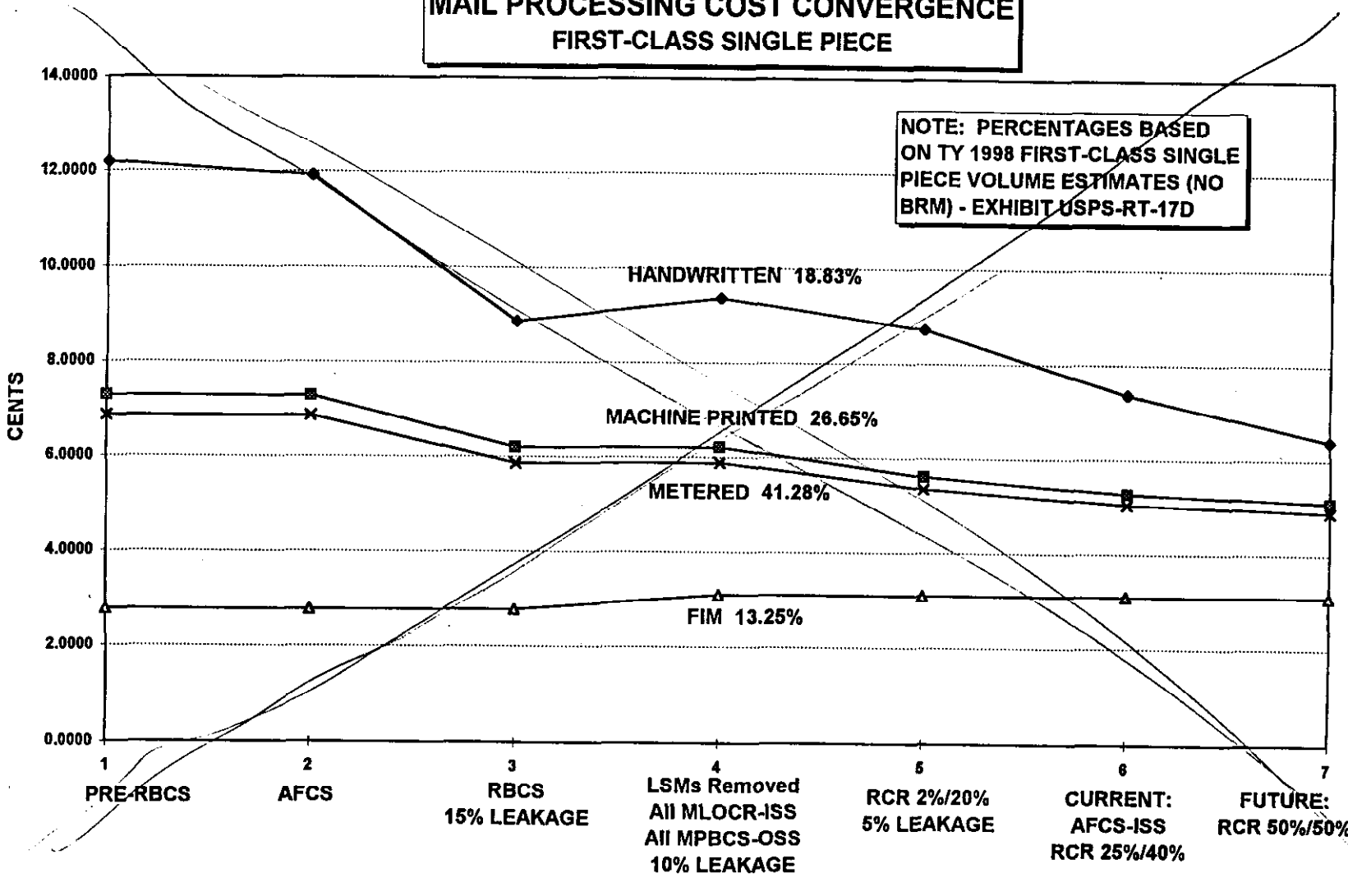


EXHIBIT USPS-RT-17F: COVERAGE FACTORS

DESCRIPTION	SOURCE	VALUE
DPS % Given BCS Destination	USPS LR-H-128	89.77%
DBCS DPS Volume Share	USPS LR-H-128	80.00%
CSBCS DPS Volume Share	USPS LR-H-128	20.00%

EXHIBIT USPS-RT-17F: TEST YEAR WAGE RATES

DESCRIPTION	SOURCE	VALUE
Remote Encoding Centers (REC)	USPS LR-H-146	$14.92
Other Mail Processing	USPS LR-H-146	$25.45
Premium Pay Adjustment Factor	USPS LR-H-77	1.020

EXHIBIT USPS-RT-17F: MARGINAL (VOLUME VARIABLE) PRODUCTIVITIES

DESCRIPTION	SOURCE	VALUE
MLOCR/MLOCR-ISS	USPS LR-H-113	7,350
REC	USPS LR-H-113	660
LMLM	USPS LR-H-113	4,985
MPBCS - OSS	USPS LR-H-113	11,984
MPBCS/DBCS (Non-Inc Sec)	USPS LR-H-113	7,467
MPBCS Incoming Secondary	USPS LR-H-113	6,633
DBCS Incoming Secondary	USPS LR-H-113	8,393
CSBCS Incoming Secondary	USPS LR-H-113	17,124
LSM Outgoing Primary	USPS LR-H-113	1,413
LSM Outgoing Secondary	USPS LR-H-113	1,440
LSM Incoming Primary	USPS LR-H-113	1,271
LSM Incoming Secondary	USPS LR-H-113	1,151
Manual Outgoing Primary	USPS LR-H-113	662
Manual Outgoing Secondary	USPS LR-H-113	691
Manual Incoming Primary	USPS LR-H-113	562
Manual Incoming Secondary	USPS LR-H-113	646

EXHIBIT USPS-RT-17F: PIGGYBACK FACTORS

DESCRIPTION	SOURCE	VALUE
MLOCR	USPS LR-H-77	2.095
REC	USPS LR-H-77	1.450
LMLM	USPS LR-H-77	1.450
MPBCS	USPS LR-H-77	1.719
DBCS	USPS LR-H-77	2.434
CSBCS	USPS LR-H-77	1.948
LSM	USPS LR-H-77	2.240
Manual	USPS LR-H-77	1.372

EXHIBIT USPS-RT-17F: ACCEPT/UPGRADE RATES

DESCRIPTION	SOURCE	VALUE
MLOCR Accept (Hand)	USPS LR-H-130	8.36%
MLOCR Upgrade (Hand)	USPS LR-H-130	57.42%
MPBCS OSS Accept (Hand)	USPS LR-H-130	87.35%
MPBCS OSS Upgrade (Hand)	USPS LR-H-130	92.99%
MPBCS OSS Errors (Hand):		
OSS Refeeds	USPS LR-H-130	0.96%
ISS Refeeds	USPS LR-H-130	3.95%
LMLM	USPS LR-H-130	6.79%
Manual/LSM	USPS LR-H-130	0.95%
MLOCR Accept (Mach Print)	USPS LR-H-130	70.24%
MLOCR Upgrade (Mach Print)	USPS LR-H-130	79.95%
MPBCS OSS Accept (Mach Print)	USPS LR-H-130	83.04%
MPBCS OSS Upgrade (Mach Print)	USPS LR-H-130	92.70%
MPBCS OSS Errors (Mach Print):		
OSS Refeeds	USPS LR-H-130	1.19%
ISS Refeeds	USPS LR-H-130	6.49%
LMLM	USPS LR-H-130	7.48%
Manual/LSM	USPS LR-H-130	1.80%
MLOCR Accept (Metered)	USPS LR-H-130	74.88%
MLOCR Upgrade (Metered)	USPS LR-H-130	81.05%
MPBCS OSS Accept (Metered)	USPS LR-H-130	85.68%
MPBCS OSS Upgrade (Metered)	USPS LR-H-130	91.46%
MPBCS OSS Errors (Metered):		
OSS Refeeds	USPS LR-H-130	1.38%
ISS Refeeds	USPS LR-H-130	5.99%
LMLM	USPS LR-H-130	5.59%
Manual/LSM	USPS LR-H-130	1.36%
BCS Accept (Non-Inc Sec)	USPS LR-H-113	95.00%
BCS Accept (Inc Sec)	USPS LR-H-113	89.90%
DBCS Accept (Inc Sec-Pass1)	USPS LR-H-113	95.00%
DBCS Accept (Inc Sec-Pass2)	USPS LR-H-113	95.00%
CSBCS Accept (Inc Sec-Pass1)	MC95-1, Exhibit USPS-T-10G	98.50%
CSBCS Accept (Inc Sec-Pass2,3)	MC95-1, Exhibit USPS-T-10G	99.00%
LSM Outgoing Primary	MC95-1, MCR-2	94.30%
LSM Outgoing Secondary	MC95-1, MCR-2	93.40%
LSM Incoming Primary	MC95-1, MCR-2	94.60%
LSM Incoming Secondary	MC95-1, MCR-2	96.00%

EXHIBIT USPS-RT-17F: MAILFLOW DENSITIES
(MC95-1, Library Reference MCR-3)*

MODS OPERATION		OP (BCS)	OS	MMP	SCF	IP	IS	Firm	Total
831/881	MLOCR/MLOCR-ISS Out Prim	2.62%	21.90%	5.00%	14.09%	10.44%	45.90%	0.06%	100.00%
832/882	MLOCR/MLOCR-ISS Out Sec		17.70%	18.17%	50.15%	8.01%	5.98%	0.00%	100.00%
833/883	MLOCR/MLOCR-ISS MMP			4.28%	16.04%	9.72%	68.55%	1.41%	100.00%
834/884	MLOCR/MLOCR-ISS SCF				9.13%	5.84%	84.66%	0.36%	100.00%
835/885	MLOCR/MLOCR-ISS Inc Prim					7.68%	91.46%	0.87%	100.00%
		OP	**OS**	**MMP**	**SCF**	**IP**	**IS**	**Firm**	**Total**
871/891	MPBCS/DBCS Out Prim	**0.17%**	17.56%	17.05%	13.60%	11.86%	19.23%	20.70%	100.17%
872/892	MPBCS/DBCS Out Sec		**1.31%**	50.51%	24.32%	17.48%	6.83%	0.86%	101.31%
873/893	MPBCS/DBCS MMP			**0.84%**	21.21%	9.40%	61.45%	7.94%	100.84%
874/894	MPBCS/DBCS SCF				**0.84%**	4.32%	90.69%	5.00%	100.84%
875/895	MPBCS/DBCS Inc Prim					**1.08%**	88.42%	11.58%	101.08%
	(Diagonal allocated 100% to IS)**								
		OP (BCS)	**OS**	**MMP**	**SCF**	**IP**	**IS**	**Firm**	**Total**
971	MPBCS-OSS Out Prim	0.32%	22.36%	5.60%	16.97%	13.97%	40.52%	0.25%	100.00%
972	MPBCS-OSS Out Sec		20.78%	13.22%	38.80%	16.77%	10.42%	0.01%	100.00%
973	MPBCS-OSS MMP			2.88%	16.47%	11.99%	66.26%	2.40%	100.00%
974	MPBCS-OSS SCF				5.27%	4.67%	86.03%	4.04%	100.00%
975	MPBCS-OSS Inc Prim					4.63%	94.84%	0.53%	100.00%
		OP	**OS**	**MMP**	**SCF**	**IP**	**IS**	**Firm**	**Total**
081	LSM Out Prim	**0.00%**	0.96%	25.12%	10.96%	9.18%	52.09%	1.68%	100.00%
082	LSM Out Sec			27.06%	4.83%	7.73%	57.28%	3.09%	100.00%
083	LSM MMP			**2.12%**	9.78%	3.59%	81.48%	5.16%	102.12%
084	LSM SCF				**3.00%**	4.03%	93.21%	2.76%	103.00%
085	LSM Inc Prim					**2.67%**	94.40%	5.60%	102.67%
	(Diagonal allocated 100% to IS)**								
		OP	**OS**	**MMP**	**SCF**	**IP**	**IS**	**Firm**	**Total**
030	Manual Out Prim		15.48%	36.22%	16.42%	12.18%	19.70%	0.00%	100.00%
040	Manual Out Sec			42.85%	19.43%	14.41%	23.31%	0.00%	100.00%
043	Manual MMP				43.63%	26.47%	29.90%	0.00%	100.00%
044	Manual SCF					6.47%	93.53%	0.00%	100.00%
150	Manual Inc Prim						100.00%	0.00%	100.00%

*** The density tables were revised to include DISP code 9 volumes. See Exhibit USPS-RT-17H for discussion and program.**

**** Bold numbers indicate second handlings (i.e., flows to same machine/ same level). These percentages were incorporated into the TPH calculations in the models.**

EXHIBIT USPS-RT-17F: RBCS INFORMATION

1.) LEAKAGE

A. INITIAL DEPLOYMENT	15%
B. INTERMEDIATE LEAKAGE	10%

FY	AP	Percent Leakage
97	1	7.50%
	2	7.60%
	3	7.10%
	4	6.10%
	5	7.00%
	6	6.70%
	7	6.30%
CUMMULATIVE		6.98%

C. CURRENT LEAKAGE TARGET	5.00%

NOTE: DATA OBTAINED FROM IMAGE PROCESSING SUB-SYSTEM (IPSS) REPORTS

2.) RCR FINALIZATION RATES

A. HANDWRITTEN:	RCR% ORIGINAL	2.00%	Source: ENGINEERING
	RCR % CURRENT	25.00%	
	RCR % FUTURE	50.00%	
B. MACHINE PRINTED/ METERED:	RCR% ORIGINAL	20.00%	
	RCR % CURRENT	40.00%	
	RCR % FUTURE	50.00%	

EXHIBIT USPS-RT-17F: HANDWRITTEN MAIL PROCESSING MODEL UNIT COSTS
MODEL 1: PRE-RBCS ENVIRONMENT

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Outgoing Primary	TPH	Pieces Per Hour	Wage Rate	Cents Per Piece	Piggyback Factor	Premium Pay Adj	Total Cents Per Piece	Weighted Cost
MLOCR	10,000	7,350	$25.45	0.3462	2.0950	0.0070	0.7323	0.7323
MPBCS/DBCS	13	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.0007
LSM	9,521	1,413	$25.45	1.8008	2.2400	0.0367	4.0704	3.8753
Manual	543	662	$25.45	3.8437	1.3720	0.0783	5.3518	0.2904
Outgoing Secondary								
MPBCS/DBCS	109	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.0064
LSM	92	1,440	$25.45	1.7670	2.2400	0.0360	3.9941	0.0366
Manual	90	691	$25.45	3.6823	1.3720	0.0750	5.1271	0.0462
Incoming Primary								
MPBCS/DBCS	243	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.0144
LSM	4,219	1,271	$25.45	2.0020	2.2400	0.0408	4.5252	1.9092
Manual	643	562	$25.45	4.5276	1.3720	0.0922	6.3040	0.4052
Incoming Secondary								
MPBCS	44	6,633	$25.45	0.3836	1.7190	0.0078	0.6672	0.0029
DBCS	605	8,393	$25.45	0.3032	2.4340	0.0062	0.7441	0.0450
CSBCS	230	17,124	$25.45	0.1486	1.9480	0.0030	0.2925	0.0067
LSM	8,431	1,151	$25.45	2.2107	2.2400	0.0450	4.9969	4.2127
Manual	1,108	646	$25.45	3.9389	1.3720	0.0802	5.4843	0.6076
TOTAL MAIL PROCESSING MODEL UNIT COSTS								**12.1918**

(1) TPH from corresponding model
(2) Exhibit USPS-RT-17F, page 5
(3) Exhibit USPS-RT-17F, page 4
(4) [(3) x 100] / (2)
(5) Exhibit USPS-RT-17F, page 6
(6) [(Premium Pay Adjustment Factor) - 1] * (4)
(7) [(4) x (5)] + (6)
(8) [(1) x (7)] / 10,000

EXHIBIT USPS-RT-17F: HANDWRITTEN MAIL PROCESSING MODEL

MODEL 1: PRE-RBCS ENVIRONMENT

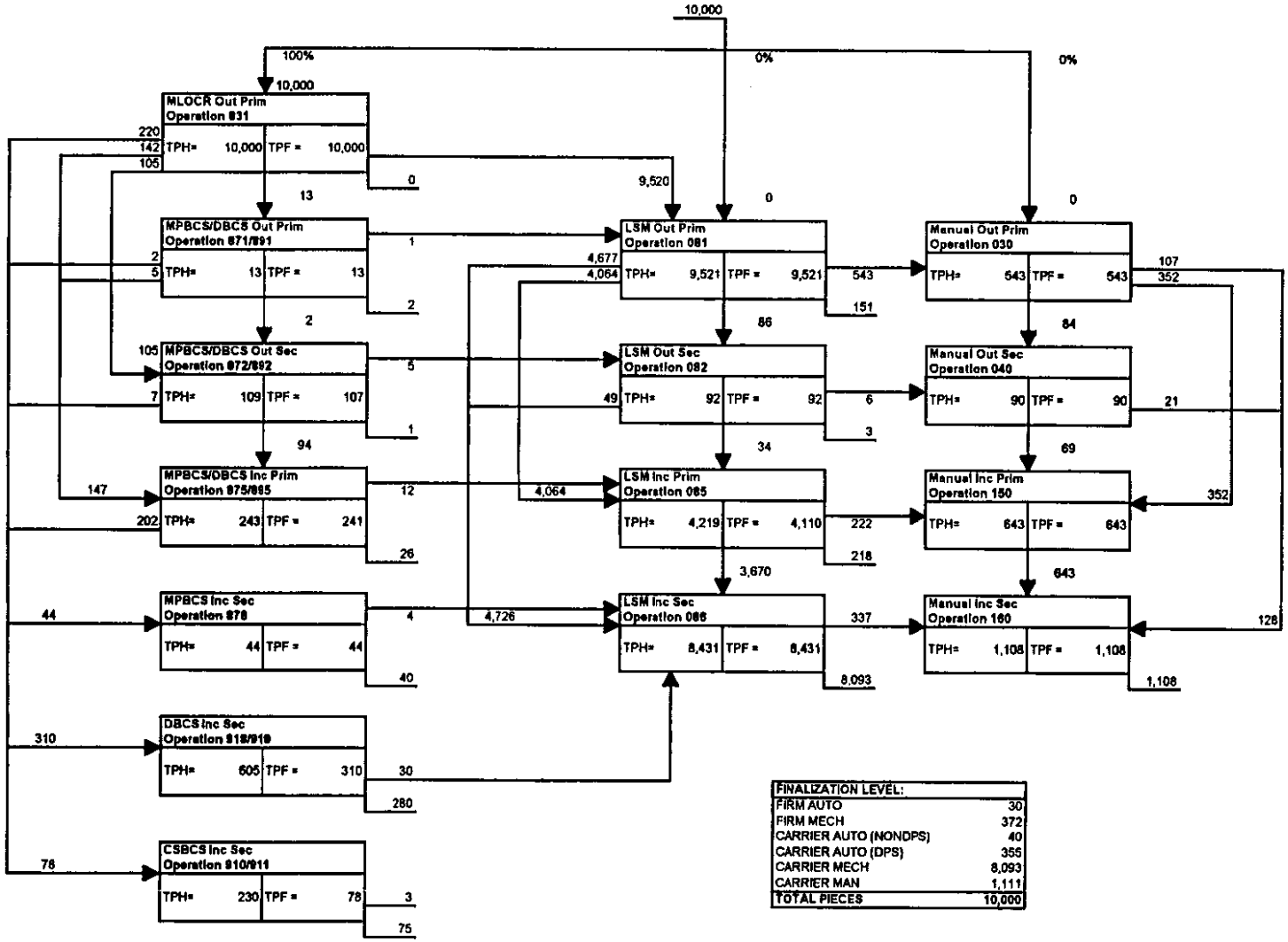


EXHIBIT USPS-RT-17F: HANDWRITTEN MAIL PROCESSING MODEL UNIT COSTS
MODEL 2: AFCS DEPLOYMENT

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Outgoing Primary	TPH	Pieces Per Hour	Wage Rate	Cents Per Piece	Piggyback Factor	Premium Pay Adj	Total Cents Per Piece	Weighted Cost
MLOCR	0	7,350	$25.45	0.3462	2.0950	0.0070	0.7323	0.0000
MPBCS/DBCS	0	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.0000
LSM	10,000	1,413	$25.45	1.8008	2.2400	0.0367	4.0704	4.0704
Manual	570	662	$25.45	3.8437	1.3720	0.0783	5.3518	0.3050
Outgoing Secondary								
MPBCS/DBCS	0	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.0000
LSM	91	1,440	$25.45	1.7670	2.2400	0.0360	3.9941	0.0362
Manual	94	691	$25.45	3.6823	1.3720	0.0750	5.1271	0.0483
Incoming Primary								
MPBCS/DBCS	0	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.0000
LSM	4,416	1,271	$25.45	2.0020	2.2400	0.0408	4.5252	1.9985
Manual	674	562	$25.45	4.5276	1.3720	0.0922	6.3040	0.4249
Incoming Secondary								
MPBCS	0	6,633	$25.45	0.3836	1.7190	0.0078	0.6672	0.0000
DBCS	0	8,393	$25.45	0.3032	2.4340	0.0062	0.7441	0.0000
CSBCS	0	17,124	$25.45	0.1486	1.9480	0.0030	0.2925	0.0000
LSM	8,802	1,151	$25.45	2.2107	2.2400	0.0450	4.9969	4.3985
Manual	1,160	646	$25.45	3.9389	1.3720	0.0802	5.4843	0.6364
TOTAL MAIL PROCESSING MODEL UNIT COSTS								11.9184

(1) TPH from corresponding model
(2) Exhibit USPS-RT-17F, page 5
(3) Exhibit USPS-RT-17F, page 4
(4) [(3) x 100] / (2)
(5) Exhibit USPS-RT-17F, page 6
(6) [(Premium Pay Adjustment Factor) - 1] * (4)
(7) [(4) x (5)] + (6)
(8) [(1) x (7)] / 10,000

EXHIBIT USPS-RT-17F: HANDWRITTEN MAIL PROCESSING MODEL

MODEL 2: AFCS DEPLOYMENT

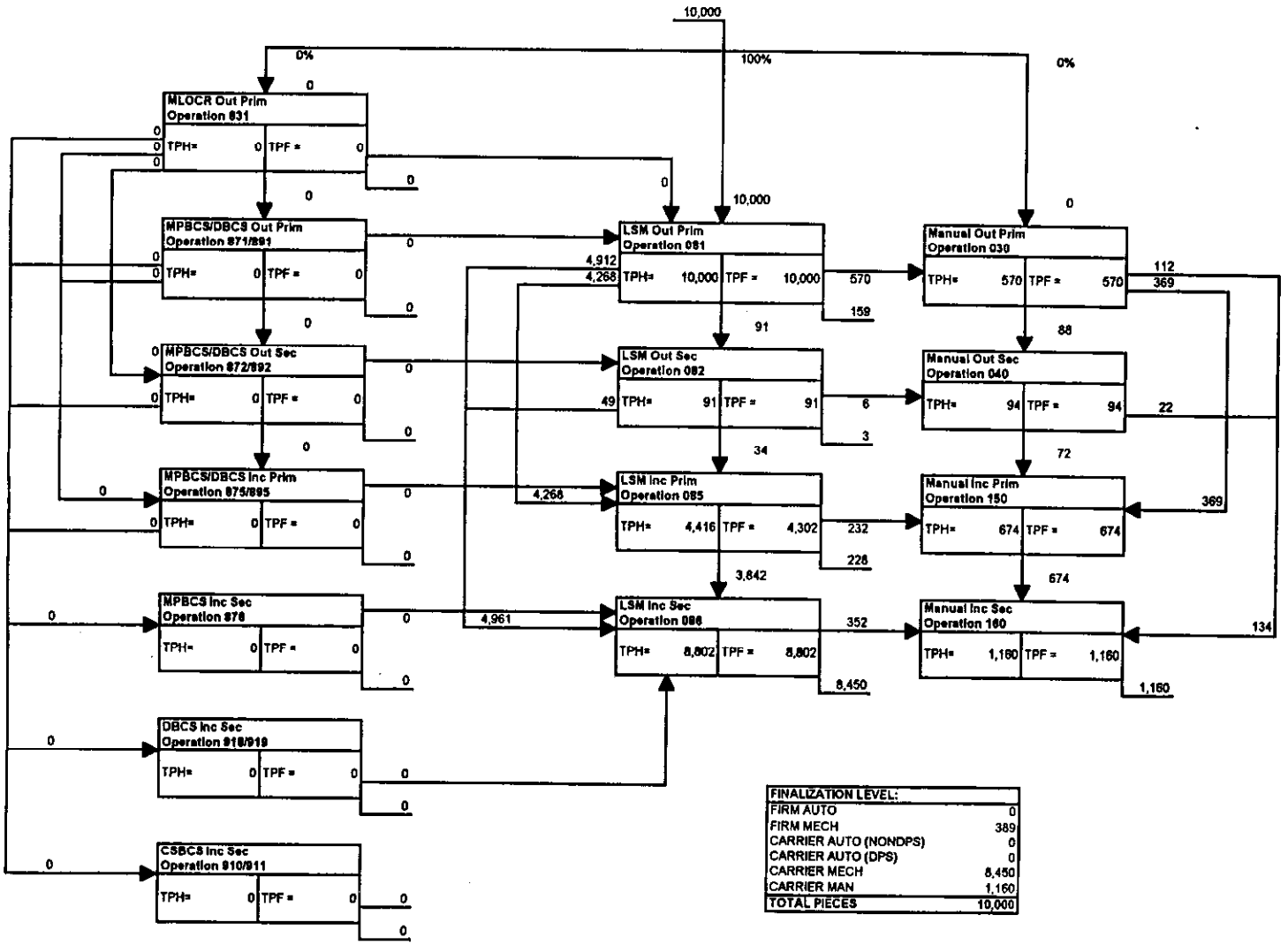


EXHIBIT USPS-RT-17F: HANDWRITTEN MAIL PROCESSING MODEL UNIT COSTS
MODEL 3: RBCS DEPLOYMENT/15% LEAKAGE

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Outgoing Primary	TPH	Pieces Per Hour	Wage Rate	Cents Per Piece	Piggyback Factor	Premium Pay Adj	Total Cents Per Piece	Weighted Cost
MLOCR-ISS	10,319	7,350	$25.45	0.3462	2.0950	0.0070	0.7323	0.7557
REC	9,839	660	$14.92	2.2605	1.4500	0.0460	3.3237	3.2703
MPBCS-OSS	9,039	11,984	$25.45	0.2123	1.7190	0.0043	0.3693	0.3338
LMLM	550	4,985	$25.45	0.5104	1.4500	0.0104	0.7505	0.0413
MPBCS/DBCS	36	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.0022
LSM	2,180	1,413	$25.45	1.8008	2.2400	0.0367	4.0704	0.8874
Manual	124	662	$25.45	3.8437	1.3720	0.0783	5.3518	0.0665
Outgoing Secondary								
MPBCS/DBCS	1,776	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.1053
LSM	107	1,440	$25.45	1.7670	2.2400	0.0360	3.9941	0.0429
Manual	26	691	$25.45	3.6823	1.3720	0.0750	5.1271	0.0135
Incoming Primary								
MPBCS/DBCS	4,424	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.2622
LSM	1,221	1,271	$25.45	2.0020	2.2400	0.0408	4.5252	0.5524
Manual	165	562	$25.45	4.5276	1.3720	0.0922	6.3040	0.1040
Incoming Secondary								
MPBCS	715	6,633	$25.45	0.3836	1.7190	0.0078	0.6672	0.0477
DBCS	9,792	8,393	$25.45	0.3032	2.4340	0.0062	0.7441	0.7286
CSBCS	3,716	17,124	$25.45	0.1486	1.9480	0.0030	0.2925	0.1087
LSM	2,752	1,151	$25.45	2.2107	2.2400	0.0450	4.9969	1.3752
Manual	306	646	$25.45	3.9389	1.3720	0.0802	5.4843	0.1676
TOTAL MAIL PROCESSING MODEL UNIT COSTS								**8.8653**

(1) TPH from corresponding model
(2) Exhibit USPS-RT-17F, page 5
(3) Exhibit USPS-RT-17F, page 4
(4) [(3) x 100] / (2)
(5) Exhibit USPS-RT-17F, page 6
(6) [(Premium Pay Adjustment Factor) - 1] * (4)
(7) [(4) x (5)] + (6)
(8) [(1) x (7)] / 10,000

EXHIBIT USPS-RT-17F: HANDWRITTEN MAIL PROCESSING MODEL

MODEL 3: RBCS DEPLOYMENT/15% LEAKAGE

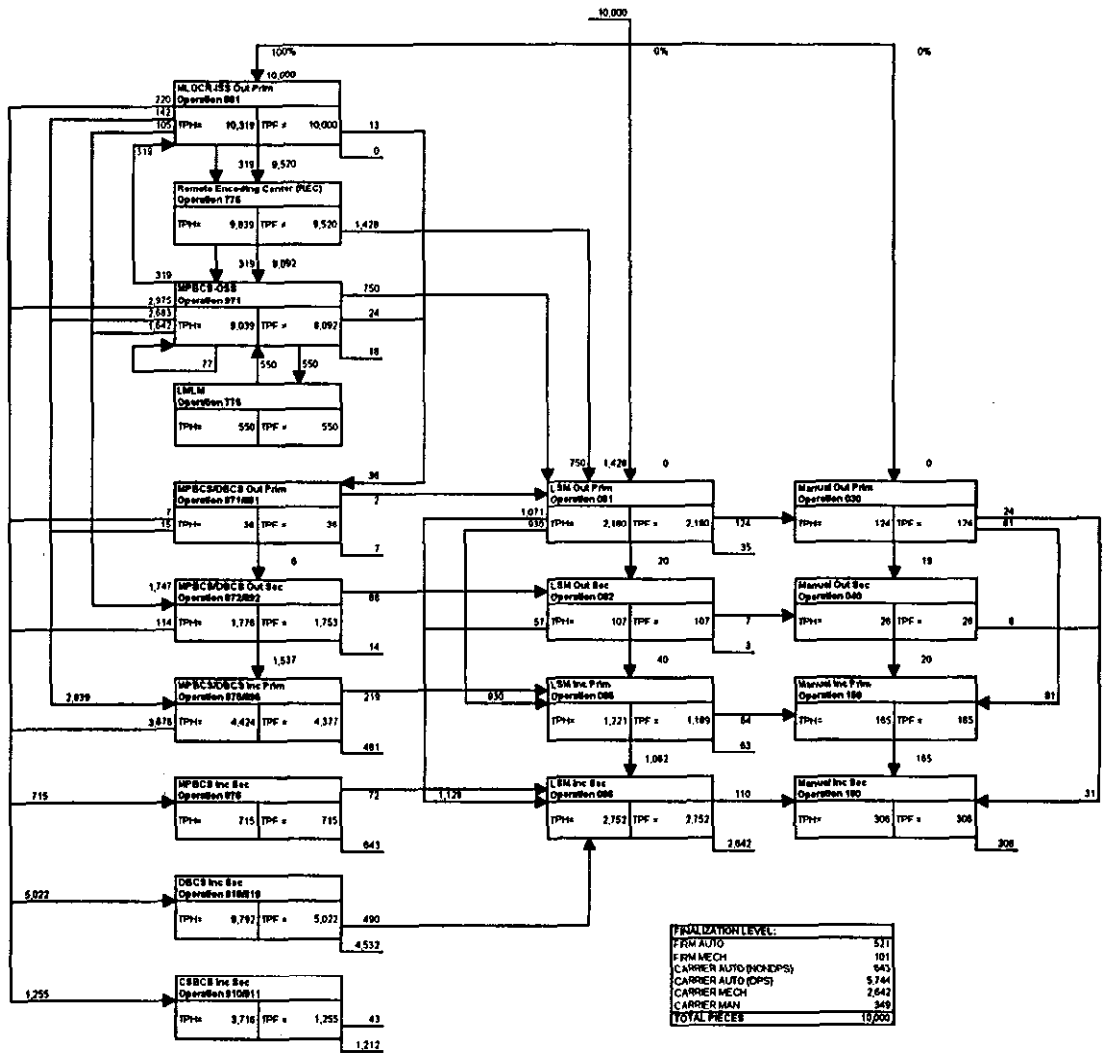


EXHIBIT USPS-RT-17F: HANDWRITTEN MAIL PROCESSING MODEL UNIT COSTS
MODEL 4: LSMs REMOVED/ALL MLOCR-ISS/ALL MPBCS-OSS/10% LEAKAGE

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Outgoing Primary	TPH	Pieces Per Hour	Wage Rate	Cents Per Piece	Piggyback Factor	Premium Pay Adj	Total Cents Per Piece	Weighted Cost
MLOCR-ISS	10,338	7,350	$25.45	0.3462	2.0950	0.0070	0.7323	0.7571
REC	9,858	660	$14.92	2.2605	1.4500	0.0460	3.3237	3.2766
MPBCS-OSS	9,570	11,984	$25.45	0.2123	1.7190	0.0043	0.3693	0.3534
LMLM	582	4,985	$25.45	0.5104	1.4500	0.0104	0.7505	0.0437
MPBCS/DBCS	38	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.0022
Manual	1,748	662	$25.45	3.8437	1.3720	0.0783	5.3518	0.9356
Outgoing Secondary								
MPBCS/DBCS	1,874	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.1111
Manual	363	691	$25.45	3.6823	1.3720	0.0750	5.1271	0.1862
Incoming Primary								
MPBCS/DBCS	4,670	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.2768
Manual	1,643	562	$25.45	4.5276	1.3720	0.0922	6.3040	1.0355
Incoming Secondary								
MPBCS	755	6,633	$25.45	0.3836	1.7190	0.0078	0.6672	0.0504
DBCS	10,332	8,393	$25.45	0.3032	2.4340	0.0062	0.7441	0.7688
CSBCS	3,921	17,124	$25.45	0.1486	1.9480	0.0030	0.2925	0.1147
Manual	2,665	646	$25.45	3.9389	1.3720	0.0802	5.4843	1.4613
TOTAL MAIL PROCESSING MODEL UNIT COSTS								**9.3735**

(1) TPH from corresponding model
(2) Exhibit USPS-RT-17F, page 5
(3) Exhibit USPS-RT-17F, page 4
(4) [(3) x 100] / (2)
(5) Exhibit USPS-RT-17F, page 6
(6) [(Premium Pay Adjustment Factor) - 1] * (4)
(7) [(4) x (5)] + (6)
(8) [(1) x (7)] / 10,000

EXHIBIT USPS-RT-17F: HANDWRITTEN MAIL PROCESSING MODEL

MODEL 4: LSMs REMOVED/ALL MLOCR CONVERTED TO MLOCR-ISS/10% LEAKAGE

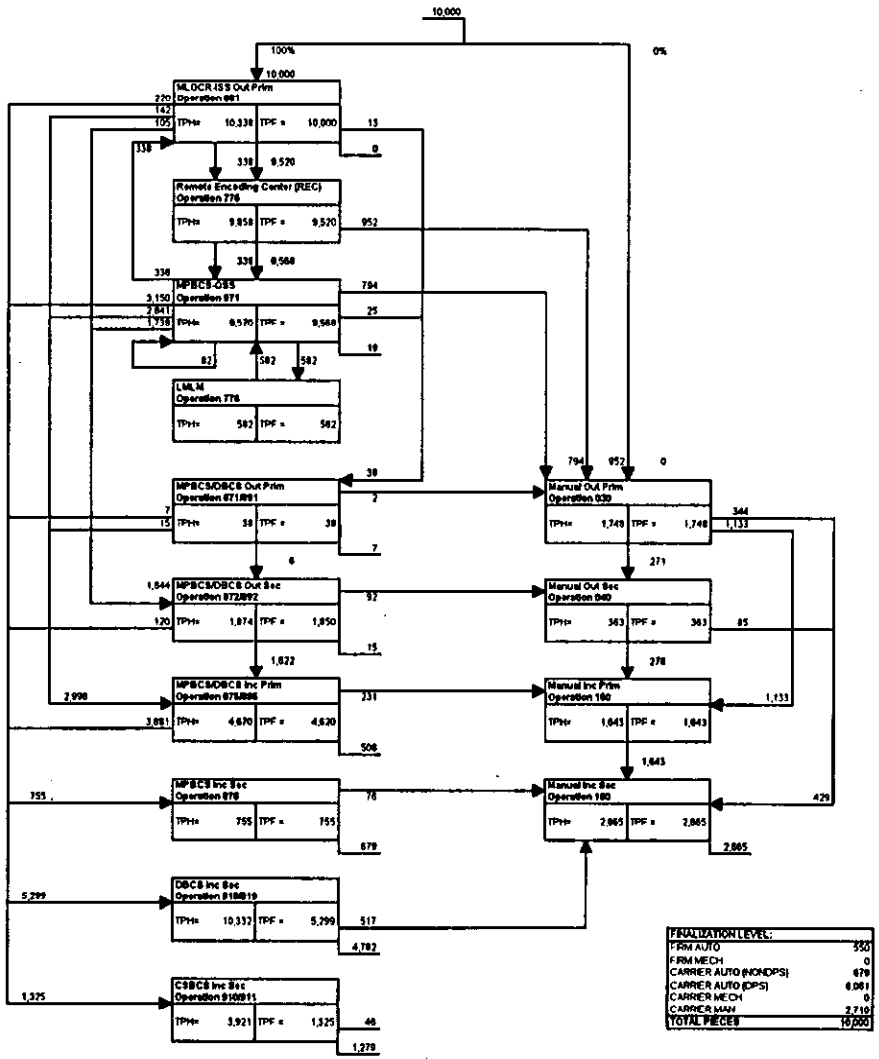


EXHIBIT USPS-RT-17F: HANDWRITTEN MAIL PROCESSING MODEL UNIT COSTS
MODEL 5: RCR DEPLOYMENT (HW-2%) / 5% LEAKAGE

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Outgoing Primary	TPH	Pieces Per Hour	Wage Rate	Cents Per Piece	Piggyback Factor	Premium Pay Adj	Total Cents Per Piece	Weighted Cost
MLOCR-ISS	10,357	7,350	$25.45	0.3462	2.0950	0.0070	0.7323	0.7585
REC	9,687	660	$14.92	2.2605	1.4500	0.0460	3.3237	3.2197
MPBCS-OSS	10,113	11,984	$25.45	0.2123	1.7190	0.0043	0.3693	0.3735
LMLM	615	4,985	$25.45	0.5104	1.4500	0.0104	0.7505	0.0462
MPBCS/DBCS	39	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.0023
Manual	1,308	662	$25.45	3.8437	1.3720	0.0783	5.3518	0.6999
Outgoing Secondary								
MPBCS/DBCS	1,974	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.1170
Manual	300	691	$25.45	3.6823	1.3720	0.0750	5.1271	0.1538
Incoming Primary								
MPBCS/DBCS	4,921	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.2917
Manual	1,321	562	$25.45	4.5276	1.3720	0.0922	6.3040	0.8328
Incoming Secondary								
MPBCS	795	6,633	$25.45	0.3836	1.7190	0.0078	0.6672	0.0530
DBCS	10,884	8,393	$25.45	0.3032	2.4340	0.0062	0.7441	0.8098
CSBCS	4,130	17,124	$25.45	0.1486	1.9480	0.0030	0.2925	0.1208
Manual	2,273	646	$25.45	3.9389	1.3720	0.0802	5.4843	1.2466
TOTAL MAIL PROCESSING MODEL UNIT COSTS								**8.7256**

(1) TPH from corresponding model
(2) Exhibit USPS-RT-17F, page 5
(3) Exhibit USPS-RT-17F, page 4
(4) [(3) x 100] / (2)
(5) Exhibit USPS-RT-17F, page 6
(6) [(Premium Pay Adjustment Factor) - 1] * (4)
(7) [(4) x (5)] + (6)
(8) [(1) x (7)] / 10,000

EXHIBIT USPS-RT-17F: HANDWRITTEN MAIL PROCESSING MODEL
MODEL 5: RCR DEPLOYMENT (HW-2%) / 5% LEAKAGE

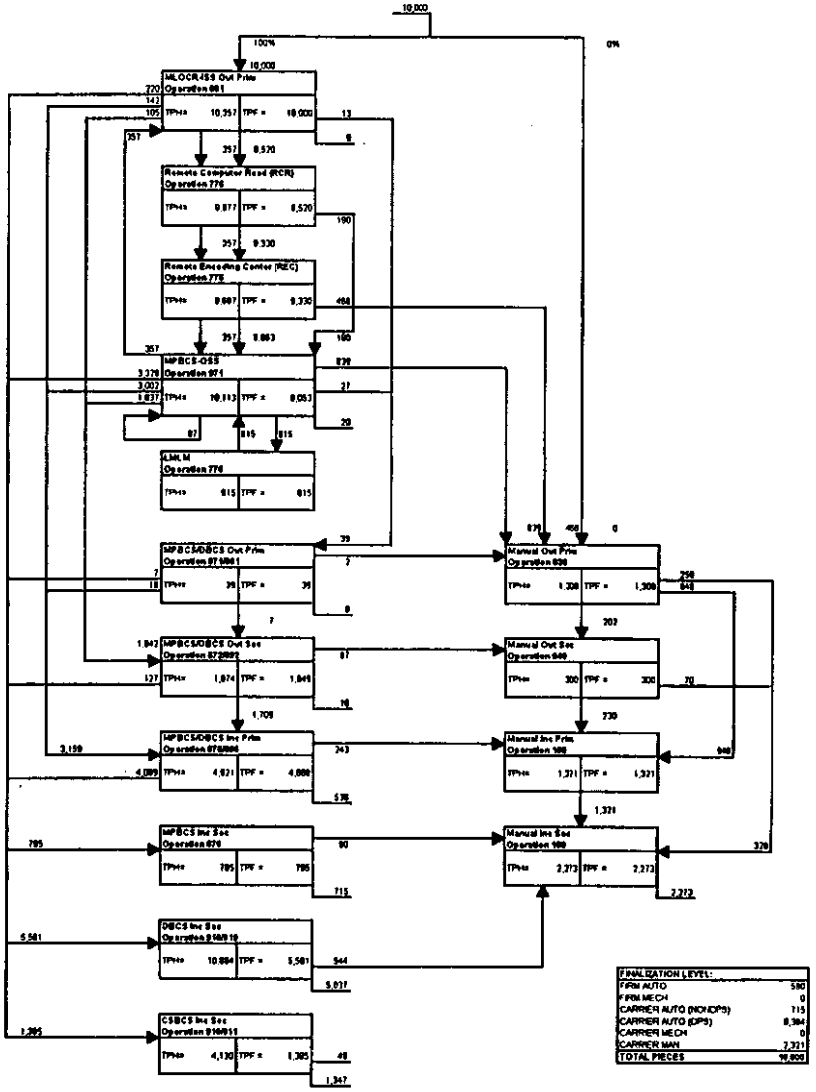


EXHIBIT USPS-RT-17F: HANDWRITTEN MAIL PROCESSING MODEL UNIT COSTS
MODEL 6: CURRENT - AFCS-ISS RETROFITS/RCR MODIFICATIONS (HW-25%)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Outgoing Primary	TPH	Pieces Per Hour	Wage Rate	Cents Per Piece	Piggyback Factor	Premium Pay Adj	Total Cents Per Piece	Weighted Cost
MLOCR-ISS	380	7,350	$25.45	0.3462	2.0950	0.0070	0.7323	0.0278
REC	7,880	660	$14.92	2.2605	1.4500	0.0460	3.3237	2.6191
MPBCS-OSS	10,751	11,984	$25.45	0.2123	1.7190	0.0043	0.3693	0.3970
LMLM	654	4,985	$25.45	0.5104	1.4500	0.0104	0.7505	0.0491
MPBCS/DBCS	28	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.0017
Manual	1,269	662	$25.45	3.8437	1.3720	0.0783	5.3518	0.6790
Outgoing Secondary								
MPBCS/DBCS	1,983	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.1176
Manual	294	691	$25.45	3.6823	1.3720	0.0750	5.1271	0.1509
Incoming Primary								
MPBCS/DBCS	4,972	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.2947
Manual	1,294	562	$25.45	4.5276	1.3720	0.0922	6.3040	0.8158
Incoming Secondary								
MPBCS	798	6,633	$25.45	0.3836	1.7190	0.0078	0.6672	0.0533
DBCS	10,928	8,393	$25.45	0.3032	2.4340	0.0062	0.7441	0.8131
CSBCS	4,147	17,124	$25.45	0.1486	1.9480	0.0030	0.2925	0.1213
Manual	2,240	646	$25.45	3.9389	1.3720	0.0802	5.4843	1.2283
TOTAL MAIL PROCESSING MODEL UNIT COSTS								**7.3686**

(1) TPH from corresponding model
(2) Exhibit USPS-RT-17F, page 5
(3) Exhibit USPS-RT-17F, page 4
(4) [(3) x 100] / (2)
(5) Exhibit USPS-RT-17F, page 6
(6) [(Premium Pay Adjustment Factor) - 1] * (4)
(7) [(4) x (5)] + (6)
(8) [(1) x (7)] / 10,000

EXHIBIT USPS-RT-17F: HANDWRITTEN MAIL PROCESSING MODEL

MODEL 6: CURRENT - AFCS-ISS RETROFITS/RCR MODIFICATIONS (HW-25%)

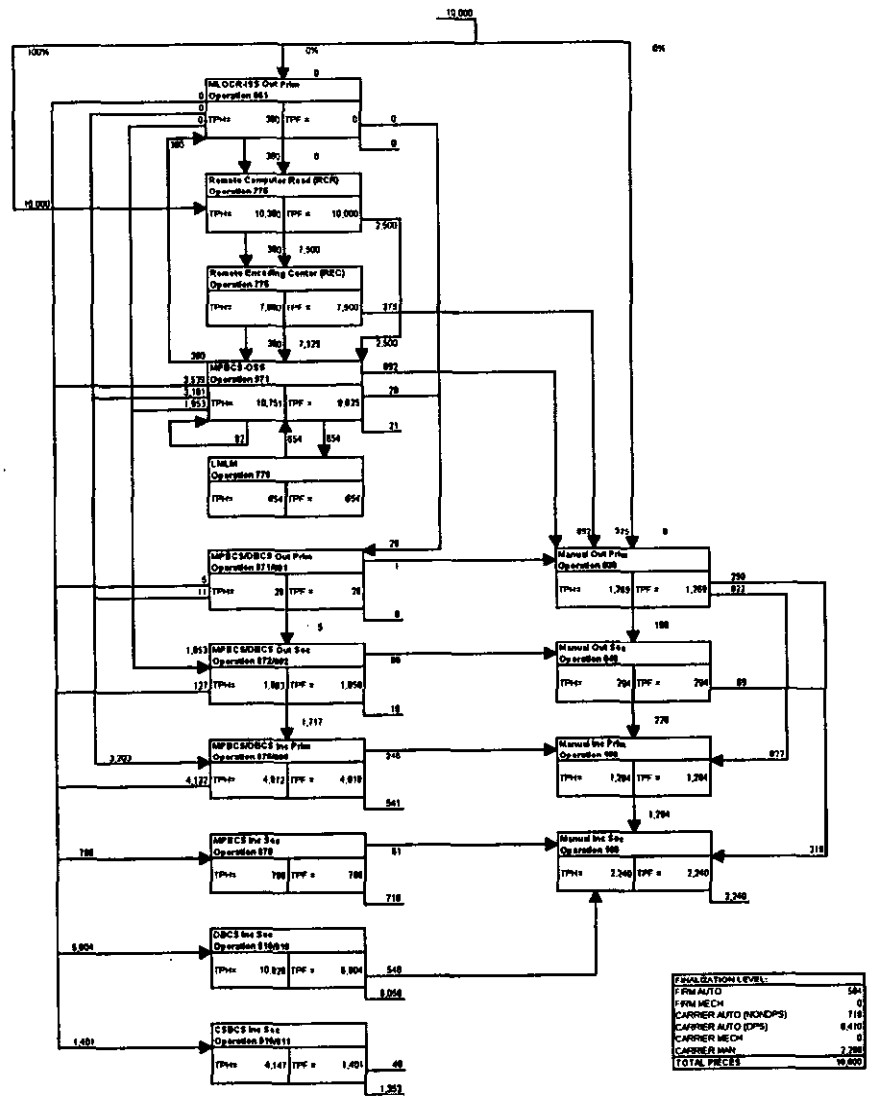


EXHIBIT USPS-RT-17F: HANDWRITTEN MAIL PROCESSING MODEL UNIT COSTS
MODEL 7: FUTURE - RCR MODIFICATIONS (HW-50%)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Outgoing Primary	TPH	Pieces Per Hour	Wage Rate	Cents Per Piece	Piggyback Factor	Premium Pay Adj	Total Cents Per Piece	Weighted Cost
MLOCR-ISS	385	7,350	$25.45	0.3462	2.0950	0.0070	0.7323	0.0282
REC	5,385	660	$14.92	2.2605	1.4500	0.0460	3.3237	1.7898
MPBCS-OSS	10,891	11,984	$25.45	0.2123	1.7190	0.0043	0.3693	0.4022
LMLM	662	4,985	$25.45	0.5104	1.4500	0.0104	0.7505	0.0497
MPBCS/DBCS	29	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.0017
Manual	1,155	662	$25.45	3.8437	1.3720	0.0783	5.3518	0.6183
Outgoing Secondary								
MPBCS/DBCS	2,009	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.1191
Manual	278	691	$25.45	3.6823	1.3720	0.0750	5.1271	0.1425
Incoming Primary								
MPBCS/DBCS	5,037	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.2986
Manual	1,211	562	$25.45	4.5276	1.3720	0.0922	6.3040	0.7636
Incoming Secondary								
MPBCS	809	6,633	$25.45	0.3836	1.7190	0.0078	0.6672	0.0540
DBCS	11,070	8,393	$25.45	0.3032	2.4340	0.0062	0.7441	0.8237
CSBCS	4,201	17,124	$25.45	0.1486	1.9480	0.0030	0.2925	0.1229
Manual	2,139	646	$25.45	3.9389	1.3720	0.0802	5.4843	1.1730
TOTAL MAIL PROCESSING MODEL UNIT COSTS								**6.3872**

(1) TPH from corresponding model
(2) Exhibit USPS-RT-17F, page 5
(3) Exhibit USPS-RT-17F, page 4
(4) [(3) x 100] / (2)
(5) Exhibit USPS-RT-17F, page 6
(6) [(Premium Pay Adjustment Factor) - 1] * (4)
(7) [(4) x (5)] + (6)
(8) [(1) x (7)] / 10,000

EXHIBIT USPS-RT-17F: HANDWRITTEN MAIL PROCESSING MODEL
MODEL 7: FUTURE - RCR MODIFICATIONS (HW-50%)

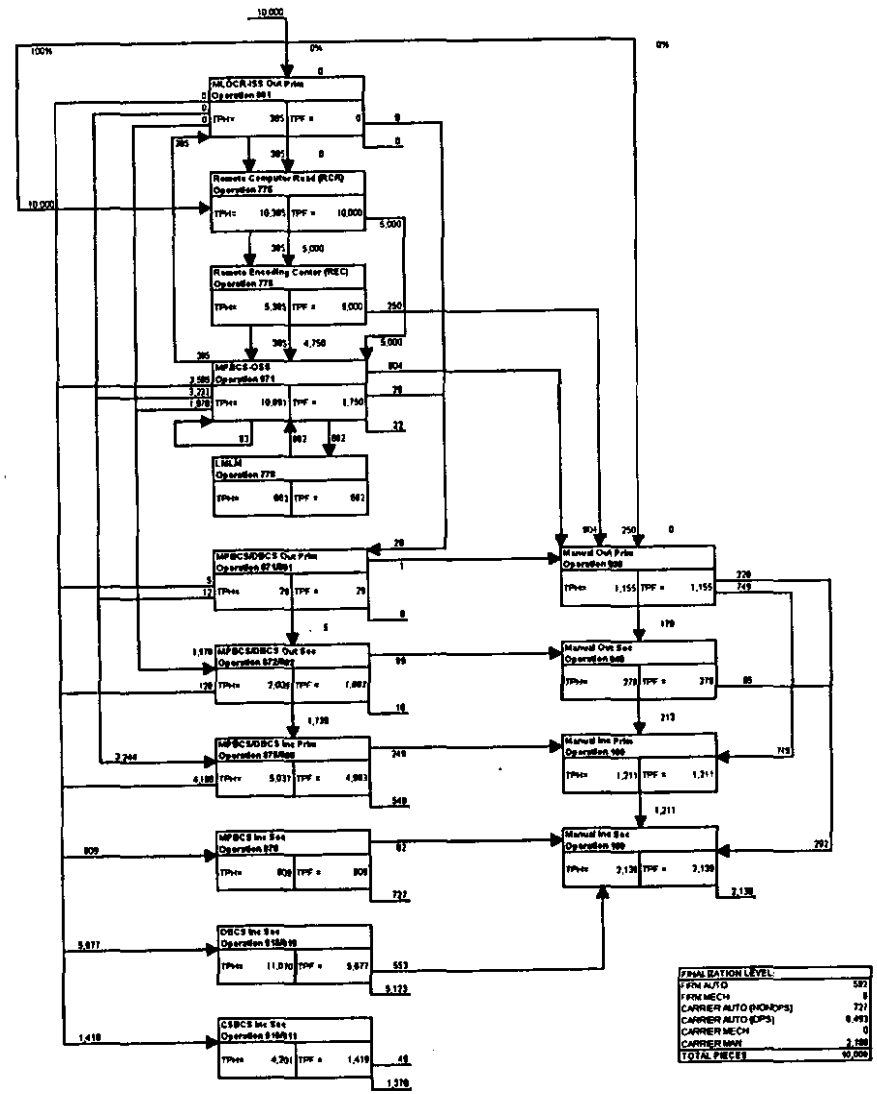


EXHIBIT USPS-RT-17F: MACHINE PRINTED MAIL PROCESSING MODEL UNIT COSTS
MODELS 1,2: PRE-RBCS ENVIRONMENT/AFCS DEPLOYMENT

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Outgoing Primary	TPH	Pieces Per Hour	Wage Rate	Cents Per Piece	Piggyback Factor	Premium Pay Adj	Total Cents Per Piece	Weighted Cost
MLOCR	10,000	7,350	$25.45	0.3462	2.0950	0.0070	0.7323	0.7323
MPBCS/DBCS	147	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.0087
LSM	4,392	1,413	$25.45	1.8008	2.2400	0.0367	4.0704	1.7877
Manual	250	662	$25.45	3.8437	1.3720	0.0783	5.3518	0.1340
Outgoing Secondary								
MPBCS/DBCS	1,271	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.0753
LSM	103	1,440	$25.45	1.7670	2.2400	0.0360	3.9941	0.0410
Manual	46	691	$25.45	3.6823	1.3720	0.0750	5.1271	0.0233
Incoming Primary								
MPBCS/DBCS	2,848	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.1688
LSM	2,108	1,271	$25.45	2.0020	2.2400	0.0408	4.5252	0.9540
Manual	308	562	$25.45	4.5276	1.3720	0.0922	6.3040	0.1942
Incoming Secondary								
MPBCS	517	6,633	$25.45	0.3836	1.7190	0.0078	0.6672	0.0345
DBCS	7,075	8,393	$25.45	0.3032	2.4340	0.0062	0.7441	0.5265
CSBCS	2,685	17,124	$25.45	0.1486	1.9480	0.0030	0.2925	0.0785
LSM	4,452	1,151	$25.45	2.2107	2.2400	0.0450	4.9969	2.2246
Manual	546	646	$25.45	3.9389	1.3720	0.0802	5.4843	0.2995
TOTAL MAIL PROCESSING MODEL UNIT COSTS								7.2828

(1) TPH from corresponding model
(2) Exhibit USPS-RT-17F, page 5
(3) Exhibit USPS-RT-17F, page 4
(4) [(3) x 100] / (2)
(5) Exhibit USPS-RT-17F, page 6
(6) [(Premium Pay Adjustment Factor) - 1] * (4)
(7) [(4) x (5)] + (6)
(8) [(1) x (7)] / 10,000

EXHIBIT USPS-RT-17F: MACHINE PRINTED MAIL PROCESSING MODEL

MODELS 1,2: PRE-RBCS ENVIRONMENT/AFCS DEPLOYMENT

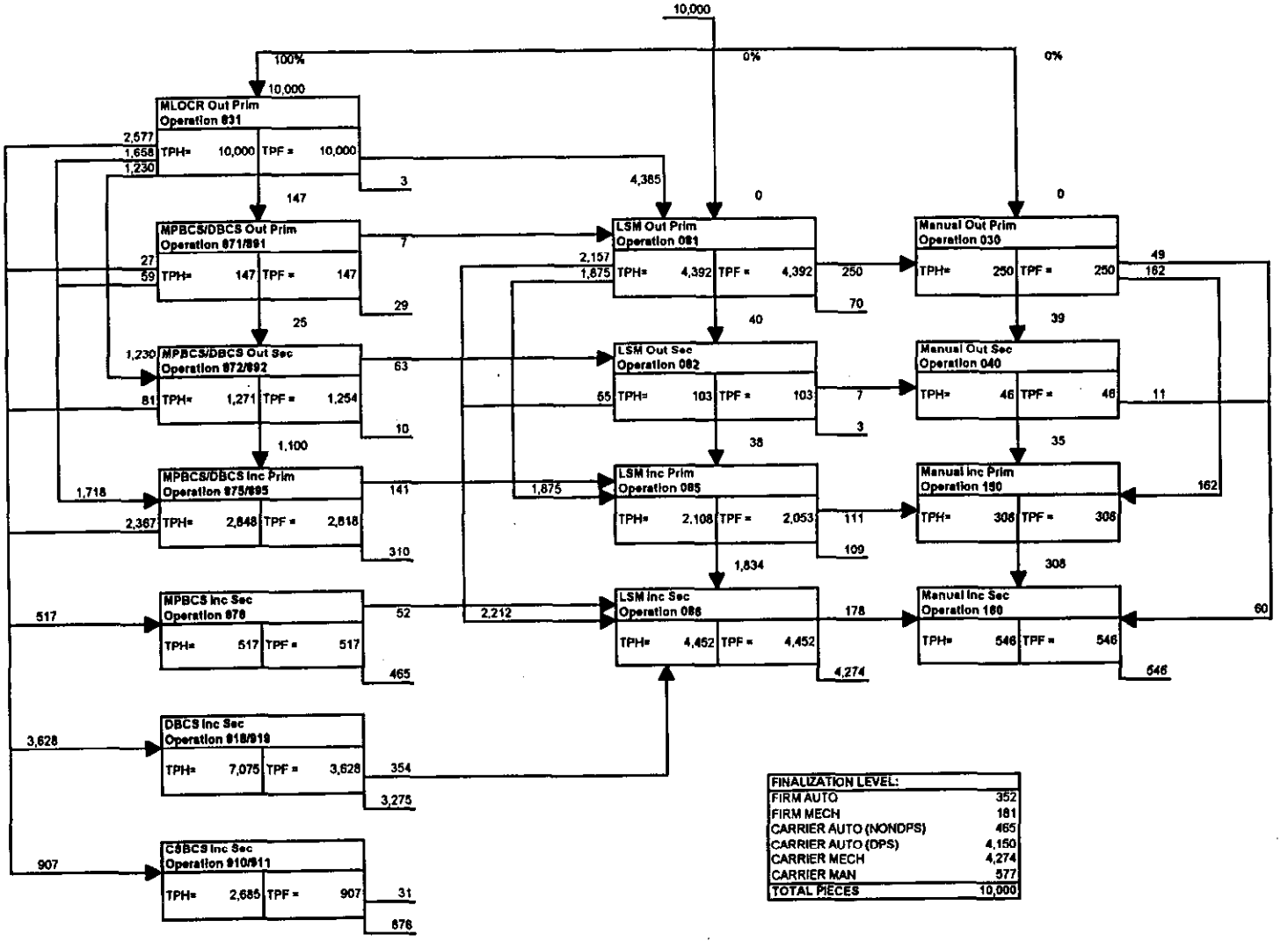


EXHIBIT USPS-RT-17F: MACHINE PRINTED MAIL PROCESSING MODEL UNIT COSTS
MODEL 3: RBCS DEPLOYMENT/15% LEAKAGE

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Outgoing Primary	TPH	Pieces Per Hour	Wage Rate	Cents Per Piece	Piggyback Factor	Premium Pay Adj	Total Cents Per Piece	Weighted Cost
MLOCR	10,000	7,350	$25.45	0.3462	2.0950	0.0070	0.7323	0.7323
MLOCR-ISS	4,626	7,350	$25.45	0.3462	2.0950	0.0070	0.7323	0.3388
REC	4,626	660	$14.92	2.2605	1.4500	0.0460	3.3237	1.5377
MPBCS-OSS	4,292	11,984	$25.45	0.2123	1.7190	0.0043	0.3693	0.1585
LMLM	279	4,985	$25.45	0.5104	1.4500	0.0104	0.7505	0.0209
MPBCS/DBCS	158	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.0094
LSM	1,088	1,413	$25.45	1.8008	2.2400	0.0367	4.0704	0.4430
Manual	62	662	$25.45	3.8437	1.3720	0.0783	5.3518	0.0332
Outgoing Secondary								
MPBCS/DBCS	2,021	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.1198
LSM	110	1,440	$25.45	1.7670	2.2400	0.0360	3.9941	0.0438
Manual	17	691	$25.45	3.6823	1.3720	0.0750	5.1271	0.0086
Incoming Primary								
MPBCS/DBCS	4,729	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.2803
LSM	759	1,271	$25.45	2.0020	2.2400	0.0408	4.5252	0.3434
Manual	93	562	$25.45	4.5276	1.3720	0.0922	6.3040	0.0587
Incoming Secondary								
MPBCS	819	6,633	$25.45	0.3836	1.7190	0.0078	0.6672	0.0546
DBCS	11,210	8,393	$25.45	0.3032	2.4340	0.0062	0.7441	0.8341
CSBCS	4,254	17,124	$25.45	0.1486	1.9480	0.0030	0.2925	0.1244
LSM	1,897	1,151	$25.45	2.2107	2.2400	0.0450	4.9969	0.9477
Manual	185	646	$25.45	3.9389	1.3720	0.0802	5.4843	0.1015
TOTAL MAIL PROCESSING MODEL UNIT COSTS								6.1907

(1) TPH from corresponding model
(2) Exhibit USPS-RT-17F, page 5
(3) Exhibit USPS-RT-17F, page 4
(4) [(3) x 100] / (2)
(5) Exhibit USPS-RT-17F, page 6
(6) [(Premium Pay Adjustment Factor) - 1] * (4)
(7) [(4) x (5)] + (6)
(8) [(1) x (7)] / 10,000

EXHIBIT USPS-RT-17F: MACHINE PRINTED MAIL PROCESSING MODEL

MODEL 3: RBCS DEPLOYMENT/16% LEAKAGE

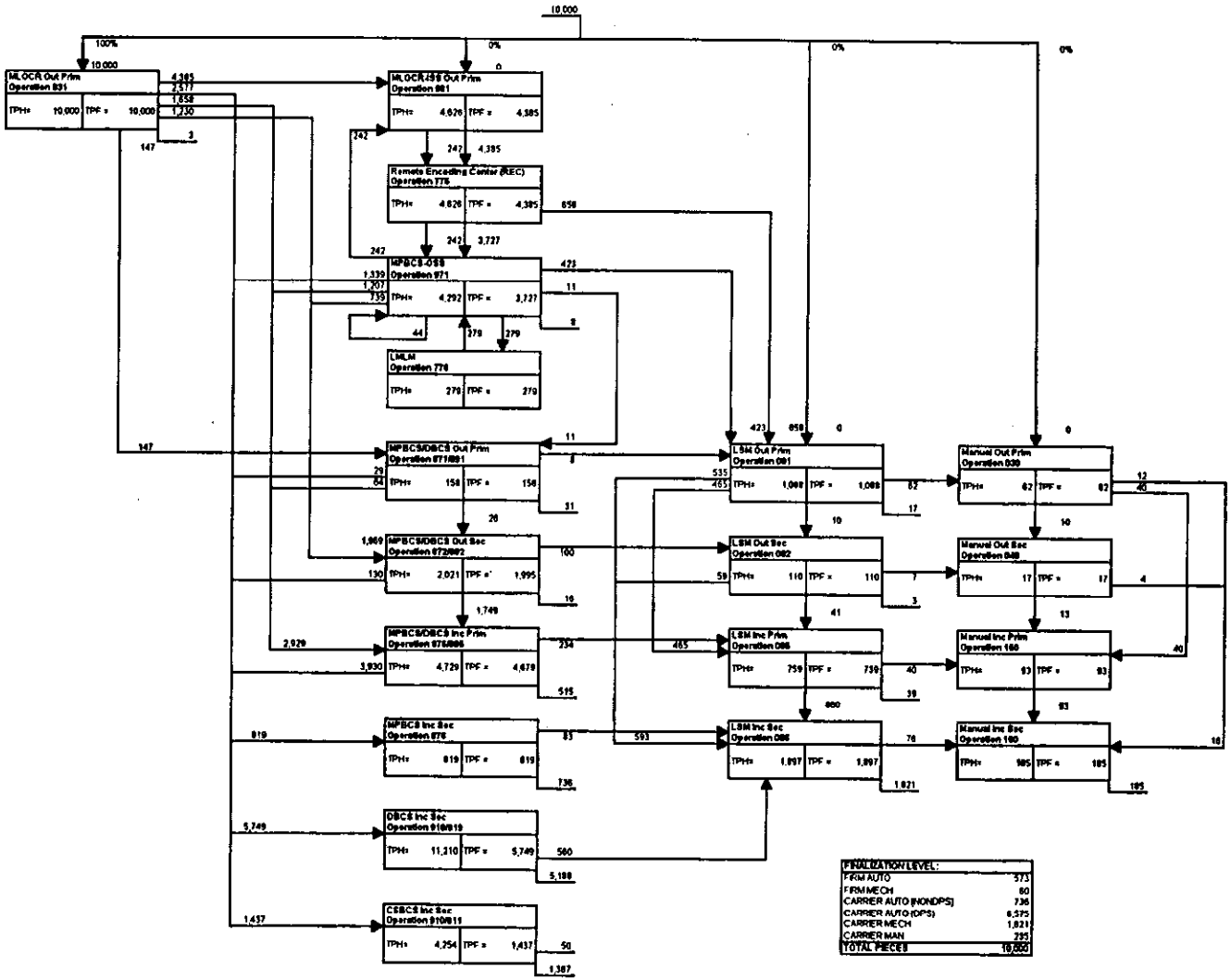


EXHIBIT USPS-RT-17F: MACHINE PRINTED MAIL PROCESSING MODEL UNIT COSTS
MODEL 4: LSMs REMOVED/ALL MLOCR-ISS/ALL MPBCS-OSS/10% LEAKAGE

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Outgoing Primary	TPH	Pieces Per Hour	Wage Rate	Cents Per Piece	Piggyback Factor	Premium Pay Adj	Total Cents Per Piece	Weighted Cost
MLOCR-ISS	10,256	7,350	$25.45	0.3462	2.0950	0.0070	0.7323	0.7511
REC	4,640	660	$14.92	2.2605	1.4500	0.0460	3.3237	1.5424
MPBCS-OSS	4,544	11,984	$25.45	0.2123	1.7190	0.0043	0.3693	0.1678
LMLM	295	4,985	$25.45	0.5104	1.4500	0.0104	0.7505	0.0222
MPBCS/DBCS	159	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.0094
Manual	894	662	$25.45	3.8437	1.3720	0.0783	5.3518	0.4785
Outgoing Secondary								
MPBCS/DBCS	2,065	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.1224
Manual	240	691	$25.45	3.6823	1.3720	0.0750	5.1271	0.1232
Incoming Primary								
MPBCS/DBCS	4,840	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.2869
Manual	1,003	562	$25.45	4.5276	1.3720	0.0922	6.3040	0.6325
Incoming Secondary								
MPBCS	837	6,633	$25.45	0.3836	1.7190	0.0078	0.6672	0.0558
DBCS	11,453	8,393	$25.45	0.3032	2.4340	0.0062	0.7441	0.8522
CSBCS	4,346	17,124	$25.45	0.1486	1.9480	0.0030	0.2925	0.1271
Manual	1,893	646	$25.45	3.9389	1.3720	0.0802	5.4843	1.0380
TOTAL MAIL PROCESSING MODEL UNIT COSTS								**6.2094**

(1) TPH from corresponding model
(2) Exhibit USPS-RT-17F, page 5
(3) Exhibit USPS-RT-17F, page 4
(4) [(3) x 100] / (2)
(5) Exhibit USPS-RT-17F, page 6
(6) [(Premium Pay Adjustment Factor) - 1] * (4)
(7) [(4) x (5)] + (6)
(8) [(1) x (7)] / 10,000

EXHIBIT USPS-RT-17F: MACHINE PRINTED MAIL PROCESSING MODEL

MODEL 4: LSMs REMOVED/ALL MLOCR CONVERTED TO MLOCR-ISS/10% LEAKAGE

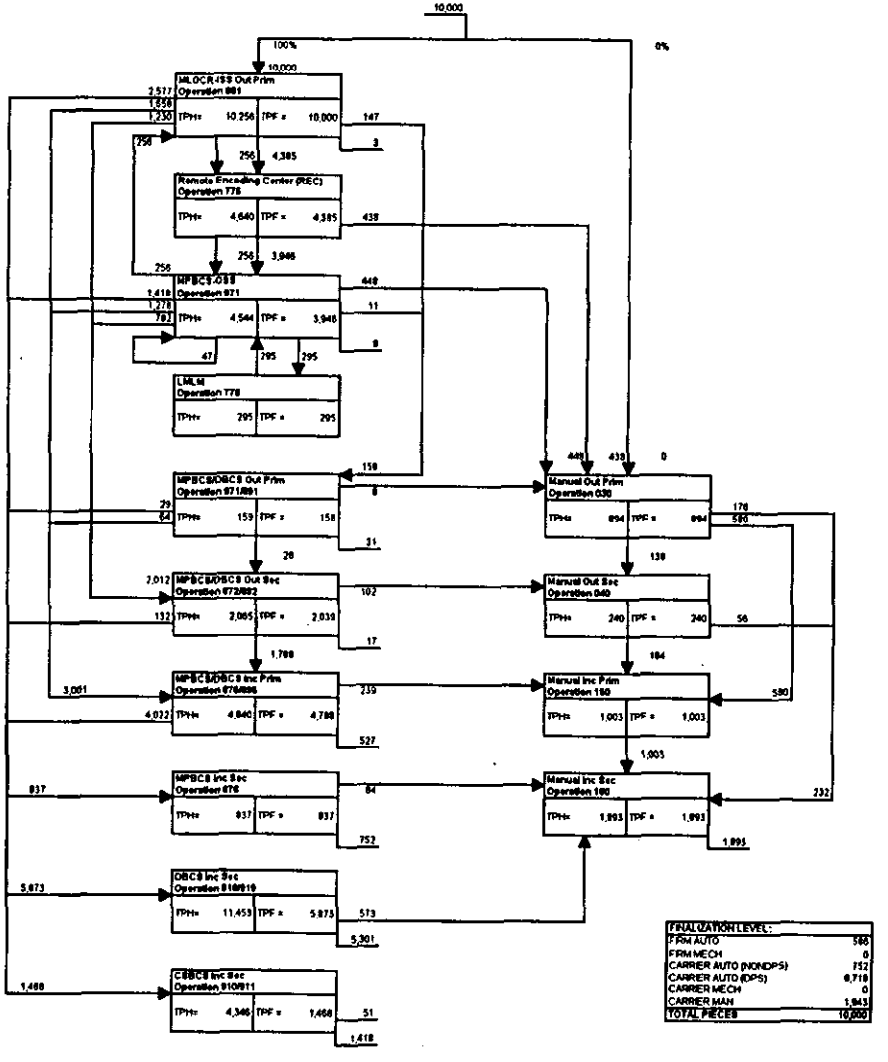


EXHIBIT USPS-RT-17F: MACHINE PRINTED MAIL PROCESSING MODEL UNIT COSTS
MODEL 5: RCR DEPLOYMENT (MP - 20%) / 5% LEAKAGE

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Outgoing Primary	TPH	Pieces Per Hour	Wage Rate	Cents Per Piece	Piggyback Factor	Premium Pay Adj	Total Cents Per Piece	Weighted Cost
MLOCR-ISS	10,273	7,350	$25.45	0.3462	2.0950	0.0070	0.7323	0.7523
REC	3,781	660	$14.92	2.2605	1.4500	0.0460	3.3237	1.2566
MPBCS-OSS	4,847	11,984	$25.45	0.2123	1.7190	0.0043	0.3693	0.1790
LMLM	315	4,985	$25.45	0.5104	1.4500	0.0104	0.7505	0.0236
MPBCS/DBCS	159	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.0094
Manual	661	662	$25.45	3.8437	1.3720	0.0783	5.3518	0.3537
Outgoing Secondary								
MPBCS/DBCS	2,118	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.1256
Manual	207	691	$25.45	3.6823	1.3720	0.0750	5.1271	0.1061
Incoming Primary								
MPBCS/DBCS	4,973	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.2947
Manual	833	562	$25.45	4.5276	1.3720	0.0922	6.3040	0.5252
Incoming Secondary								
MPBCS	858	6,633	$25.45	0.3836	1.7190	0.0078	0.6672	0.0572
DBCS	11,745	8,393	$25.45	0.3032	2.4340	0.0062	0.7441	0.8739
CSBCS	4,457	17,124	$25.45	0.1486	1.9480	0.0030	0.2925	0.1304
Manual	1,685	646	$25.45	3.9389	1.3720	0.0802	5.4843	0.9243
TOTAL MAIL PROCESSING MODEL UNIT COSTS								**5.6121**

(1) TPH from corresponding model
(2) Exhibit USPS-RT-17F, page 5
(3) Exhibit USPS-RT-17F, page 4
(4) [(3) x 100] / (2)
(5) Exhibit USPS-RT-17F, page 6
(6) [(Premium Pay Adjustment Factor) - 1] * (4)
(7) [(4) x (5)] + (6)
(8) [(1) x (7)] / 10,000

EXHIBIT USPS-RT-17F: MACHINE PRINTED MAIL PROCESSING MODEL

MODEL 5: RCR DEPLOYMENT (MP - 20%) / 5% LEAKAGE

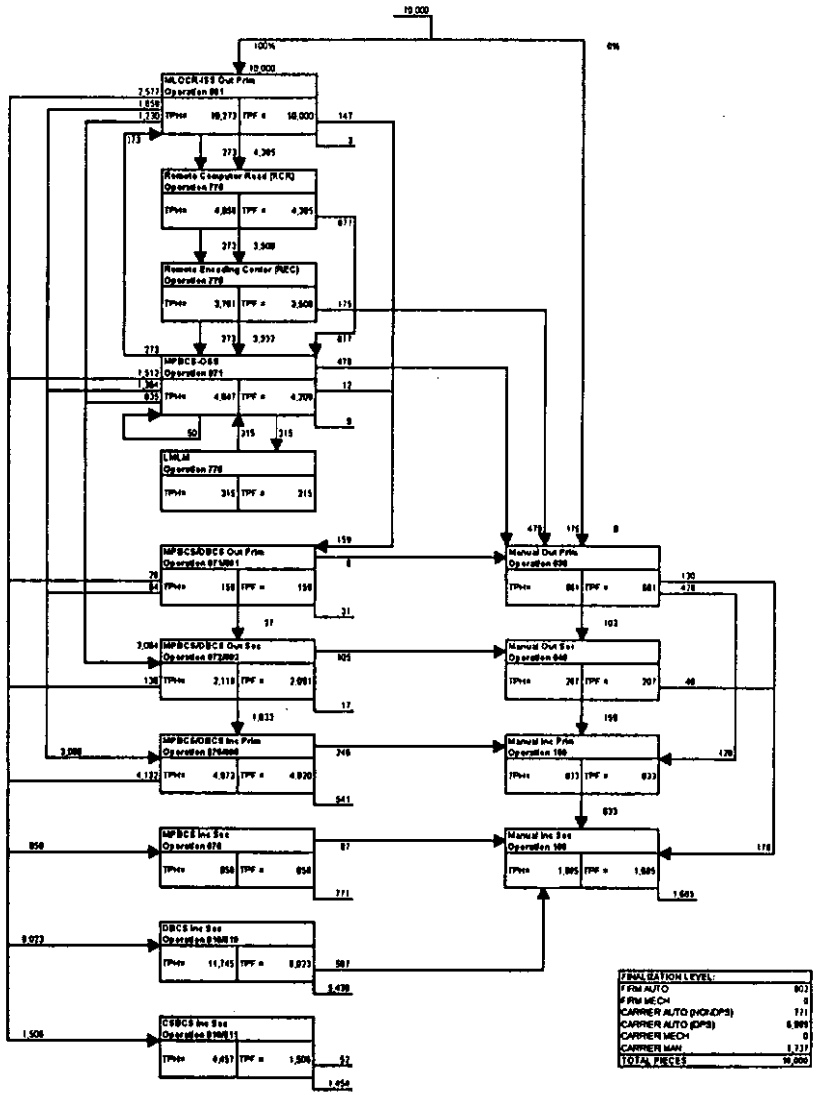


EXHIBIT USPS-RT-17F: MACHINE PRINTED MAIL PROCESSING MODEL UNIT COSTS
MODEL 6: CURRENT - AFCS-ISS RETROFITS/RCR MODIFICATIONS (MP-40%)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Outgoing Primary	TPH	Pieces Per Hour	Wage Rate	Cents Per Piece	Piggyback Factor	Premium Pay Adj	Total Cents Per Piece	Weighted Cost
MLOCR-ISS	10,276	7,350	$25.45	0.3462	2.0950	0.0070	0.7323	0.7525
REC	2,907	660	$14.92	2.2605	1.4500	0.0460	3.3237	0.9661
MPBCS-OSS	4,898	11,984	$25.45	0.2123	1.7190	0.0043	0.3693	0.1809
LMLM	318	4,985	$25.45	0.5104	1.4500	0.0104	0.7505	0.0239
MPBCS/DBCS	159	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.0095
Manual	622	662	$25.45	3.8437	1.3720	0.0783	5.3518	0.3329
Outgoing Secondary								
MPBCS/DBCS	2,127	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.1261
Manual	201	691	$25.45	3.6823	1.3720	0.0750	5.1271	0.1032
Incoming Primary								
MPBCS/DBCS	4,995	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.2961
Manual	805	562	$25.45	4.5276	1.3720	0.0922	6.3040	0.5073
Incoming Secondary								
MPBCS	862	6,633	$25.45	0.3836	1.7190	0.0078	0.6672	0.0575
DBCS	11,793	8,393	$25.45	0.3032	2.4340	0.0062	0.7441	0.8775
CSBCS	4,476	17,124	$25.45	0.1486	1.9480	0.0030	0.2925	0.1309
Manual	1,651	646	$25.45	3.9389	1.3720	0.0802	5.4843	0.9054
TOTAL MAIL PROCESSING MODEL UNIT COSTS								**5.2696**

(1) TPH from corresponding model
(2) Exhibit USPS-RT-17F, page 5
(3) Exhibit USPS-RT-17F, page 4
(4) [(3) x 100] / (2)
(5) Exhibit USPS-RT-17F, page 6
(6) [(Premium Pay Adjustment Factor) - 1] * (4)
(7) [(4) x (5)] + (6)
(8) [(1) x (7)] / 10,000

EXHIBIT USPS-RT-17F: MACHINE PRINTED MAIL PROCESSING MODEL

MODEL 6: CURRENT - AFCS-ISS RETROFITS/RCR MODIFICATIONS (MP-40%)

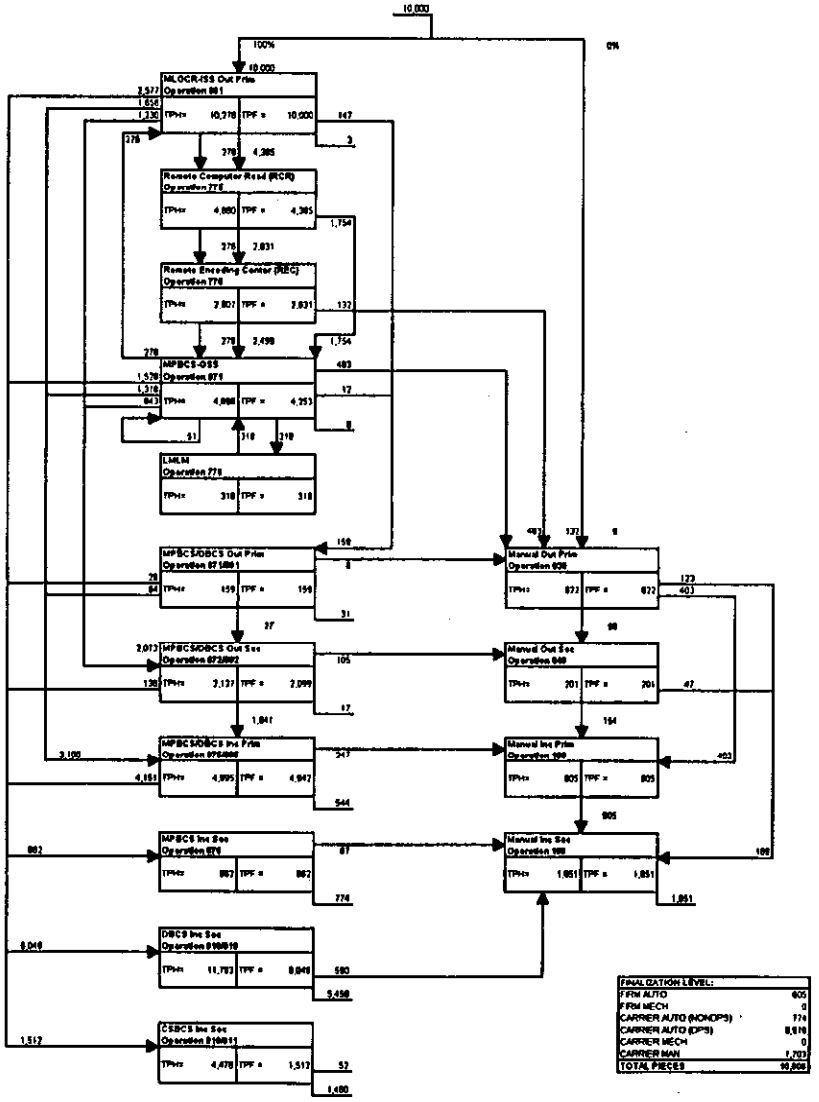


EXHIBIT USPS-RT-17F: MACHINE PRINTED MAIL PROCESSING MODEL UNIT COSTS
MODEL 7: FUTURE - RCR MODIFICATIONS (MP-50%)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Outgoing Primary	TPH	Pieces Per Hour	Wage Rate	Cents Per Piece	Piggyback Factor	Premium Pay Adj	Total Cents Per Piece	Weighted Cost
MLOCR-ISS	10,277	7,350	$25.45	0.3462	2.0950	0.0070	0.7323	0.7526
REC	2,470	660	$14.92	2.2605	1.4500	0.0460	3.3237	0.8208
MPBCS-OSS	4,923	11,984	$25.45	0.2123	1.7190	0.0043	0.3693	0.1818
LMLM	320	4,985	$25.45	0.5104	1.4500	0.0104	0.7505	0.0240
MPBCS/DBCS	160	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.0095
Manual	603	662	$25.45	3.8437	1.3720	0.0783	5.3518	0.3225
Outgoing Secondary								
MPBCS/DBCS	2,131	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.1263
Manual	198	691	$25.45	3.6823	1.3720	0.0750	5.1271	0.1018
Incoming Primary								
MPBCS/DBCS	5,006	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.2967
Manual	790	562	$25.45	4.5276	1.3720	0.0922	6.3040	0.4983
Incoming Secondary								
MPBCS	863	6,633	$25.45	0.3836	1.7190	0.0078	0.6672	0.0576
DBCS	11,818	8,393	$25.45	0.3032	2.4340	0.0062	0.7441	0.8793
CSBCS	4,485	17,124	$25.45	0.1486	1.9480	0.0030	0.2925	0.1312
Manual	1,634	646	$25.45	3.9389	1.3720	0.0802	5.4843	0.8959
TOTAL MAIL PROCESSING MODEL UNIT COSTS								**5.0984**

(1) TPH from corresponding model
(2) Exhibit USPS-RT-17F, page 5
(3) Exhibit USPS-RT-17F, page 4
(4) [(3) x 100] / (2)
(5) Exhibit USPS-RT-17F, page 6
(6) [(Premium Pay Adjustment Factor) - 1] * (4)
(7) [(4) x (5)] + (6)
(8) [(1) x (7)] / 10,000

EXHIBIT USPS-RT-17F: MACHINE PRINTED MAIL PROCESSING MODEL
MODEL 7: FUTURE - RCR MODIFICATIONS (MP-50%)

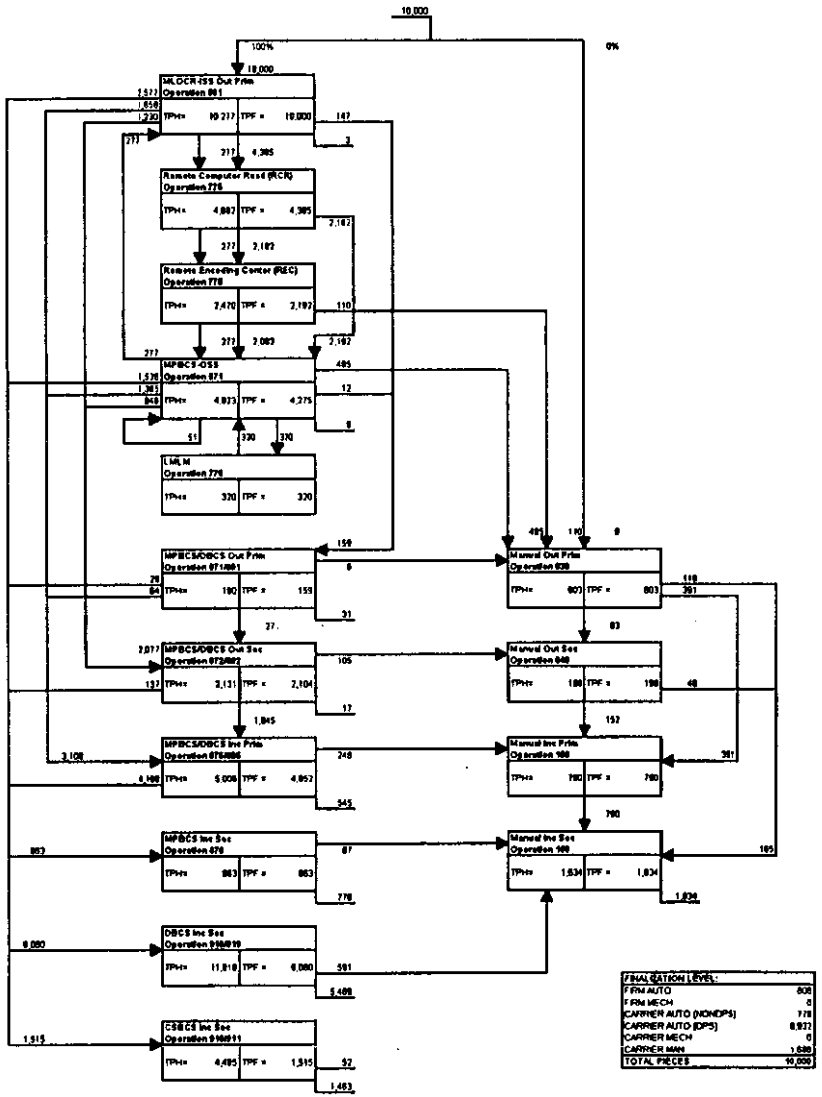


EXHIBIT USPS-RT-17F: METERED MAIL PROCESSING MODEL UNIT COSTS
MODELS 1,2: PRE-RBCS ENVIRONMENT/AFCS DEPLOYMENT

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Outgoing Primary	TPH	Pieces Per Hour	Wage Rate	Cents Per Piece	Piggyback Factor	Premium Pay Adj	Total Cents Per Piece	Weighted Cost
MLOCR	10,000	7,350	$25.45	0.3462	2.0950	0.0070	0.7323	0.7323
MPBCS/DBCS	159	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.0094
LSM	3,939	1,413	$25.45	1.8008	2.2400	0.0367	4.0704	1.6035
Manual	225	662	$25.45	3.8437	1.3720	0.0783	5.3518	0.1202
Outgoing Secondary								
MPBCS/DBCS	1,373	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.0814
LSM	104	1,440	$25.45	1.7670	2.2400	0.0360	3.9941	0.0413
Manual	42	691	$25.45	3.6823	1.3720	0.0750	5.1271	0.0213
Incoming Primary								
MPBCS/DBCS	3,078	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.1824
LSM	1,922	1,271	$25.45	2.0020	2.2400	0.0408	4.5252	0.8697
Manual	279	562	$25.45	4.5276	1.3720	0.0922	6.3040	0.1756
Incoming Secondary								
MPBCS	559	6,633	$25.45	0.3836	1.7190	0.0078	0.6672	0.0373
DBCS	7,646	8,393	$25.45	0.3032	2.4340	0.0062	0.7441	0.5689
CSBCS	2,902	17,124	$25.45	0.1486	1.9480	0.0030	0.2925	0.0849
LSM	4,101	1,151	$25.45	2.2107	2.2400	0.0450	4.9969	2.0492
Manual	496	646	$25.45	3.9389	1.3720	0.0802	5.4843	0.2723
TOTAL MAIL PROCESSING MODEL UNIT COSTS								**6.8497**

(1) TPH from corresponding model
(2) Exhibit USPS-RT-17F, page 5
(3) Exhibit USPS-RT-17F, page 4
(4) [(3) x 100] / (2)
(5) Exhibit USPS-RT-17F, page 6
(6) [(Premium Pay Adjustment Factor) - 1] * (4)
(7) [(4) x (5)] + (6)
(8) [(1) x (7)] / 10,000

EXHIBIT USPS-RT-17F: METERED MAIL PROCESSING MODEL

MODELS 1,2: PRE-RBCS ENVIRONMENT/AFCS DEPLOYMENT

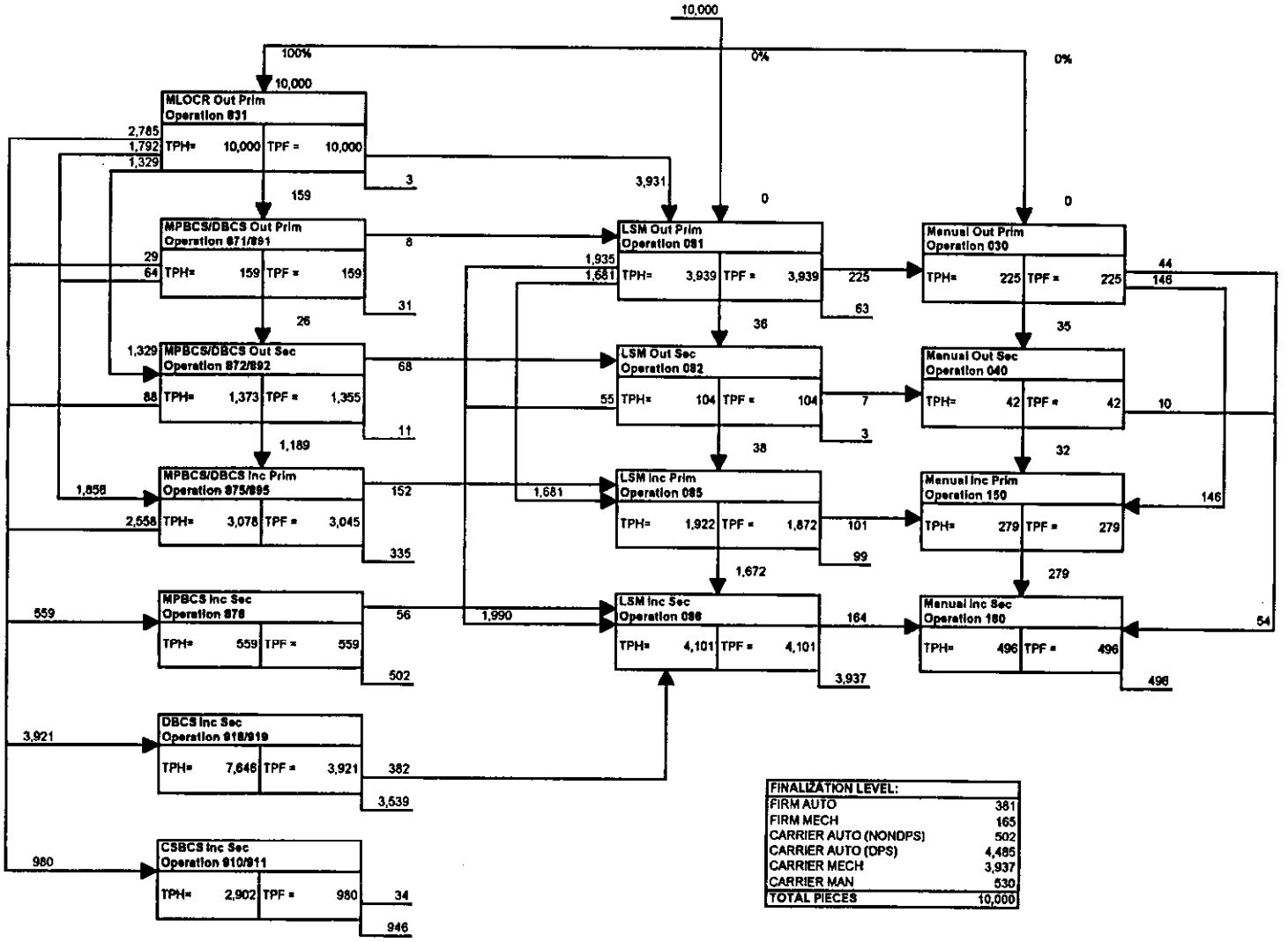


EXHIBIT USPS-RT-17F: METERED MAIL PROCESSING MODEL UNIT COSTS
MODEL 3: RBCS DEPLOYMENT/15% LEAKAGE

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Outgoing Primary	TPH	Pieces Per Hour	Wage Rate	Cents Per Piece	Piggyback Factor	Premium Pay Adj	Total Cents Per Piece	Weighted Cost
MLOCR	10,000	7,350	$25.45	0.3462	2.0950	0.0070	0.7323	0.7323
MLOCR-ISS	4,131	7,350	$25.45	0.3462	2.0950	0.0070	0.7323	0.3026
REC	4,131	660	$14.92	2.2605	1.4500	0.0460	3.3237	1.3732
MPBCS-OSS	3,775	11,984	$25.45	0.2123	1.7190	0.0043	0.3693	0.1394
LMLM	187	4,985	$25.45	0.5104	1.4500	0.0104	0.7505	0.0140
MPBCS/DBCS	169	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.0100
LSM	982	1,413	$25.45	1.8008	2.2400	0.0367	4.0704	0.3996
Manual	56	662	$25.45	3.8437	1.3720	0.0783	5.3518	0.0299
Outgoing Secondary								
MPBCS/DBCS	2,045	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.1212
LSM	110	1,440	$25.45	1.7670	2.2400	0.0360	3.9941	0.0439
Manual	16	691	$25.45	3.6823	1.3720	0.0750	5.1271	0.0082
Incoming Primary								
MPBCS/DBCS	4,762	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.2823
LSM	714	1,271	$25.45	2.0020	2.2400	0.0408	4.5252	0.3230
Manual	86	562	$25.45	4.5276	1.3720	0.0922	6.3040	0.0542
Incoming Secondary								
MPBCS	829	6,633	$25.45	0.3836	1.7190	0.0078	0.6672	0.0553
DBCS	11,348	8,393	$25.45	0.3032	2.4340	0.0062	0.7441	0.8444
CSBCS	4,307	17,124	$25.45	0.1486	1.9480	0.0030	0.2925	0.1260
LSM	1,813	1,151	$25.45	2.2107	2.2400	0.0450	4.9969	0.9059
Manual	173	646	$25.45	3.9389	1.3720	0.0802	5.4843	0.0950
TOTAL MAIL PROCESSING MODEL UNIT COSTS								**5.8603**

(1) TPH from corresponding model
(2) Exhibit USPS-RT-17F, page 5
(3) Exhibit USPS-RT-17F, page 4
(4) [(3) x 100] / (2)
(5) Exhibit USPS-RT-17F, page 6
(6) [(Premium Pay Adjustment Factor) - 1] * (4)
(7) [(4) x (5)] + (6)
(8) [(1) x (7)] / 10,000

EXHIBIT USPS-RT-17F: METERED MAIL PROCESSING MODEL

MODEL 3: RBCS DEPLOYMENT/15% LEAKAGE

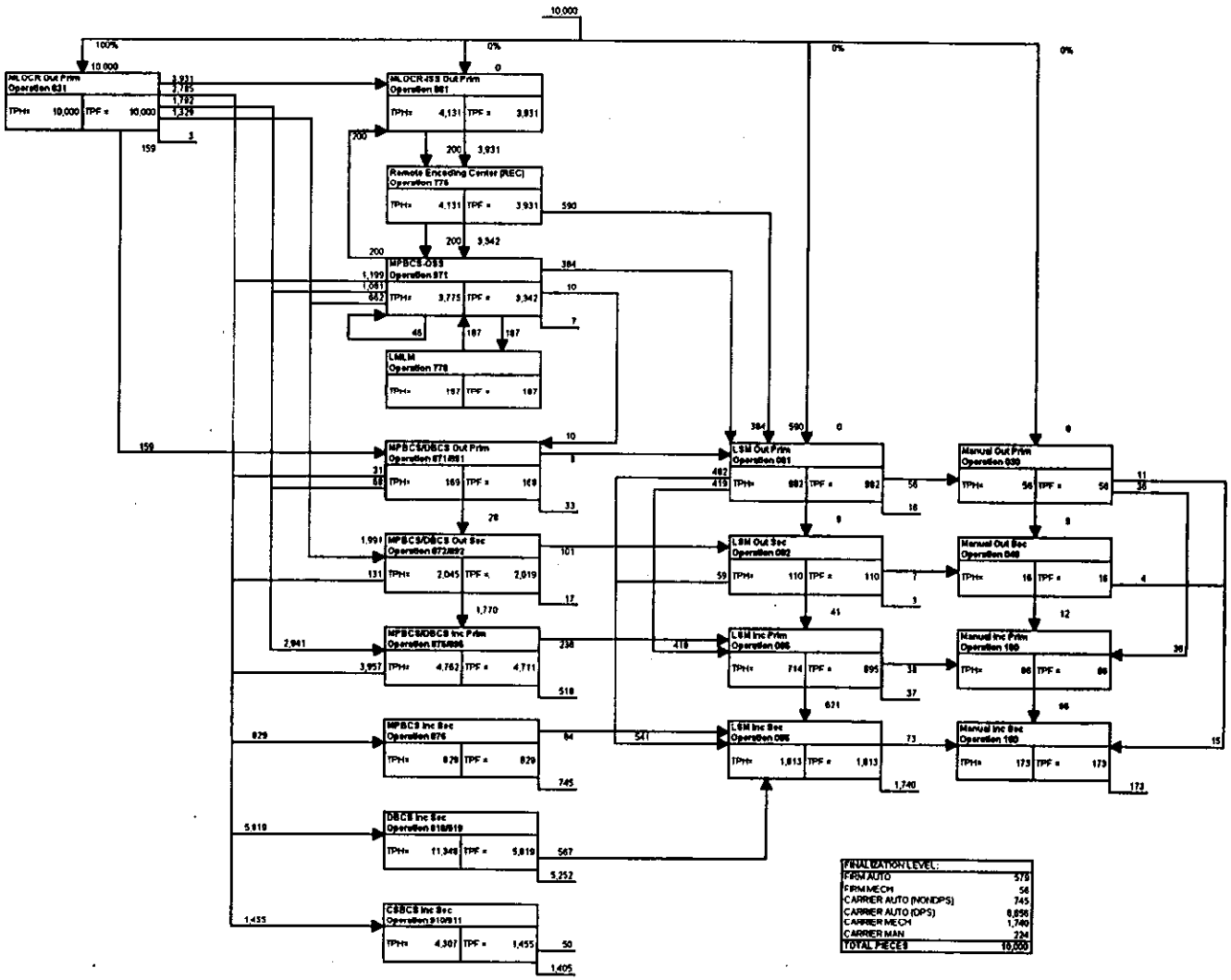


EXHIBIT USPS-RT-17F: METERED MAIL PROCESSING MODEL UNIT COSTS
MODEL 4: LSMs REMOVED/ALL MLOCR-ISS/ALL MPBCS-OSS/10% LEAKAGE

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Outgoing Primary	TPH	Pieces Per Hour	Wage Rate	Cents Per Piece	Piggyback Factor	Premium Pay Adj	Total Cents Per Piece	Weighted Cost
MLOCR-ISS	10,212	7,350	$25.45	0.3462	2.0950	0.0070	0.7323	0.7478
REC	4,143	660	$14.92	2.2605	1.4500	0.0460	3.3237	1.3771
MPBCS-OSS	3,997	11,984	$25.45	0.2123	1.7190	0.0043	0.3693	0.1476
LMLM	198	4,985	$25.45	0.5104	1.4500	0.0104	0.7505	0.0149
MPBCS/DBCS	169	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.0100
Manual	808	662	$25.45	3.8437	1.3720	0.0783	5.3518	0.4323
Outgoing Secondary								
MPBCS/DBCS	2,085	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.1236
Manual	228	691	$25.45	3.6823	1.3720	0.0750	5.1271	0.1169
Incoming Primary								
MPBCS/DBCS	4,861	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.2881
Manual	939	562	$25.45	4.5276	1.3720	0.0922	6.3040	0.5918
Incoming Secondary								
MPBCS	845	6,633	$25.45	0.3836	1.7190	0.0078	0.6672	0.0564
DBCS	11,566	8,393	$25.45	0.3032	2.4340	0.0062	0.7441	0.8606
CSBCS	4,389	17,124	$25.45	0.1486	1.9480	0.0030	0.2925	0.1284
Manual	1,815	646	$25.45	3.9389	1.3720	0.0802	5.4843	0.9952
TOTAL MAIL PROCESSING MODEL UNIT COSTS								**5.8906**

(1) TPH from corresponding model
(2) Exhibit USPS-RT-17F, page 5
(3) Exhibit USPS-RT-17F, page 4
(4) [(3) x 100] / (2)
(5) Exhibit USPS-RT-17F, page 6
(6) [(Premium Pay Adjustment Factor) - 1] * (4)
(7) [(4) x (5)] + (6)
(8) [(1) x (7)] / 10,000

EXHIBIT USPS-RT-17F: METERED MAIL PROCESSING MODEL

MODEL 4: LSMs REMOVED/ALL MLOCR CONVERTED TO MLOCR-ISS/10% LEAKAGE

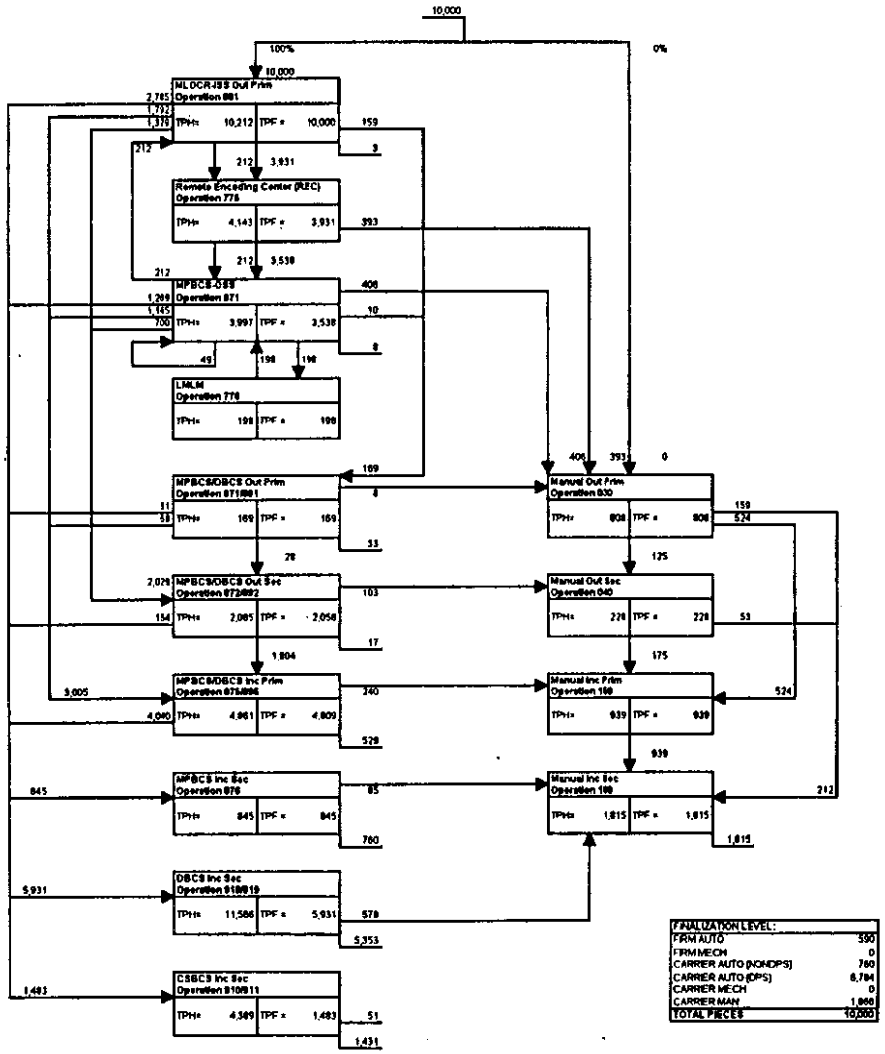


EXHIBIT USPS-RT-17F: METERED MAIL PROCESSING MODEL UNIT COSTS
MODEL 5: RCR DEPLOYMENT (MTR - 20%) / 5% LEAKAGE

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Outgoing Primary	TPH	Pieces Per Hour	Wage Rate	Cents Per Piece	Piggyback Factor	Premium Pay Adj	Total Cents Per Piece	Weighted Cost
MLOCR-ISS	10,226	7,350	$25.45	0.3462	2.0950	0.0070	0.7323	0.7489
REC	3,371	660	$14.92	2.2605	1.4500	0.0460	3.3237	1.1204
MPBCS-OSS	4,263	11,984	$25.45	0.2123	1.7190	0.0043	0.3693	0.1574
LMLM	211	4,985	$25.45	0.5104	1.4500	0.0104	0.7505	0.0158
MPBCS/DBCS	170	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.0101
Manual	599	662	$25.45	3.8437	1.3720	0.0783	5.3518	0.3206
Outgoing Secondary								
MPBCS/DBCS	2,132	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.1264
Manual	198	691	$25.45	3.6823	1.3720	0.0750	5.1271	0.1015
Incoming Primary								
MPBCS/DBCS	4,980	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.2952
Manual	786	562	$25.45	4.5276	1.3720	0.0922	6.3040	0.4957
Incoming Secondary								
MPBCS	864	6,633	$25.45	0.3836	1.7190	0.0078	0.6672	0.0576
DBCS	11,827	8,393	$25.45	0.3032	2.4340	0.0062	0.7441	0.8800
CSBCS	4,488	17,124	$25.45	0.1486	1.9480	0.0030	0.2925	0.1313
Manual	1,629	646	$25.45	3.9389	1.3720	0.0802	5.4843	0.8935
TOTAL MAIL PROCESSING MODEL UNIT COSTS								**5.3544**

(1) TPH from corresponding model
(2) Exhibit USPS-RT-17F, page 5
(3) Exhibit USPS-RT-17F, page 4
(4) [(3) x 100] / (2)
(5) Exhibit USPS-RT-17F, page 6
(6) [(Premium Pay Adjustment Factor) - 1] * (4)
(7) [(4) x (5)] + (6)
(8) [(1) x (7)] / 10,000

EXHIBIT USPS-RT-17F: METERED MAIL PROCESSING MODEL
MODEL 5: RCR DEPLOYMENT (MTR-20%) / 5% LEAKAGE

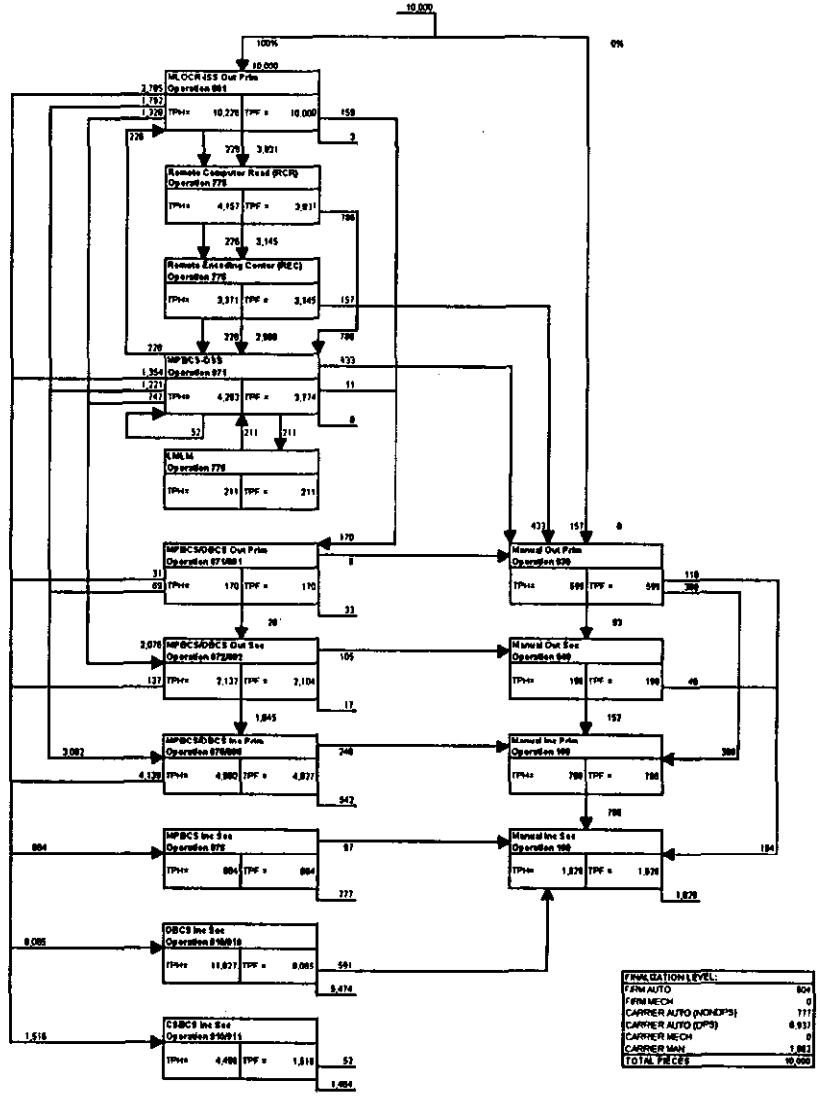


EXHIBIT USPS-RT-17F: METERED MAIL PROCESSING MODEL UNIT COSTS
MODEL 6: CURRENT - AFCS-ISS RETROFITS/RCR MODIFICATIONS (MTR-40%)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Outgoing Primary	TPH	Pieces Per Hour	Wage Rate	Cents Per Piece	Piggyback Factor	Premium Pay Adj	Total Cents Per Piece	Weighted Cost
MLOCR-ISS	10,228	7,350	$25.45	0.3462	2.0950	0.0070	0.7323	0.7490
REC	2,587	660	$14.92	2.2605	1.4500	0.0460	3.3237	0.8599
MPBCS-OSS	4,308	11,984	$25.45	0.2123	1.7190	0.0043	0.3693	0.1591
LMLM	213	4,985	$25.45	0.5104	1.4500	0.0104	0.7505	0.0160
MPBCS/DBCS	170	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.0101
Manual	564	662	$25.45	3.8437	1.3720	0.0783	5.3518	0.3019
Outgoing Secondary								
MPBCS/DBCS	2,140	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.1268
Manual	193	691	$25.45	3.6823	1.3720	0.0750	5.1271	0.0989
Incoming Primary								
MPBCS/DBCS	5,000	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.2964
Manual	761	562	$25.45	4.5276	1.3720	0.0922	6.3040	0.4797
Incoming Secondary								
MPBCS	867	6,633	$25.45	0.3836	1.7190	0.0078	0.6672	0.0579
DBCS	11,870	8,393	$25.45	0.3032	2.4340	0.0062	0.7441	0.8833
CSBCS	4,505	17,124	$25.45	0.1486	1.9480	0.0030	0.2925	0.1318
Manual	1,598	646	$25.45	3.9389	1.3720	0.0802	5.4843	0.8765
TOTAL MAIL PROCESSING MODEL UNIT COSTS								**5.0473**

(1) TPH from corresponding model
(2) Exhibit USPS-RT-17F, page 5
(3) Exhibit USPS-RT-17F, page 4
(4) [(3) x 100] / (2)
(5) Exhibit USPS-RT-17F, page 6
(6) [(Premium Pay Adjustment Factor) - 1] * (4)
(7) [(4) x (5)] + (6)
(8) [(1) x (7)] / 10,000

EXHIBIT USPS-RT-17F: METERED MAIL PROCESSING MODEL
MODEL 6: CURRENT - AFCS-ISS RETROFITS/RCR MODIFICATIONS (MTR-40%)

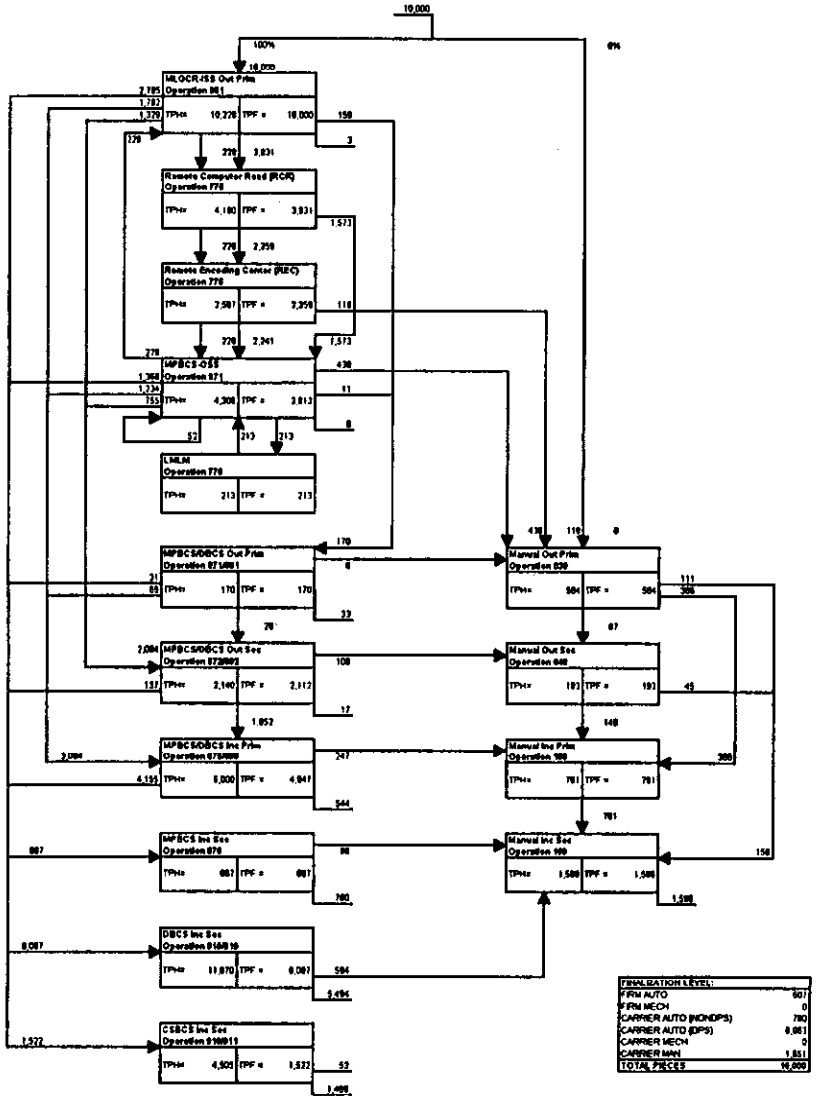


EXHIBIT USPS-RT-17F: METERED MAIL PROCESSING MODEL UNIT COSTS
MODEL 7: FUTURE - RCR MODIFICATIONS (MTR-50%)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Outgoing Primary	TPH	Pieces Per Hour	Wage Rate	Cents Per Piece	Piggyback Factor	Premium Pay Adj	Total Cents Per Piece	Weighted Cost
MLOCR-ISS	10,229	7,350	$25.45	0.3462	2.0950	0.0070	0.7323	0.7491
REC	2,195	660	$14.92	2.2605	1.4500	0.0460	3.3237	0.7296
MPBCS-OSS	4,330	11,984	$25.45	0.2123	1.7190	0.0043	0.3693	0.1599
LMLM	214	4,985	$25.45	0.5104	1.4500	0.0104	0.7505	0.0161
MPBCS/DBCS	170	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.0101
Manual	547	662	$25.45	3.8437	1.3720	0.0783	5.3518	0.2926
Outgoing Secondary								
MPBCS/DBCS	2,144	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.1271
Manual	190	691	$25.45	3.6823	1.3720	0.0750	5.1271	0.0976
Incoming Primary								
MPBCS/DBCS	5,010	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.2969
Manual	748	562	$25.45	4.5276	1.3720	0.0922	6.3040	0.4717
Incoming Secondary								
MPBCS	869	6,633	$25.45	0.3836	1.7190	0.0078	0.6672	0.0580
DBCS	11,892	8,393	$25.45	0.3032	2.4340	0.0062	0.7441	0.8849
CSBCS	4,513	17,124	$25.45	0.1486	1.9480	0.0030	0.2925	0.1320
Manual	1,583	646	$25.45	3.9389	1.3720	0.0802	5.4843	0.8680
TOTAL MAIL PROCESSING MODEL UNIT COSTS								**4.8937**

(1) TPH from corresponding model
(2) Exhibit USPS-RT-17F, page 5
(3) Exhibit USPS-RT-17F, page 4
(4) [(3) x 100] / (2)
(5) Exhibit USPS-RT-17F, page 6
(6) [(Premium Pay Adjustment Factor) - 1] * (4)
(7) [(4) x (5)] + (6)
(8) [(1) x (7)] / 10,000

EXHIBIT USPS-RT-17F: METERED MAIL PROCESSING MODEL

MODEL 7: FUTURE - RCR MODIFICATIONS (MTR-50%)

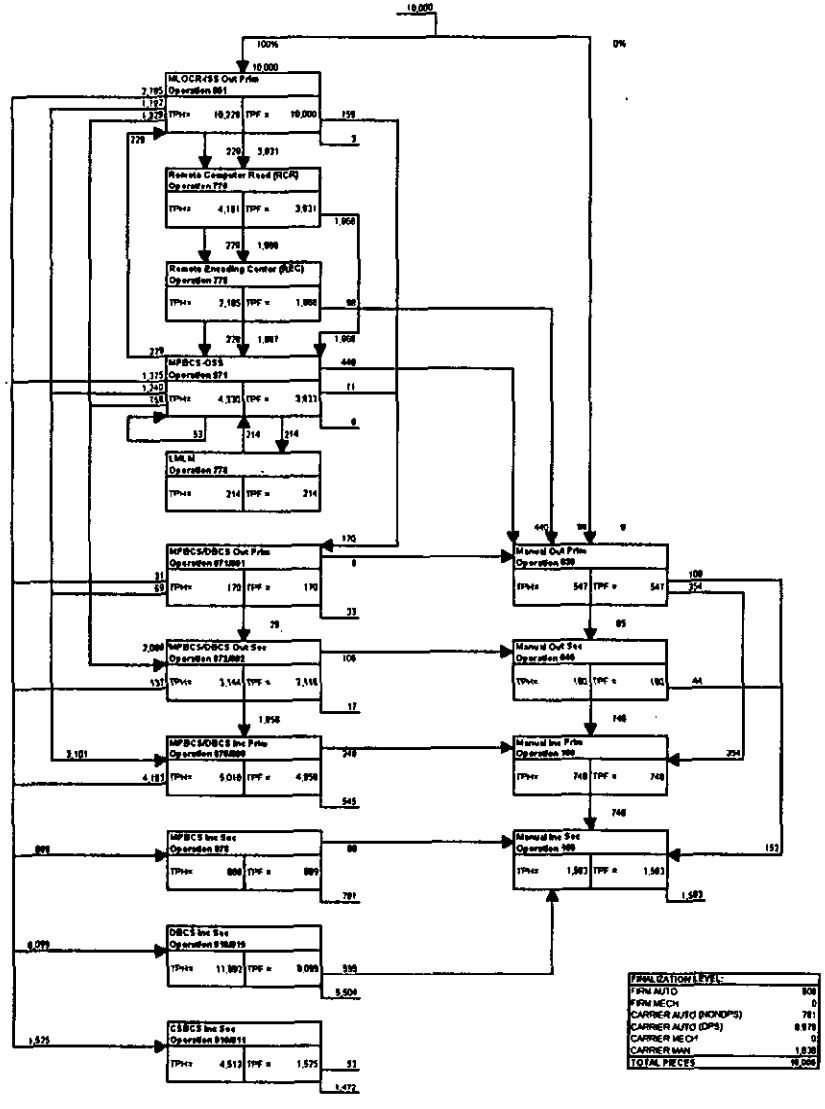


EXHIBIT USPS-RT-17F: BARCODED MAIL FLOW
MODELS 1-3

Outgoing Primary	(1) TPH	(2) Pieces Per Hour	(3) Wage Rate	(4) Cents Per Piece	(5) Piggyback Factor	(6) Premium Pay Adj	(7) Total Cents Per Piece	(8) Weighted Cost
MPBCS/DBCS	10,017	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.5937
LSM	500	1,413	$25.45	1.8008	2.2400	0.0367	4.0704	0.2035
Manual	29	662	$25.45	3.8437	1.3720	0.0783	5.3518	0.0153
Outgoing Secondary								
MPBCS/DBCS	1,690	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.1002
LSM	88	1,440	$25.45	1.7670	2.2400	0.0360	3.9941	0.0351
Manual	10	691	$25.45	3.6823	1.3720	0.0750	5.1271	0.0052
Incoming Primary								
MPBCS/DBCS	5,560	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.3296
LSM	535	1,271	$25.45	2.0020	2.2400	0.0408	4.5252	0.2421
Manual	54	562	$25.45	4.5276	1.3720	0.0922	6.3040	0.0343
Incoming Secondary								
MPBCS	6,556	6,633	$25.45	0.3836	1.7190	0.0078	0.6672	0.4374
DBCS	0	8,393	$25.45	0.3032	2.4340	0.0062	0.7441	0.0000
CSBCS	0	17,124	$25.45	0.1486	1.9480	0.0030	0.2925	0.0000
LSM	1,420	1,151	$25.45	2.2107	2.2400	0.0450	4.9969	0.7096
Manual	119	646	$25.45	3.9389	1.3720	0.0802	5.4843	0.0654
TOTAL MAIL PROCESSING MODEL UNIT COSTS								**2.7715**

(1) TPH from corresponding model
(2) Exhibit USPS-RT-17F, page 5
(3) Exhibit USPS-RT-17F, page 4
(4) [(3) x 100] / (2)
(5) Exhibit USPS-RT-17F, page 6
(6) [(Premium Pay Adjustment Factor) - 1] * (4)
(7) [(4) x (5)] + (6)
(8) [(1) x (7)] / 10,000

EXHIBIT USPS-RT-17F: BARCODED MAIL FLOW
MODELS 4-7

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Outgoing Primary	TPH	Pieces Per Hour	Wage Rate	Cents Per Piece	Piggyback Factor	Premium Pay Adj	Total Cents Per Piece	Weighted Cost
MPBCS/DBCS	10,017	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.5937
Manual	500	662	$25.45	3.8437	1.3720	0.0783	5.3518	0.2676
Outgoing Secondary								
MPBCS/DBCS	1,690	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.1002
Manual	161	691	$25.45	3.6823	1.3720	0.0750	5.1271	0.0825
Incoming Primary								
MPBCS/DBCS	5,560	7,467	$25.45	0.3408	1.7190	0.0069	0.5927	0.3296
Manual	722	562	$25.45	4.5276	1.3720	0.0922	6.3040	0.4555
Incoming Secondary								
MPBCS	6,556	6,633	$25.45	0.3836	1.7190	0.0078	0.6672	0.4374
DBCS	0	8,393	$25.45	0.3032	2.4340	0.0062	0.7441	0.0000
CSBCS	0	17,124	$25.45	0.1486	1.9480	0.0030	0.2925	0.0000
Manual	1,521	646	$25.45	3.9389	1.3720	0.0802	5.4843	0.8340
TOTAL MAIL PROCESSING MODEL UNIT COSTS								**3.1004**

(1) TPH from corresponding model
(2) Exhibit USPS-RT-17F, page 5
(3) Exhibit USPS-RT-17F, page 4
(4) [(3) x 100] / (2)
(5) Exhibit USPS-RT-17F, page 6
(6) [(Premium Pay Adjustment Factor) - 1] * (4)
(7) [(4) x (5)] + (6)
(8) [(1) x (7)] / 10,000

EXHIBIT USPS-RT-17F: BARCODED MAIL FLOW
MODELS 4-7

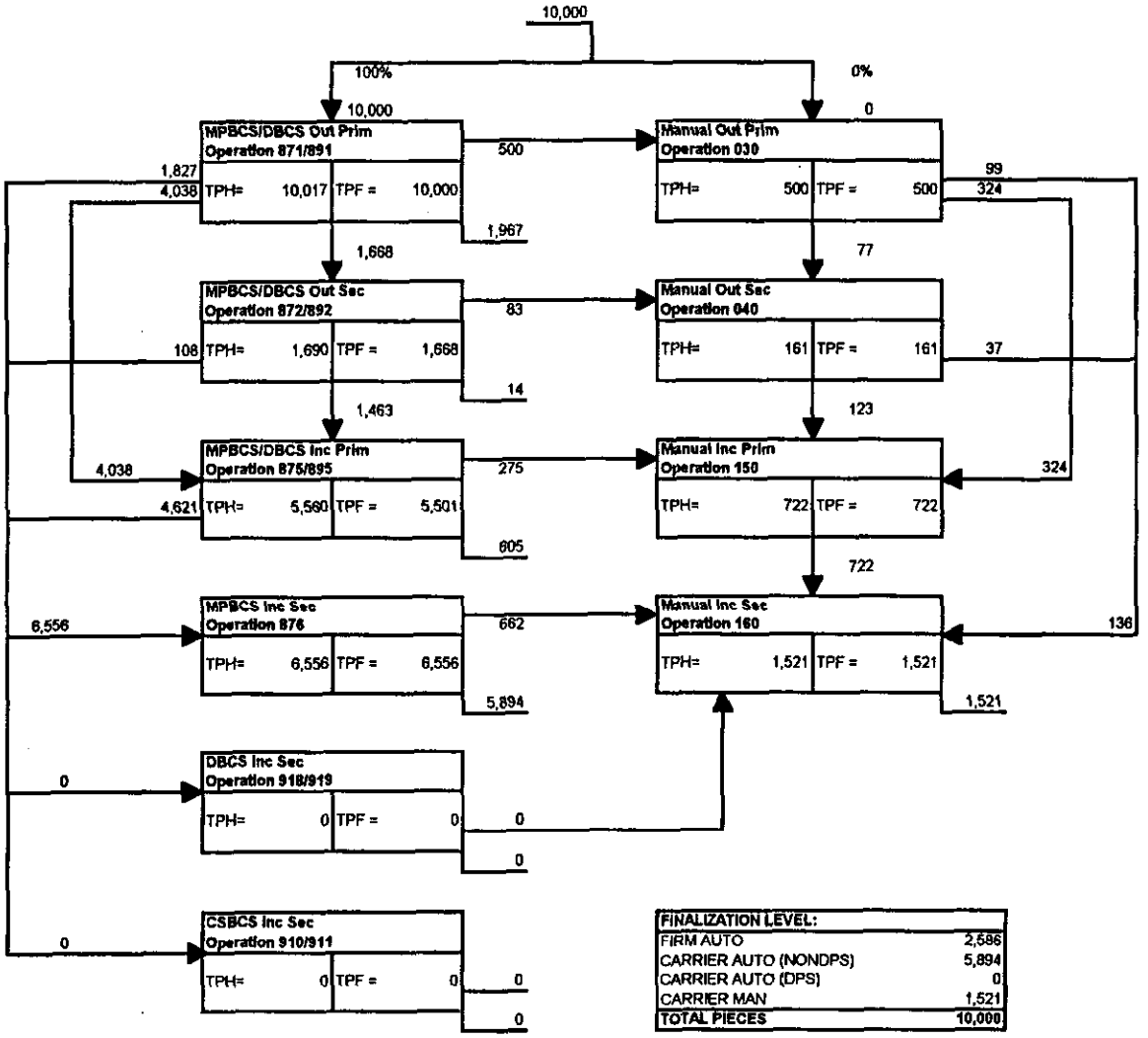


EXHIBIT USPS-RT-17G: COST CONVERGENCE MODEL DESCRIPTIONS

This exhibit describes the single piece cost models that were created to support CEM rebuttal testimony. These models show that the mail processing costs for the four single piece mail streams (handwritten, machine printed, metered, and prebarcoded) are converging. In other words, the costs for processing handwritten, machine printed, and metered mail are approaching those for prebarcoded or "FIM" (Facer Identification Mark) mail. The model inputs, assumptions, and the specific models themselves will be discussed in this exhibit.

A. MODEL INPUTS

For the most part, the inputs to these models are the same as those used in other cost models in Docket No. R97-1. In some instances, data from Docket No. MC95-1 were used. For example, the models in R97-1 did not include Letter Sorting Machine (LSM) operations. Therefore, some LSM data from Docket No. MC95-1 were used. In addition, the density tables were recalculated to include the "DISP code 9" (firm mail) data to more accurately represent single piece mail flows.[1]

B. ASSUMPTIONS

The costs contained in these models should not be viewed as all-inclusive single costs. The models were created to demonstrate the impact that automation deployments and other technological improvements have had on single piece mail processing costs. I have attempted to show how the costs would be affected (in current terms) if we removed these improvements and reverted to earlier processing strategies.

Simplified Mail Flow: The models demonstrate the cost differences between the four mail streams as letters are processed through a large automated facility, or facilities in the case of non-local mail. In addition, the densities for Automated Area Distribution Center (AADC), Section Center Facility (SCF) and Incoming Primary operations were added together when flowing mail to what is labeled the "incoming

[1] See Exhibit USPS-RT-17H.

primary" operation in the models. The assumption here is that the facilities only have one incoming primary type of operation. This was the case in San Diego which had a service area that spanned three "SCFs" or Sectional Center Facilities (ZIP Codes beginning with 919, 920,or 921). Since this same assumption was used in all models, the impact on any cost differences between the mail types should be minimal.

RCR Node: Some of the differences between the models involve changes to the finalization rates for the Remote Computer Read (RCR) system.[2] Therefore, an RCR node was used in the models. As a result, the lower Remote Encoding Center (REC) productivity from LR-H-113 was used for all models. This productivity was more representative of the pure keying productivity at a REC because it minimized the impact of RCR. (The models in USPS-T-25 and USPS-T-29 used the higher productivity because they did not have separate RCR nodes and therefore the RCR impact was built into the REC productivity.)

Finalized Firm Mail: The presort models did not use density tables that included firm mail because it was assumed that presort mail destinated at household delivery addresses. As stated previously, these single piece models do include firm holdout mail. The mail finalized on any given operation is shown in the "shelf" hanging from the lower right hand corner of all applicable operations in the models.

Barcoded Incoming Secondaries: All mail flowing to incoming secondaries in the barcoded models was diverted to the single pass operation. This assumption was used to illustrate the fact that many ZIP Codes where carriers would deliver mail to businesses would be the least likely Delivery Point Sequence (DPS) zones. Even in a DPS environment, some sites would hold out firm mail (depending on the volume) on the first pass rather than sorting it in walk sequence. In addition, many firms have their mail finalized on a box section program (operation 877) that is usually a single pass incoming secondary for box section mail. Therefore, the single pass assumption was used for incoming secondary mail.

---

[2] See page 5 for more detailed description.

C. MODELS

Models were constructed to reflect seven different processing environments.

Model 1 - Pre-RBCS Environment: Prior to 1992, automation operations consisted primarily of Multi-Line Optical Character Readers (MLOCR) and Mail Processing Bar Code Sorters (MPBCS). The LSM also carried a great deal of the processing burden. When collection mail entered an originating facility, it was canceled on the M-36 machine, the precursor to the Advanced Facer Canceler System (AFCS).

Those machines could separate barcoded FIM mail, but they could not separate handwritten mail from machine printed mail. Therefore, greater cost differences existed between the different mail types because handwritten mail would be mixed with machine printed mail and would be rejected, for the most part, on an MLOCR. Those rejects would then have to be sorted on an LSM. The manual, mechanized (LSM), and automated (barcoded) mail streams were packaged separately when dispatched. In that manner, the destinating site could ensure that the mail was routed to the most efficient operation when it was unpackaged at the opening unit at that facility.

Model 2 - AFCS Deployment: San Diego actually went on-line with the Remote Bar Coding System (RBCS) before it started receiving the AFCS in the spring of 1993. RBCS implementation at plants, however, was not a turnkey operation. The plant and the REC slowly increased the amount of mail that was being processed through the RBCS system over time. Therefore, I did observe some of the benefits that were attributed solely to the deployment of the AFCS. The only mail stream that experienced these benefits was the handwritten mail stream. The AFCS had the capability to separate FIM, handwritten and machine printed mail. Therefore, handwritten mail could be sent directly to an LSM rather than first being processed on an MLOCR.

Model 3 - RBCS Deployment/15% Leakage: San Diego was the fourth Phase I deployment site in the country to receive RBCS when it went on-line in June 1992. At that time, only a portion of the MLOCRs was converted to Input Sub Systems (ISS) that could lift images. The same was true for the MPBCS Output Sub System (OSS)

retrofits. The amount that were retrofitted at each plant was calculated using a nationwide spreadsheet model referred to as the Barcode Automation Model (BAM).

Once RBCS was operational, it was possible to route handwritten mail directly to an MLOCR-ISS. Due to the higher read rates, machine printed and metered mail were sent directly to the MLOCRs that had no image lift capabilities. The rejects from that operation were then routed to the MLOCR-ISS to have the images lifted.

As stated previously, the barcoded, mechanized, and manual mail streams were packaged separately to facilitate processing at the destinating P&DC. One of the major advantages of having RBCS was the fact that a higher percentage of mail was barcoded by the originating facility. Therefore, the costs for processing "incoming" mail decreased substantially because the destinating facility had more barcoded mail and less mechanized and manual mail to process.

Leakage refers to mail that is processed through the REC, but a corresponding result is never retrieved from the Decision Storage Unit (DSU). For the RBCS system as a whole, the initial leakage percentage was fairly high due to the fact that there was some resistance to change and a lot of uncertainty as to what the different OSS errors actually represented. For purposes of modeling, a 15% leakage value was used.

Model 4 - LSM Removals/All MLOCR Converted To ISS/All MPBCS Converted to OSS/10% Leakage: These models represent what happened during the period between the initial RBCS deployment and the Remote Computer Read (RCR) installation. In San Diego, these changes occurred between 1993 and 1996. All LSMs were removed, all MLOCRs were converted to ISSs, all MPBCSs were converted to OSSs, and the leakage was reduced.

The handwritten and barcoded mail processing costs increased due to the fact that, with the removal of LSMs, automation rejects had to be processed in manual operations. This change was actually beneficial because it improved service. At that time, the LSM was processing the lowest quality automation reject mail. The addresses on these mail pieces were often difficult to read. Therefore, the percentage of LSM errors was high because the keyers were still required to process this mail at 60 letters

per minute. As a result, many sites noticed dramatic improvements in their EXternal First-Class (EXFC) measurement scores after removing their LSMs.

The machine printed and metered mail costs would have also increased slightly with the removal of the LSMs, but that increase was offset by the fact that all the MLOCRs had been retrofitted to ISSs. Therefore, this mail only had to be processed on an MLOCR once and any mail pieces that were not encoded would have had their images directly lifted by the ISS.

Model 5 - RCR Deployments/5% Leakage: San Diego received the RCR system in April 1996. This system was a component that was added to the RBCS computer equipment at the plant. All images were routed through RCR before being transmitted to the REC. RCR used advanced image processing and pattern recognition software to finalize images electronically. Initially, the finalization percentages were 2% for handwritten mail and 20% for machine printed and metered mail.[3] Finalized images did not require any REC keying. Therefore, the mail processing costs were reduced. During this time, the leakage percentage also continued to decrease.

Model 6 - AFCS-ISS Retrofits/RCR Modifications: These models most closely resemble today's processing environment. San Diego began retrofitting its AFCSs with image lift capabilities in the Fall of 1996. The changes further contributed to reducing the costs for handwritten mail as images could be lifted directly on the AFCS. During that same time period, modifications were added to the RCR system which increased the finalization rates to 25% for handwritten mail and 40% for machine printed and metered mail. Mail processing costs for all three of these mail types decreased to some extent due to the RCR enhancements.

Model 7 - Future RCR Modifications: Single piece mail processing costs will continue to converge in the future as the Postal Service strengthens its automation program. RCR modifications are being planned which will improve the finalization rates to at least 50% for all mail types.[4] These changes were reflected in the models.

---

[3] As per Engineering.
[4] As per Engineering.

There are also other changes being planned which could not be incorporated into the models. For example, a requirements call was recently solicited to plants for DBCS Output Sub System (DBCS-OSS) retrofits. The current MPBCS-OSS has limited bin capacity (96) and, as a result, a sizable percentage of mail must be "residued" and finalized to the 3-digit or 5-digit level in a separate operation. The DBCS-OSS will increase bin capacity (174, on average) and will therefore eliminate some of these additional handlings. As a result, the mail processing costs for handwritten, machine printed, and metered mail will continue to approach those of prebarcoded mail.

EXHIBIT USPS-RT-17H: DENSITY TABLES

Revised-3/13/98

The purpose of this analysis is to add firm holdout downflow density percentages to the work done in Docket No MC95-1, LR-MCR-3.

LR-MCR-3 calculated downflow densities for several MODS operations at the Outgoing Primary, Outgoing Secondary, Managed Mail, SCF, Incoming Primary, and Incoming Secondary levels. Downflow densities are defined as the percentage of mail that is sorted to each level, or "flows downward" to each level. Early in the work period for LR-MCR-3, it was determined to exclude all bins with a disposition or DISP code of 9. DISP code 9 bins are defined as bins containing a complete 9-digit ZIP or a firm name, regardless of the remaining description. The current work added DISP code 9 densities back into the density tables.

The work done to add DISP code 9 mail back into the results table was relatively straight-forward. Since the data had already been collected, the programs that had taken DISP code 9 mail out of the final dataset were modified to leave that mail in the dataset and separate it from the other sort levels. The result is a summary of final densities table that is similar to Table 4 in LR-MCR-3, but has an extra column for DISP code 9 mail.

The specific changes to the programs were very minor. In the program Anal_3.sas (pages 3-8), the section of code from lines 41 through 68 was commented out, since this is the section that eliminated DISP code 9 mail in the original program. The section of code in lines 264 through 273 was also commented out, since this section eliminated the remainder of the DISP code 9 mail. In the program Anal_4.sas (pages 9-17), line 749 was added to format the DISP code 9 tallies. The rest of the program remained the same. No other changes were necessary since the output datasets from Anal_3.sas now include the DISP code 9 tallies.

Following is an updated version of Table 4 (page 2) from Docket No. MC95-1, LR-MCR-3. This table now includes DISP9 densities. The modified programs Anal_3.sas and Anal_4.sas are also included.

EXHIBIT USPS-RT-17H: DENSITY TABLES

MODS Operation	Sort Levels						
	OP	OS	MMP	SCF	IP	IS	DISP9
081	0.00001	0.00962	0.25120	0.10957	0.09184	0.52092	0.01684
082			0.27064	0.04833	0.07730	0.57283	0.03090
083			0.02121	0.09568	0.03509	0.79747	0.05055
084				0.02995	0.03910	0.90418	0.02677
085					0.02667	0.91883	0.05450
141	0.00008	0.12823	0.33173	0.22821	0.13422	0.17714	0.00039
142			0.79993	0.06792	0.06943	0.06127	0.00145
143			0.02512	0.25416	0.08611	0.62967	0.00494
144				0.00635	0.00821	0.98274	0.00271
145					0.00218	0.92318	0.07464
961		0.10431	0.28766	0.29373	0.11743	0.19655	0.00031
962			0.82516	0.04890	0.09774	0.02820	
963			0.00719	0.22750	0.10698	0.64191	0.01642
964				0.00146	0.01509	0.98160	0.00186
965					0.00010	0.96096	0.03894
971	0.00324	0.22364	0.05603	0.16971	0.13970	0.40523	0.00245
972		0.20784	0.13216	0.38804	0.16772	0.10415	0.00008
973			0.02879	0.16471	0.11989	0.66258	0.02403
974				0.05274	0.04665	0.86026	0.04035
975					0.04633	0.94838	0.00528
MLOCR/ISS-OP	0.02617	0.21899	0.04995	0.14094	0.10443	0.45895	0.00057
MLOCR/ISS-OS		0.17695	0.18171	0.50145	0.08010	0.05979	
MLOCR/ISS-MMP			0.04284	0.16035	0.09720	0.68549	0.01412
MLOCR/ISS-SCF				0.09131	0.05841	0.84664	0.00365
MLOCR/ISS-IP					0.07677	0.91455	0.00868
MPBCS/DBCS-OP	0.00172	0.17530	0.17016	0.13574	0.11844	0.19197	0.20667
MPBCS/DBCS-OS		0.01314	0.49845	0.23996	0.17251	0.06744	0.00848
MPBCS/DBCS-MMP			0.00841	0.21030	0.09321	0.60931	0.07876
MPBCS/DBCS-SCF				0.00843	0.04279	0.89922	0.04956
MPBCS/DBCS-IP					0.01079	0.87466	0.11455

The purpose of this analysis is to add firm holdout downflow density percentages to the work done in Docket No MC95-1, LR-MCR-3.

LR-MCR-3 calculated downflow densities for several MODS operations at the Outgoing Primary, Outgoing Secondary, Managed Mail, SCF, Incoming Primary, and Incoming Secondary levels. Downflow densities are defined as the percentage of mail that is sorted to each level, or "flows downward" to each level. Early in the work period for LR-MCR-3, it was determined to exclude all bins with a disposition or DISP code of 9. DISP code 9 bins are defined as bins containing a complete 9-digit ZIP or a firm name, regardless of the remaining description. The current work added DISP code 9 densities back into the density tables.

The work done to add DISP code 9 mail back into the results table was relatively straight-forward. Since the data had already been collected, the programs that had taken DISP code 9 mail out of the final dataset were modified to leave that mail in the dataset and separate it from the other sort levels. The result is a summary of final densities table that is similar to Table 4 in LR-MCR-3, but has an extra column for DISP code 9 mail.

The specific changes to the programs were very minor. In the program Anal_3.sas (pages 3-8), the section of code from lines 41 through 68 was commented out, since this is the section that eliminated DISP code 9 mail in the original program. The section of code in lines 264 through 273 was also commented out, since this section eliminated the remainder of the DISP code 9 mail. In the program Anal_4.sas (pages 9-17), line 749 was added to format the DISP code 9 tallies. The rest of the program remained the same. No other changes were necessary since the output datasets from Anal_3.sas now include the DISP code 9 tallies.

Following is an updated version of Table 4 (page 2) from Docket No. MC95-1, LR-MCR-3. This table now includes DISP9 densities. The modified programs Anal_3.sas and Anal_4.sas are also included.

This exhibit describes the single piece cost models that were created to support CEM rebuttal testimony. These models show that the mail processing costs for the four metered mail will continue to approach those of prebarcoded mail.

```
1    ************************************************************************;
2    * This program collapses multiple sortplans within mods operations*;
3    * & put observations into an appropriate dataset based upon the    *;
4    * direction/type of flow.                                          *;
5    *                                                                  *;
6    * Author:  Paul Seckar                                            *;
7    * Date:    12/5/94                                                 *;
8    * Edited by Bill McNary on 10/22/97                                *;
9    * Name:    Anal_3.sas                                              *;
10   *                                                                  *;
11   *  Input datasets:  flow.sd2 (from anal_2.sas)                     *;
12   *                   regpos.sd2 (from read_dbf.sas)                 *;
13   *                   tphvols.sd2 (from read_dbf.sas)                *;
14   *  Output datasets: dwnwd.sd2                                      *;
15   ************************************************************************;
16
17   options ls=110 ps=85;
18
19   libname data 'c:\mydocu~1\bill\density';
NOTE: Libref DATA was successfully assigned as follows:
      Engine:        V612
      Physical Name: c:\mydocu~1\bill\density
20   libname alpurdat 'c:\mydocu~1\bill\density';
NOTE: Libname ALPURDAT refers to the same physical library as DATA.
NOTE: Libref ALPURDAT was successfully assigned as follows:
      Engine:        V612
      Physical Name: c:\mydocu~1\bill\density
21   libname sampdata 'c:\mydocu~1\bill\density';
NOTE: Libname SAMPDATA refers to the same physical library as ALPURDAT.
NOTE: Libref SAMPDATA was successfully assigned as follows:
      Engine:        V612
      Physical Name: c:\mydocu~1\bill\density
22
23   proc contents data=data.flow;run;

NOTE: The PROCEDURE CONTENTS used 1.05 seconds.


24   proc contents data=alpurdat.regpos;run;

NOTE: The PROCEDURE CONTENTS used 0.11 seconds.


25   proc contents data=alpurdat.tphvols;run;

NOTE: The PROCEDURE CONTENTS used 0.16 seconds.


26
27
28   proc sort data=data.flow out=flow tagsort;
29     by site from_mod from_sp nextop;
30   run;

NOTE: The data set WORK.FLOW has 115604 observations and 7 variables.
NOTE: The PROCEDURE SORT used 41.03 seconds.


31   ************************************************************************;
32   ***Sum up densities within site, from_mod, & from_sp, by nextop.  **;
33   ************************************************************************;
34   proc means data=flow noprint;
35     by site from_mod from_sp nextop;
36     var density;
37     output out=colovnop(drop=_type_ _freq_) sum=density;
38   run;

NOTE: The data set WORK.COLOVNOP has 6048 observations and 5 variables.
NOTE: The PROCEDURE MEANS used 5.54 seconds.


39
40   /*
41   ************************************************************************;
42   ***The next section of code shows to what extent MOD 871 sortplans**;
43   ***are made up of firm mail.  And deletes all MOD 871 sortplans  .**;
44   ***that consist of at least 20% firm mail.                        **;
45   ************************************************************************;
46   proc print data=colovnop;
47     where nextop=9 & (from_mod=871 or from_mod=891 or from_mod=971);
48     title 'From Anal_3.sas';
49     title2 'Dataset colovnop:  from_mod 871/891/971 sortplans that';
50     title3 'contain firm mail';
51     var site from_mod from_sp nextop density;
52   run;
53
54   data all_firm;
55     set colovnop;
56     if nextop = 9 and density > 20 then do;
57       if from_mod=871 or from_mod=891 or from_mod=971 then do;
58         del = 1;
59         output;
60       end;*if from_mod*;
61     end;*if nextop*;
62   run;
63
64   data colovnop (drop=del);
65     merge colovnop all_firm;
66     by site from_mod from_sp;
67     if del = 1 then delete;
68   run;
69   */
70
71   ************************************************************************;
72   ***Read in the summary spreadsheet that details multiple        **;
73   ***sortplans and calculate wts based on the associated volume. **;
74   ************************************************************************;
75   data summ_sp;
76     set data.summary;
77     site=upcase(site);
78     rename volume=sp_vol;
79   run;

NOTE: The data set WORK.SUMM_SP has 489 observations and 4 variables.
NOTE: The DATA statement used 1.32 seconds.


80
81   proc sort data=summ_sp tagsort;
82     by site from_mod from_sp;
83   run;

NOTE: The data set WORK.SUMM_SP has 489 observations and 4 variables.
NOTE: The PROCEDURE SORT used 0.27 seconds.


84
85   **merge sortplan vols onto appropriate density flows***;
86   **and get volume associated with each nextop        ***;
87   data sumovnop;
88     merge colovnop summ_sp;
89     by site from_mod from_sp;
90     nop_vol=(density*sp_vol)/100;
91   run;

NOTE: Missing values were generated as a result of performing an operation on missing
values.
      Each place is given by: (Number of times) at (Line):(Column).
      3825 at 90:19   3825 at 90:27
NOTE: The data set WORK.SUMOVNOP has 6062 observations and 7 variables.
NOTE: The DATA statement used 0.81 seconds.
```

```
92
93   proc summary data=sumovnop noprint;
94     where sp_vol ne .;
95     class site from_mod nextop;
96     var nop_vol;
97     output out=sum_sps(drop=_freq_) sum=volovmod;
98   run;

NOTE: The data set WORK.SUM_SPS has 1910 observations and 5 variables.
NOTE: The PROCEDURE SUMMARY used 0.77 seconds.

99
100  data sum_sps(drop=_type_) mod_tot(drop=_type_ nextop);
101    set sum_sps;
102    if _type_=6 then do;
103      modtotal=volovmod;
104      output mod_tot;
105    end;
106    else if _type_=7 then do;
107      rename volovmod=volovsp;
108      output sum_sps;
109    end;
110  run;

NOTE: The data set WORK.SUM_SPS has 1105 observations and 5 variables.
NOTE: The data set WORK.MOD_TOT has 204 observations and 4 variables.
NOTE: The DATA statement used 0.6 seconds.

111
112  data nomoresp(drop=modtotal volovsp);
113    merge mod_tot(drop=volovsp) sum_sps(drop=modtotal);
114    by site from_mod;
115    **if density > 0 and modtotal > 0;
116    density = volovsp/modtotal;
117  run;

NOTE: The data set WORK.NOMORESP has 1105 observations and 4 variables.
NOTE: The DATA statement used 0.39 seconds.

118
119  ***add density flows aggregated over sort plans to existing***;
120  ***density flows that did not have multiple sortplans       ***;
121  data aggdovsp(drop=sp_vol nop_vol from_sp);
122    set sumovnop nomoresp;
123    if sp_vol ne . then delete;
124  run;

NOTE: The data set WORK.AGGDOVSP has 4916 observations and 4 variables.
NOTE: The DATA statement used 0.48 seconds.

125
126  proc sort data=aggdovsp tagsort;
127    by site from_mod;
128  run;

NOTE: The data set WORK.AGGDOVSP has 4916 observations and 4 variables.
NOTE: The PROCEDURE SORT used 0.48 seconds.

129
130  ***AT THIS POINT, WE NO LONGER HAVE MULTIPLE SORTPLANS***;
131
132
133
134  ***Read in all_purpose dataset that has regpos and and fin_nums**;
135  ***for each site and merge onto density flows***;
```

```
136  proc sort data=alpurdat.regpos tagsort;
137    by site;
138  run;

NOTE: Input data set is already sorted, no sorting done.
NOTE: The PROCEDURE SORT used 0.11 seconds.

139
140  data aggdovsp;
141    merge aggdovsp alpurdat.regpos;
142    by site;
143    if from_mod=. then delete;
144  run;

NOTE: The data set WORK.AGGDOVSP has 4916 observations and 6 variables.
NOTE: The DATA statement used 0.66 seconds.

145
146  ************************************************************;
147  *Read in all_purpose dataset that has regpos and fin_nums     *;
148  *attached to each site, along with the distributional TPH     *;
149  *volume for all mod operations.                               *;
150  ************************************************************;
151  data tphvols;
152    set alpurdat.tphvols;
153    fin_num2=fin_num*1;
154    regpo2=regpo*1;
155    drop regpo fin_num;
156    rename fin_num2=fin_num;
157    rename regpo2=regpo;
158  run;

NOTE: The data set WORK.TPHVOLS has 321 observations and 72 variables.
NOTE: The DATA statement used 0.55 seconds.

159
160  proc sort data=tphvols tagsort out=data.tphvols;
161    by fin_num regpo;
162  run;

NOTE: The data set DATA.TPHVOLS has 321 observations and 72 variables.
NOTE: The PROCEDURE SORT used 0.48 seconds.

163
164  proc sort data=aggdovsp tagsort;
165    by fin_num regpo;
166  run;

NOTE: The data set WORK.AGGDOVSP has 4916 observations and 6 variables.
NOTE: The PROCEDURE SORT used 0.66 seconds.

167
168  ************************************************************;
169  ***Merge ALL dist_tph volumes for each mod operation onto    **;
170  ***each observation in Aggdovsp dataset by regpo and fun_num **;
171  ***(which define sites).  Compute the distributional TPH     **;
172  ***volume associated with each density.  Finally, put all    **;
173  ***observations into one ofthe following datasets:  Horiz(6),**;
174  ***Upward(7), Reject(8), Firm(9), or Downward(all others)    **;
175  ************************************************************;
176  data aggdovsp(drop=finame) inv_fmod;
177    merge aggdovsp tphvols;
178    by fin_num regpo;
179    if mod(from_mod,10) > 5 or mod(from_mod,10) < 1 then do;
180      if from_mod ne . and nextop ne . then output inv_fmod;
181    end;
```

```
182     else do;
183       if from_mod=. or nextop = . then delete;
184       output aggdovsp;
185     end;
186   run;

NOTE: Missing values were generated as a result of performing an operation on missing
values.
      Each place is given by: (Number of times) at (Line):(Column).
      281 at 179:6    281 at 179:30
NOTE: The data set WORK.AGGDOVSP has 4538 observations and 75 variables.
NOTE: The data set WORK.INV_FMOD has 0 observations and 76 variables.
NOTE: The DATA statement used 1.91 seconds.


187
188   proc print data=inv_fmod;
189     title 'Dataset inv_fmod';
190     var site from_mod;
191   run;

NOTE: No observations in data set WORK.INV_FMOD.
NOTE: The PROCEDURE PRINT used 0.22 seconds.


192
193   data horiz upward reject
194        data.dwnwd97 down_0s;
195     set aggdovsp;
196
197     ind831=831;ind832=832;ind833=833;ind834=834;ind835=835;
198     ind841=841;ind842=842;ind843=843;ind844=844;ind845=845;
199     ind851=851;ind852=852;ind853=853;ind854=854;ind855=855;
200     ind881=881;ind882=882;ind883=883;ind884=884;ind885=885;
201     ind861=861;ind862=862;ind863=863;ind864=864;ind865=865;
202     ind871=871;ind872=872;ind873=873;ind874=874;ind875=875;
203     ind891=891;ind892=892;ind893=893;ind894=894;ind895=895;
204     ind971=971;ind972=972;ind973=973;ind974=974;ind975=975;
205     ind081=81;ind082=82;ind083=83;ind084=84;ind085=85;
206     ind091=91;ind093=93;ind094=94;ind095=95;ind060=60;
207     ind070=70;ind073=73;ind074=74;ind170=170;ind961=961;
208     ind962=962;ind963=963;ind964=964;ind965=965;ind141=141;
209     ind142=142;ind143=143;ind144=144;ind145=145;ind030=30;
210     ind040=40;ind043=43;ind044=44;ind150=150;
211
212     array indx(69) ind831-ind835 ind841-ind845 ind851-ind855
213                    ind881-ind885 ind861-ind865 ind871-ind875
214                    ind891-ind895 ind971-ind975 ind081-ind085
215                    ind091 ind093-ind095 ind060 ind070 ind073
216                    ind074 ind170 ind961-ind965 ind141-ind145
217                    ind030 ind040 ind043 ind044 ind150;
218     array mod_vol(69) TPH831-TPH835 TPH841-TPH845 TPH851-TPH855
219                       TPH881-TPH885 TPH861-TPH865 TPH871-TPH875
220                       TPH891-TPH895 TPH971-TPH975 TPH081-TPH085
221                       TPH091 TPH093-TPH095 TPH060 TPH070 TPH073
222                       TPH074 TPH170 TPH961-TPH965 TPH141-TPH145
223                       TPH030 TPH040 TPH043 TPH044 TPH150;
224
225     found=0;
226     do i = 1 to 69 while(not(found));
227       if from_mod = indx(i) then do;
228         place=i;
229         found=1;
230       end;
231     end;
232     dist_vol=(density/100)*(1000*mod_vol(place));
233
234     if nextop=6 then do;
235       drop ind831-ind835 ind841-ind845 ind851-ind855
236            ind881-ind885 ind861-ind865 ind871-ind875
237            ind891-ind895 ind971-ind975 ind081-ind085
238            ind091 ind093-ind095 ind060 ind070 ind073
239            ind074 ind170 ind961-ind965 ind141-ind145
240            ind030 ind040 ind043 ind044 ind150
241            i place found;
242       output horiz;
243     end;
244       else if nextop=7 then do;
245         drop ind831-ind835 ind841-ind845 ind851-ind855
246              ind881-ind885 ind861-ind865 ind871-ind875
247              ind891-ind895 ind971-ind975 ind081-ind085
248              ind091 ind093-ind095 ind060 ind070 ind073
249              ind074 ind170 ind961-ind965 ind141-ind145
250              ind030 ind040 ind043 ind044 ind150
251              i place found;
252         output upward;
253       end;
254         else if nextop=8 then do;
255           drop ind831-ind835 ind841-ind845 ind851-ind855
256                ind881-ind885 ind861-ind865 ind871-ind875
257                ind891-ind895 ind971-ind975 ind081-ind085
258                ind091 ind093-ind095 ind060 ind070 ind073
259                ind074 ind170 ind961-ind965 ind141-ind145
260                ind030 ind040 ind043 ind044 ind150
261                i place found;
262           output reject;
263         end;
264           * else if nextop=9 then do;
265             *   drop ind831-ind835 ind841-ind845 ind851-ind855
266                      ind881-ind885 ind861-ind865 ind871-ind875
267                      ind891-ind895 ind971-ind975 ind081-ind085
268                      ind091 ind093-ind095 ind060 ind070 ind073
269                      ind074 ind170 ind961-ind965 ind141-ind145
270                      ind030 ind040 ind043 ind044 ind150
271                      i place found;
272             * output firm;
273           * end;
274             else if dist_vol <= 0 then do;
275               drop ind831-ind835 ind841-ind845 ind851-ind855
276                    ind881-ind885 ind861-ind865 ind871-ind875
277                    ind891-ind895 ind971-ind975 ind081-ind085
278                    ind091 ind093-ind095 ind060 ind070 ind073
279                    ind074 ind170 ind961-ind965 ind141-ind145
280                    ind030 ind040 ind043 ind044 ind150
281                    i place found;
282               output down_0s;
283             end;
284               else do;
285                 drop ind831-ind835 ind841-ind845 ind851-ind855
286                      ind881-ind885 ind861-ind865 ind871-ind875
287                      ind891-ind895 ind971-ind975 ind081-ind085
288                      ind091 ind093-ind095 ind060 ind070 ind073
289                      ind074 ind170 ind961-ind965 ind141-ind145
290                      ind030 ind040 ind043 ind044 ind150
291                      i place found;
292                 output data.dwnwd97;
293               end;
294   run;

NOTE: The data set WORK.HORIZ has 2 observations and 76 variables.
NOTE: The data set WORK.UPWARD has 657 observations and 76 variables.
NOTE: The data set WORK.REJECT has 584 observations and 76 variables.
NOTE: The data set DATA.DWNWD97 has 3270 observations and 76 variables.
NOTE: The data set WORK.DOWN_0S has 25 observations and 76 variables.
NOTE: The DATA statement used 4.12 seconds.


295
296   proc contents data=data.dwnwd97;run;

NOTE: The PROCEDURE CONTENTS used 0.27 seconds.
```

CONTENTS PROCEDURE

Data Set Name: DATA.FLOW
Observations: 115604
Member Type: DATA
Variables: 7
Engine: V612
Indexes: 0
Created: 9:40 Wednesday, February 22, 1995
Observation Length: 72
Last Modified: 9:41 Wednesday, February 22, 1995
Deleted Observations: 0
Protection:
Compressed: NO
Data Set Type:
Sorted: NO
Label:

-----Engine/Host Dependent Information-----

Data Set Page Size: 4096
Number of Data Set Pages: 2065
File Format: 607
First Data Page: 1
Max Obs per Page: 56
Obs in First Data Page: 40

-----Alphabetic List of Variables and Attributes-----

#	Variable	Type	Len	Pos	Format
1	BIN_NUM	Num	8	0	9.
7	CLASS	Char	5	67	$5.
2	DENSITY	Num	8	8	9.4
5	FROM_MOD	Num	8	44	9.
6	FROM_SP	Char	15	52	$15.
3	NEXTOP	Num	8	16	9.
4	SITE	Char	20	24	$20.

CONTENTS PROCEDURE

Data Set Name: ALPURDAT.REGPOS
Observations: 40
Member Type: DATA
Variables: 3
Engine: V612
Indexes: 0
Created: 14:47 Friday, February 27, 1998
Observation Length: 41
Last Modified: 14:47 Friday, February 27, 1998
Deleted Observations: 0
Protection:
Compressed: NO
Data Set Type:
Sorted: YES
Label:

-----Engine/Host Dependent Information-----

Data Set Page Size: 4096
Number of Data Set Pages: 1
File Format: 607
First Data Page: 1
Max Obs per Page: 99
Obs in First Data Page: 40

-----Alphabetic List of Variables and Attributes-----

#	Variable	Type	Len	Pos	Format
1	FIN_NUM	Num	8	0	9.
3	REGPO	Num	8	33	9.
2	SITE	Char	25	8	$25.

-----Sort Information-----

Sortedby: SITE
Validated: YES
Character Set: ANSI

CONTENTS PROCEDURE

Data Set Name: ALPURDAT.TPHVOLS
Observations: 321
Member Type: DATA
Variables: 72
Engine: V612
Indexes: 0
Created: 16:13 Friday, February 27, 1998
Observation Length: 593
Last Modified: 16:13 Friday, February 27, 1998
Deleted Observations: 0
Protection:
Compressed: NO
Data Set Type:
Sorted: YES
Label:

-----Engine/Host Dependent Information-----

Data Set Page Size: 16384
Number of Data Set Pages: 13
File Format: 607
First Data Page: 1
Max Obs per Page: 27
Obs in First Data Page: 12

-----Alphabetic List of Variables and Attributes-----

#	Variable	Type	Len	Pos	Format
1	FINAME	Char	25	0	$25.
71	FIN_NUM	Num	8	577	
72	REGPO	Num	8	585	
66	TPH030	Num	8	537	9.
67	TPH040	Num	8	545	9.
68	TPH043	Num	8	553	9.
69	TPH044	Num	8	561	9.
51	TPH060	Num	8	417	9.
52	TPH070	Num	8	425	9.
53	TPH073	Num	8	433	9.
54	TPH074	Num	8	441	9.
42	TPH081	Num	8	345	9.
43	TPH082	Num	8	353	9.
44	TPH083	Num	8	361	9.
45	TPH084	Num	8	369	9.
46	TPH085	Num	8	377	9.
47	TPH091	Num	8	385	9.
48	TPH093	Num	8	393	9.
49	TPH094	Num	8	401	9.
50	TPH095	Num	8	409	9.
61	TPH141	Num	8	497	9.
62	TPH142	Num	8	505	9.
63	TPH143	Num	8	513	9.
64	TPH144	Num	8	521	9.

65	TPH145	Num	8	529	9.
70	TPH150	Num	8	569	9.
55	TPH170	Num	8	449	9.
2	TPH831	Num	8	25	9.
3	TPH832	Num	8	33	9.
4	TPH833	Num	8	41	9.
5	TPH834	Num	8	49	9.
6	TPH835	Num	8	57	9.
7	TPH841	Num	8	65	9.
8	TPH842	Num	8	73	9.
9	TPH843	Num	8	81	9.
10	TPH844	Num	8	89	9.
11	TPH845	Num	8	97	9.
12	TPH851	Num	8	105	9.
13	TPH852	Num	8	113	9.
14	TPH853	Num	8	121	9.
15	TPH854	Num	8	129	9.
16	TPH855	Num	8	137	9.
22	TPH861	Num	8	185	9.
23	TPH862	Num	8	193	9.
24	TPH863	Num	8	201	9.
25	TPH864	Num	8	209	9.
26	TPH865	Num	8	217	9.
27	TPH871	Num	8	225	9.
28	TPH872	Num	8	233	9.
29	TPH873	Num	8	241	9.
30	TPH874	Num	8	249	9.
31	TPH875	Num	8	257	9.
17	TPH881	Num	8	145	9.
18	TPH882	Num	8	153	9.
19	TPH883	Num	8	161	9.
20	TPH884	Num	8	169	9.
21	TPH885	Num	8	177	9.
32	TPH891	Num	8	265	9.
33	TPH892	Num	8	273	9.

CONTENTS PROCEDURE

#	Variable	Type	Len	Pos	Format
34	TPH893	Num	8	281	9.
35	TPH894	Num	8	289	9.
36	TPH895	Num	8	297	9.
56	TPH961	Num	8	457	9.
57	TPH962	Num	8	465	9.
58	TPH963	Num	8	473	9.
59	TPH964	Num	8	481	9.
60	TPH965	Num	8	489	9.
37	TPH971	Num	8	305	9.
38	TPH972	Num	8	313	9.
39	TPH973	Num	8	321	9.
40	TPH974	Num	8	329	9.
41	TPH975	Num	8	337	9.

-----Sort Information-----

Sortedby: FIN_NUM REGPO
Validated: YES
Character Set: ANSI

CONTENTS PROCEDURE

Data Set Name: DATA.DWMWD97 Observations:
3270

Member Type: DATA Variables:
76
Engine: V612 Indexes:
0
Created: 17:20 Friday, February 27, 1998 Observation
Length: 620
Last Modified: 17:20 Friday, February 27, 1998 Deleted
Observations: 0
Protection: Compressed:
NO
Data Set Type: Sorted:
NO
Label:

-----Engine/Host Dependent Information-----

Data Set Page Size: 16384
Number of Data Set Pages: 127
File Format: 607
First Data Page: 1
Max Obs per Page: 26
Obs in First Data Page: 10

-----Alphabetic List of Variables and Attributes-----

#	Variable	Type	Len	Pos	Format
4	DENSITY	Num	8	36	9.4
76	DIST_VOL	Num	8	612	
5	FIN_NUM	Num	8	44	9.
2	FROM_MOD	Num	8	20	9.
3	NEXTOP	Num	8	28	9.
6	REGPO	Num	8	52	9.
1	SITE	Char	20	0	$20.
71	TPH030	Num	8	572	9.
72	TPH040	Num	8	580	9.
73	TPH043	Num	8	588	9.
74	TPH044	Num	8	596	9.
56	TPH060	Num	8	452	9.
57	TPH070	Num	8	460	9.
58	TPH073	Num	8	468	9.
59	TPH074	Num	8	476	9.
47	TPH081	Num	8	380	9.
48	TPH082	Num	8	388	9.
49	TPH083	Num	8	396	9.
50	TPH084	Num	8	404	9.
51	TPH085	Num	8	412	9.
52	TPH091	Num	8	420	9.
53	TPH093	Num	8	428	9.
54	TPH094	Num	8	436	9.
55	TPH095	Num	8	444	9.
66	TPH141	Num	8	532	9.
67	TPH142	Num	8	540	9.
68	TPH143	Num	8	548	9.
69	TPH144	Num	8	556	9.
70	TPH145	Num	8	564	9.
75	TPH150	Num	8	604	9.
60	TPH170	Num	8	484	9.
7	TPH831	Num	8	60	9.
8	TPH832	Num	8	68	9.
9	TPH833	Num	8	76	9.
10	TPH834	Num	8	84	9.
11	TPH835	Num	8	92	9.
12	TPH841	Num	8	100	9.
13	TPH842	Num	8	108	9.
14	TPH843	Num	8	116	9.
15	TPH844	Num	8	124	9.
16	TPH845	Num	8	132	9.
17	TPH851	Num	8	140	9.
18	TPH852	Num	8	148	9.
19	TPH853	Num	8	156	9.

20	TPH854	Num	8	164	9.
21	TPH855	Num	8	172	9.
27	TPH861	Num	8	220	9.
28	TPH862	Num	8	228	9.
29	TPH863	Num	8	236	9.
30	TPH864	Num	8	244	9.
31	TPH865	Num	8	252	9.
32	TPH871	Num	8	260	9.
33	TPH872	Num	8	268	9.
34	TPH873	Num	8	276	9.
35	TPH874	Num	8	284	9.
36	TPH875	Num	8	292	9.
22	TPH881	Num	8	180	9.
23	TPH882	Num	8	188	9.
24	TPH883	Num	8	196	9.

CONTENTS PROCEDURE

#	Variable	Type	Len	Pos	Format
25	TPH884	Num	8	204	9.
26	TPH885	Num	8	212	9.
37	TPH891	Num	8	300	9.
38	TPH892	Num	8	308	9.
39	TPH893	Num	8	316	9.
40	TPH894	Num	8	324	9.
41	TPH895	Num	8	332	9.
61	TPH961	Num	8	492	9.
62	TPH962	Num	8	500	9.
63	TPH963	Num	8	508	9.
64	TPH964	Num	8	516	9.
65	TPH965	Num	8	524	9.
42	TPH971	Num	8	340	9.
43	TPH972	Num	8	348	9.
44	TPH973	Num	8	356	9.
45	TPH974	Num	8	364	9.
46	TPH975	Num	8	372	9.

```
297  ************************************************************;
298  * This program aggregates observations by machine type (where     *;
299  * necessary, weights the data, & outputs the final densities.     *;
300  *                                                                 *;
301  * Author:  Paul Seckar                                           *;
302  * Date:    12/5/94                                               *;
303  * Edited:  Bill McNary  10/22/97                                 *;
304  * Name:    Anal_4.sas                                           *;
305  *                                                                 *;
306  * Input datasets:  dwnwd97.sd2 (from anal_3c.sas)                 *;
307  *                  regpos.sd2 (from read_dbf.sas)                 *;
308  *                  popwstr3.sd2                                   *;
309  *                     (from drw_190.sas in sample sub-dir)        *;
310  * Output datasets: fin_all.sd2                                    *;
311  ************************************************************;
312
313  options ls=110 ps=85;
314
315  libname data 'c:\mydocu~1\bill\density';
NOTE: Libname DATA refers to the same physical library as SAMPDATA.
NOTE: Libref DATA was successfully assigned as follows:
      Engine:        V612
      Physical Name: c:\mydocu~1\bill\density
316  libname alpurdat 'c:\mydocu~1\bill\density';
NOTE: Libname ALPURDAT refers to the same physical library as DATA.
NOTE: Libref ALPURDAT was successfully assigned as follows:
      Engine:        V612
      Physical Name: c:\mydocu~1\bill\density
317  libname sampdata 'c:\mydocu~1\bill\density';
NOTE: Libname SAMPDATA refers to the same physical library as ALPURDAT.
NOTE: Libref SAMPDATA was successfully assigned as follows:
      Engine:        V612
      Physical Name: c:\mydocu~1\bill\density
318  filename flat_all
319      'c:\mydocu~1\bill\density\res_all.txt';
320  filename flat_no3
321      'c:\mydocu~1\bill\density\res_no3.txt';
322  filename flat_no1
323      'c:\mydocu~1\bill\density\res_no1.txt';
324
325  *proc contents data=data.dwnwd97;run;
326  *proc contents data=alpurdat.regpos;run;
327  *proc contents data=sampdata.popwstr3;run;
328
329  ************************************************************;
330  ***Combine nextop dist_vols by machine type.  MLOCR = 831-835 **;
331  ***and 881-885.  MPBCS = 871-875, 891-895.                   ***;
332  ************************************************************;
333  data downmach downothr;
334    set data.dwnwd97;
335    if (831 <= from_mod <= 835) or (881 <= from_mod <= 885) then do;
336       machine='mlocr';
337       adj_fmod=mod(from_mod,10);
338       ****************************************;
339       *if 4 <= adj_fmod <= 5 then adj_fmod = 45 *;
340       *                                        *;
341       *USE ONLY WHEN COMBINING SCF & IP        *;
342       ****************************************;
343
344       output downmach;
345    end;
346    else if (871 <= from_mod <= 875) or (891 <= from_mod <= 895) then do;
347       machine='mpbcs';
348       adj_fmod=mod(from_mod,10);
349       ****************************************;
350       *If 4 <= adj_fmod <= 5 then adj_fmod = 45;*;
351       *                                        *;
352       *USE ONLY WHEN COMBINING SCF & IP        *;
353       ****************************************;
354       output downmach;
355    end;
356       else do;
357       ************************************************************;
358       *  if 84 <= from_mod <= 85 then from_mod = 8485            *;
359       *    else if 144 <= from_mod <= 145 then from_mod = 144145 *;
360       *     else if 964 <= from_mod <= 965 then from_mod = 964965*;
361       *                                                          *;
362       *USE ONLY WHEN COMBINING SCF & IP                         *;
363       ************************************************************;
364         output downothr;
365       end;*else do*;
366  run;

NOTE: The data set WORK.DOWNMACH has 1684 observations and 78 variables.
NOTE: The data set WORK.DOWNOTHR has 1586 observations and 78 variables.
NOTE: The DATA statement used 2.64 seconds.


367
368  ************************************************************;
369  *Calculate the total TPH volume (flowing downstream) for each  *;
370  *nextop within/by machine type (mlocr & mpbcs) and adj_fmod    *;
371  *(1,2,...,5 - corresponding to 831,831,...,835 for example)    *;
372  ************************************************************;
373  proc summary data=downmach;
374    class fin_num regpo machine adj_fmod nextop;
375    var dist_vol;
376    output out=machines(drop=_freq_) sum=combdvol;
377  run;

NOTE: The data set WORK.MACHINES has 9839 observations and 7 variables.
NOTE: The PROCEDURE SUMMARY used 1.54 seconds.


378
379  ************************************************************;
380  *Calculate the total TPH volume (flowing downstream) across all*;
381  *nextops within/by machine type (mlocr & mpbcs) and adj_fmod   *;
382  *(1,2,...,5 - corresponding to 831,831,...,835 for example)    *;
383  ************************************************************;
384  proc sort data=machines tagsort;
385    by fin_num regpo machine adj_fmod;
386  run;

NOTE: The data set WORK.MACHINES has 9839 observations and 7 variables.
NOTE: The PROCEDURE SORT used 1.69 seconds.


387
388  proc means data=machines noprint;
389    where (_type_ = 31) and (combdvol ne .);
390    by fin_num regpo machine adj_fmod;
391    var combdvol;
392    output out=totals(drop=_freq_ _type_) sum=combtots;
```

```
393  run;

NOTE: The data set WORK.TOTALS has 296 observations and 5 variables.
NOTE: The PROCEDURE MEANS used 0.48 seconds.


394
395  ****************************************************************;
396  *Combine the grand-totals and the adjusted machine nextop totals.*;
397  *Rename the adj_fmods such that all operations that are included *;
398  *by mach                                                        *;
399  ****************************************************************;
400  data machines(drop=_type_);
401    merge machines(in=inmach) totals;
402    by fin_num regpo machine adj_fmod;
403    if inmach and _type_ < 31 then delete;
404    rename combdvol=dist_vol;
405    rename combtots=tot_dvol;
406    if machine='mlocr' then do;
407      if adj_fmod=1 then adj_fmod=831881;
408      if adj_fmod=2 then adj_fmod=832882;
409      if adj_fmod=3 then adj_fmod=833883;
410      ******************************************;
411      *if adj_fmod=45 then adj_fmod=834884835885  *;
412      *                                          *;
413      *USE ONLY WHEN COMBINING SCF & IP          *;
414      ******************************************;
415      if adj_fmod=4 then adj_fmod=834884;
416      if adj_fmod=5 then adj_fmod=835885;
417
418    end;
419    else if machine='mpbcs' then do;
420      if adj_fmod=1 then adj_fmod=871891;
421      if adj_fmod=2 then adj_fmod=872892;
422      if adj_fmod=3 then adj_fmod=873893;
423      ************************************************;
424      *if adj_fmod=45 then adj_fmod=8748949748758959975*;
425      *                                              *;
426      *USE ONLY WHEN COMBINING SCF & IP              *;
427      ************************************************;
428      if adj_fmod=4 then adj_fmod=874894;
429      if adj_fmod=5 then adj_fmod=875895;
430    end;
431    rename adj_fmod=from_mod;
432  run;

NOTE: The data set WORK.MACHINES has 1161 observations and 7 variables.
NOTE: The DATA statement used 1.2 seconds.


433
434  ****************************************************************;
435  *Merge site names back onto observations via regpo & fin_num  *;
436  ****************************************************************;
437  proc sort data=alpurdat.regpos tagsort;
438    by fin_num regpo;
439  run;

NOTE: The data set ALPURDAT.REGPOS has 40 observations and 3 variables.
NOTE: The PROCEDURE SORT used 0.33 seconds.


440
441  data machines;
442    merge alpurdat.regpos machines;
443    by fin_num regpo;
444  run;

NOTE: The data set WORK.MACHINES has 1161 observations and 8 variables.
NOTE: The DATA statement used 0.5 seconds.


445
446  ****************************************************************;
447  *Calculate the total TPH volume (flowing downstream) for mods  *;
448  *operations that are not associated with specific machines     *;
449  ****************************************************************;
450  proc sort data=downothr tagsort;
451    by fin_num regpo from_mod;
452  run;

NOTE: The data set WORK.DOWNOTHR has 1586 observations and 78 variables.
NOTE: The PROCEDURE SORT used 0.81 seconds.


453
454  proc means data=downothr noprint;
455    where dist_vol ne .;
456    by fin_num regpo from_mod;
457    var dist_vol;
458    output out=sum_atl(drop=_type_ _freq_) sum=tot_dvol;
459  run;

NOTE: The data set WORK.SUM_ATL has 408 observations and 4 variables.
NOTE: The PROCEDURE MEANS used 0.44 seconds.


460
461
462  ****************************************************************;
463  *Merge grand-totals back onto nextop totals (dist_vol) for mod *;
464  *operations that are not associated with specific machines     *;
465  ****************************************************************;
466  data downothr;
467    merge downothr(keep=fin_num site regpo from_mod nextop dist_vol)
468          sum_atl;
469    by fin_num regpo from_mod;
470  run;

NOTE: The data set WORK.DOWNOTHR has 1586 observations and 7 variables.
NOTE: The DATA statement used 0.59 seconds.


471
472  ****************************************************************;
473  *Combine non-machine specific mods and machine specific mods.*;
474  ****************************************************************;
475  data downonly;
476    set machines downothr;
477    density=dist_vol/tot_dvol;
478  run;

NOTE: The data set WORK.DOWNONLY has 2747 observations and 9 variables.
NOTE: The DATA statement used 0.44 seconds.
```

```
479
480  ************************************************************;
481  *Merge strata identifiers (from drw_190.sas) onto downonly.   *;
482  ************************************************************;
483  proc sort data=downonly tagsort;
484    by fin_num regpo;
485  run;

NOTE: The data set WORK.DOWNONLY has 2747 observations and 9 variables.
NOTE: The PROCEDURE SORT used 0.48 seconds.


486
487  data downonly;
488    merge sampdata.popwstr3(drop=finame in=inpop)
489          downonly(keep=dist_vol tot_dvol fin_num from_mod
490                        nextop regpo site in=indown);
491    by fin_num regpo;
492    if inpop and indown;
493  run;

NOTE: The data set WORK.DOWNONLY has 2747 observations and 9 variables.
NOTE: The DATA statement used 0.7 seconds.


494
495  proc summary data=downonly;
496    *where insample=1;
497    class strata from_mod nextop;
498    var dist_vol;
499    output out=sampsums sum=dv_sum;
500  run;

NOTE: The data set WORK.SAMPSUMS has 781 observations and 6 variables.
NOTE: The PROCEDURE SUMMARY used 0.44 seconds.


501
502  data sumopdes(drop=_type_) sumop(drop=_type_ nextop);
503    set sampsums(drop=_freq_);
504    if _type_ = 7 then do;
505      suminnop=dv_sum;
506      output sumopdes;
507    end;
508    if _type_ = 6 then do;
509      rename dv_sum=suminmod;
510      output sumop;
511    end;
512  run;

NOTE: The data set WORK.SUMOPDES has 454 observations and 5 variables.
NOTE: The data set WORK.SUMOP has 105 observations and 4 variables.
NOTE: The DATA statement used 0.5 seconds.


513
514  data sampsums;
515    merge sumopdes(drop=suminmod) sumop(drop=suminnop);
516    by strata from_mod;
517    r_h=suminnop/suminmod;
518  run;

NOTE: The data set WORK.SAMPSUMS has 454 observations and 6 variables.
NOTE: The DATA statement used 0.44 seconds.


519
520  ************************************************************;
521  *The second step in aggregating over sites is to sum over each *;
522  *operation, the distributional TPH population volume within    *;
523  *each strata.  To do this, the strata identifiers need to be   *;
524  *merged onto findtph.dbf (or really, tphvols)                  *;
525  ************************************************************;
526  data popwstr3(keep=strata insample site);
527    set sampdata.popwstr3;
528    site=finame;
529    site=compress(site,' "');
530    site=upcase(site);
531    if finame='MARGARETSELLERSP&DC' then site='SANDIEGOP&DC';
532    if finame='MGRMID-ISLANDP&DC' then site='MIDISLANDP&DC';
533  run;

NOTE: The data set WORK.POPWSTR3 has 190 observations and 3 variables.
NOTE: The DATA statement used 0.44 seconds.


534
535  data tphvols(drop=finame);
536    set data.tphvols(drop=fin_num regpo);
537    site=finame;
538    site=compress(site,' "');
539    site=upcase(site);
540    if finame='MARGARETSELLERSP&DC' then site='SANDIEGOP&DC';
541    if finame='MGRMID-ISLANDP&DC' then site='MIDISLANDP&DC';
542  run;

NOTE: The data set WORK.TPHVOLS has 321 observations and 70 variables.
NOTE: The DATA statement used 0.66 seconds.


543
544  proc sort data=popwstr3 tagsort;
545    by site;
546  run;

NOTE: The data set WORK.POPWSTR3 has 190 observations and 3 variables.
NOTE: The PROCEDURE SORT used 0.28 seconds.


547
548  proc sort data=tphvols tagsort;
549    by site;
550  run;

NOTE: The data set WORK.TPHVOLS has 321 observations and 70 variables.
NOTE: The PROCEDURE SORT used 0.6 seconds.


551
552  ************************************************************;
553  *The following merge statement merges the tph volumes onto the  *;
554  *population of 190 sites, which includes strata indentifiers.   *;
```

```
555  *It also creates variables which correspond to machine (mlocr & *;
556  *mpbcs) tph volumes as defined above.                          *;
557  ****************************************************************;
558  data pop_vols;
559    merge popwstr3(in=inpopw) tphvols(in=intphv);
560    by site;
561    if inpopw and intphv;
562
563    array the880s(5) tph881-tph885;
564    array the830s(5) tph831-tph835;
565    array the870s(5) tph871-tph875;
566    array the890s(5) tph891-tph895;
567    array mlocr(5) tphocr1-tphocr5;
568    array mpbcs(5) tphbcs1-tphbcs5;
569
570    do i = 1 to 5;
571      mlocr(i) = the880s(i) + the830s(i);
572      mpbcs(i) = the870s(i) + the890s(i);
573    end;
574    *********************************;
575    *tphocr45 = tphocr4 + tphocr5    *;
576    *tphbcs45 = tphbcs4 + tphbcs5    *;
577    *tph8485  = tph084 + tph085      *;
578    *tph14445 = tph144 + tph145      *;
579    *tph96465 = tph964 + tph965      *;
580    *USE ONLY TO COMBINE SCF & IP    *;
581    *********************************;
582  run;

NOTE: MERGE statement has more than one data set with repeats of BY values.
NOTE: The data set WORK.POP_VOLS has 188 observations and 83 variables.
NOTE: The DATA statement used 0.93 seconds.


583
584  proc sort data=pop_vols tagsort;
585    by strata;
586  run;

NOTE: The data set WORK.POP_VOLS has 188 observations and 83 variables.
NOTE: The PROCEDURE SORT used 0.38 seconds.


587
588  ****************************************************************;
589  *The following proc means stmt. computes (sums) population,    ***;
590  * operation specific TPH volumes across strata (X_h).          ***;
591  ****************************************************************;
592  proc means data=pop_vols noprint;
593    by strata;
594    var TPH831-TPH835 TPH841-TPH845 TPH851-TPH855 TPH881-TPH885
595        TPH861-TPH865 TPH871-TPH875 TPH891-TPH895 TPH971-TPH975
596        TPH081-TPH085 TPH091 TPH093-TPH095 TPH060 TPH070 TPH073
597        TPH074 TPH170 TPH961-TPH965 TPH141-TPH145 TPH030 TPH040
598        TPH043 TPH044 TPH150 tphocr1-tphocr5 tphbcs1-tphbcs5;
599        ************************************************;
600        *tphocr45 tphbcs45 tph8485 tph14445 tph96465    *;
601        *                                               *;
602        *USE ONLY WHEN COMBINING SCF & IP               *;
603        ************************************************;
604
605    output out=tphsums(drop=_type_ _freq_)
606           sum=sum831-sum835 sum841-sum845 sum851-sum855
607               sum881-sum885 sum861-sum865 sum871-sum875
608               sum891-sum895 sum971-sum975 sum081-sum085
609               sum091 sum093-sum095 sum060 sum070 sum073
610               sum074 sum170 sum961-sum965 sum141-sum145
611               sum030 sum040 sum043 sum044 sum150
612               sumocr1-sumocr5 sumbcs1-sumbcs5;
613               ************************************************;
614               *sumocr45 sumbcs45 sum8485 sum14445 sum96465  *;
615               *                                             *;
616               *USE ONLY WHEN COMBINING SCF & IP             *;
617               ************************************************;
618  run;

NOTE: The data set WORK.TPHSUMS has 5 observations and 80 variables.
NOTE: The PROCEDURE MEANS used 0.55 seconds.


619
620  ****************************************************************;
621  *The following merge statement merges the population, operation**;
622  *specific TPH volumes (X_h) onto the sample data, by strata.   **;
623  *And the sample ratio is multipled by the associated pop.,     **;
624  *operation TPH volume (rh_Xh).                                 **;
625  ****************************************************************;
626  data sampsums;
627    merge sampsums(in=inss) tphsums(in=intphs);
628    by strata;
629    if intphs and inss;
630    ind831=831;ind832=832;ind833=833;ind834=834;ind835=835;
631    ind841=841;ind842=842;ind843=843;ind844=844;ind845=845;
632    ind851=851;ind852=852;ind853=853;ind854=854;ind855=855;
633    ind881=881;ind882=882;ind883=883;ind884=884;ind885=885;
634    ind861=861;ind862=862;ind863=863;ind864=864;ind865=865;
635    ind871=871;ind872=872;ind873=873;ind874=874;ind875=875;
636    ind891=891;ind892=892;ind893=893;ind894=894;ind895=895;
637    ind971=971;ind972=972;ind973=973;ind974=974;ind975=975;
638    ind081=81;ind082=82;ind083=83;ind084=84;ind085=85;
639    ind091=91;ind093=93;ind094=94;ind095=95;ind060=60;
640    ind070=70;ind073=73;ind074=74;ind170=170;ind961=961;
641    ind962=962;ind963=963;ind964=964;ind965=965;ind141=141;
642    ind142=142;ind143=143;ind144=144;ind145=145;ind030=30;
643    ind040=40;ind043=43;ind044=44;ind150=150;indocr1=831881;
644    indocr2=832882;indocr3=833883;indocr4=834884;indocr5=835885;
645    indbcs1=871891;indbcs2=872892;indbcs3=873893;
646    indbcs4=874894;indbcs5=875895;
647    ****************************************************************;
648    *indocr45=834884835885; indbcs45=874894974875895975;          *;
649    *ind8485=8485; ind14445=144145; ind96465=964965;              *;
650    *                                                             *;
651    *USE ONLY WHEN COMBINING SCF & IP                             *;
652    ****************************************************************;
653
654    array indx(79) ind831-ind835 ind841-ind845 ind851-ind855
655                   ind881-ind885 ind861-ind865 ind871-ind875
656                   ind891-ind895 ind971-ind975 ind081-ind085
657                   ind091 ind093-ind095 ind060 ind070 ind073
658                   ind074 ind170 ind961-ind965 ind141-ind145
659                   ind030 ind040 ind043 ind044 ind150
660                   indocr1-indocr5 indbcs1-indbcs5;
661                   ************************************************;
662                   *indocr45 indbcs45 ind8485 ind14445 ind96465  *;
```

```
663                    *                                                  *;
664                    *USE ONLY WHEN COMBINING SCF  & IP                 *;
665                    ***************************************************;
666
667     array mod_sum(79) sum831-sum835 sum841-sum845 sum851-sum855
668                       sum881-sum885 sum861-sum865 sum871-sum875
669                       sum891-sum895 sum971-sum975 sum081-sum085
670                       sum091 sum093-sum095 sum060 sum070 sum073
671                       sum074 sum170 sum961-sum965 sum141-sum145
672                       sum030 sum040 sum043 sum044 sum150
673                       sumocr1-sumocr5 sumbcs1-sumbcs5;
674                       ***************************************************;
675                       *sumocr45 sumbcs45 sum8485 sum14445 sum96465       *;
676                       *                                                 *;
677                       *USE ONLY WHEN COMBINING SCF & IP                  *;
678                       ***************************************************;
679
680     found=0;
681     do i = 1 to 79 while(not(found));
682       if from_mod = indx(i) then do;
683         place=i;
684         found=1;
685       end;
686     end;
687     rh_xh=r_h*mod_sum(place);
688     x_h=rh_xh/r_h;
689     keep strata from_mod nextop r_h x_h rh_xh;
690   run;

NOTE: The data set WORK.SAMPSUMS has 454 observations and 6 variables.
NOTE: The DATA statement used 1.32 seconds.


691
692   ************************************************************;
693   *The following proc summary statement sums the rh_Xh's over the *;
694   *strata, within from_mod and nextop (RX_over_strata).  And sums *;
695   *the h_h's over the strata, within from_mod only (xovstr).      *;
696   ************************************************************;
697   proc summary data=sampsums;
698     class from_mod nextop;
699     var rh_xh;
700     output out=sumovstr(drop=_freq_) sum=sumrxs;
701   run;

NOTE: The data set WORK.SUMOVSTR has 182 observations and 4 variables.
NOTE: The PROCEDURE SUMMARY used 0.28 seconds.


702
703   data the_rxs(drop=_type_) the_xs(drop=_type_);
704     set sumovstr;
705     if _type_ = 3 then do;
706       rxovstr=sumrxs;
707       output the_rxs;
708     end;
709     if _type_ = 2 then do;
710       rename sumrxs=xovstr;
711       output the_xs;
712     end;
713   run;
```

```
NOTE: The data set WORK.THE_RXS has 144 observations and 4 variables.
NOTE: The data set WORK.THE_XS has 30 observations and 4 variables.
NOTE: The DATA statement used 0.44 seconds.


714
715   data data.fin_all2;
716     merge the_rxs(drop=rxovstr) the_xs(drop=rxovstr nextop);
717     by from_mod;
718     pop_den=rxovstr/xovstr;
719   run;

NOTE: The data set DATA.FIN_ALL2 has 144 observations and 5 variables.
NOTE: The DATA statement used 0.44 seconds.


720
721   proc format;
722     value modfmt 831881='MLOCR/ISS - OP'
723                  832882='MLOCR/ISS - OS'
724                  833883='MLOCR/ISS - MMP'
725                  834884='MLOCR/ISS - SCF'
726                  835885='MLOCR/ISS - IP'
727
728                  871891='MPBCS/DBCS - OP'
729                  872892='MPBCS/DBCS - OS'
730                  873893='MPBCS/DBCS - MMP'
731                  874894='MPBCS/DBCS - SCF'
732                  875895='MPBCS/DBCS - IP';
NOTE: Format MODFMT has been output.
733
734                  ****************************************;
735                  *8485='LSM - SCF/IP'                    *;
736                  *144145='MPFSM - SCF/IP'                *;
737                  *964965='FMBCR - SCF/IP'                *;
738                  *                                       *;
739                  *USE ONLY WHEN COMBINING SCF & IP       *;
740                  ****************************************;
741
742
743     value nopfmt -1='OP'
744                   0='OS'
745                   1='MMP'
746                   2='SCF'
747                   3='IP'
748                   5='IS'
749                   9='DISP9';
NOTE: Format NOPFMT has been output.
750   run;

NOTE: The PROCEDURE FORMAT used 0.81 seconds.


751
752
753   proc print data=data.fin_all2;
754     title 'From Anal_4.sas';
755     title2 'Dataset fin_all:  details the density flow at the';
756     title3 'population level using formats for nextop';
757     title4 'CALCULATIONS BASED ON ALL SORTPLANS';
758     *title4 'CALCULATIONS DO NOT INCLUDE ANY 3C SPECIFIC SORTP(LANS';
759     *title4 'CALCULATIONS DO NOT INCLUDE ANY 1C SPECIFIC SORTP(LANS';
```

```
760    by from_mod;
761    var nextop pop_den;
762    format from_mod modfmt. nextop nopfmt.;
763  run;

NOTE: The PROCEDURE PRINT used 0.38 seconds.


764
765  ************************************************************;
766  *the next data step outputs the final results to a flat file*;
767  ************************************************************;
768  data _null_;
769    set data.fin_all2;
770    file flat_all;*FOR ALL SORTPLANS*;
771    *file flat_no1;*NO 1C SPECIFIC SORTPLANS*;
772    *file flat_no3;*NO 3C SPECIFIC SORTPLANS*;
773    put from_mod nextop pop_den;
774    format from_mod modfmt. nextop nopfmt.;
775  run;

NOTE: The file FLAT_ALL is:
      FILENAME=c:\mydocu~1\bill\density\res_all.txt,
      RECFM=V,LRECL=256

NOTE: 144 records were written to the file FLAT_ALL.
      The minimum record length was 17.
      The maximum record length was 35.
NOTE: The DATA statement used 0.59 seconds.


776
777  proc contents data=data.fin_all2;run;

NOTE: The PROCEDURE CONTENTS used 0.11 seconds.


From Anal_4.sas              17:19 Friday, February 27, 1998   7
                               Dataset fin_all:  details the density flow at the
                                   population level using formats for nextop
                                      CALCULATIONS BASED ON ALL SORTPLANS

---------------------------------------------- FROM_MOD=81 ----------------------------
--------------------

                                        OBS    NEXTOP    POP_DEN

                                          1    OP        0.00001
                                          2    OS        0.00962
                                          3    MMP       0.25120
                                          4    SCF       0.10957
                                          5    IP        0.09184
                                          6    IS        0.52092
                                          7    DISP9     0.01684

---------------------------------------------- FROM_MOD=82 ----------------------------
--------------------

                                        OBS    NEXTOP    POP_DEN

                                          8    MMP       0.27064
                                          9    SCF       0.04833
                                         10    IP        0.07730
                                         11    IS        0.57283
                                         12    DISP9     0.03090

---------------------------------------------- FROM_MOD=83 ----------------------------
--------------------

                                        OBS    NEXTOP    POP_DEN

                                         13    MMP       0.02121
                                         14    SCF       0.09568
                                         15    IP        0.03509
                                         16    IS        0.79747
                                         17    DISP9     0.05055

---------------------------------------------- FROM_MOD=84 ----------------------------
--------------------

                                        OBS    NEXTOP    POP_DEN

                                         18    SCF       0.02995
                                         19    IP        0.03910
                                         20    IS        0.90418
                                         21    DISP9     0.02677

---------------------------------------------- FROM_MOD=85 ----------------------------
--------------------

                                        OBS    NEXTOP    POP_DEN

                                         22    IP        0.02667
                                         23    IS        0.91883
                                         24    DISP9     0.05450

---------------------------------------------- FROM_MOD=141 ---------------------------
--------------------

                                        OBS    NEXTOP    POP_DEN

                                         25    OP        0.00008
                                         26    OS        0.12823
                                         27    MMP       0.33173
                                         28    SCF       0.22821
                                         29    IP        0.13122
                                         30    IS        0.17714
                                         31    DISP9     0.00039

---------------------------------------------- FROM_MOD=142 ---------------------------
--------------------

                                        OBS    NEXTOP    POP_DEN

                                         32    MMP       0.79993
                                         33    SCF       0.06792
                                         34    IP        0.06943
                                         35    IS        0.06127
```

36	DISP9	0.00145

Dataset fin_all: details the density flow at the population level using formats for nextop
CALCULATIONS BASED ON ALL SORTPLANS

FROM_MOD=143

OBS	NEXTOP	POP_DEN
37	MMP	0.02512
38	SCF	0.25416
39	IP	0.08611
40	IS	0.62967
41	DISP9	0.00494

FROM_MOD=144

OBS	NEXTOP	POP_DEN
42	SCF	0.00635
43	IP	0.00821
44	IS	0.98274
45	DISP9	0.00271

FROM_MOD=145

OBS	NEXTOP	POP_DEN
46	IP	0.00218
47	IS	0.92318
48	DISP9	0.07464

FROM_MOD=961

OBS	NEXTOP	POP_DEN
49	OS	0.10431
50	MMP	0.28766
51	SCF	0.29373
52	IP	0.11743
53	IS	0.19655
54	DISP9	0.00031

FROM_MOD=962

OBS	NEXTOP	POP_DEN
55	MMP	0.82516
56	SCF	0.04890
57	IP	0.09774
58	IS	0.02820

FROM_MOD=963

OBS	NEXTOP	POP_DEN
59	MMP	0.00719
60	SCF	0.22750
61	IP	0.10698
62	IS	0.64191
63	DISP9	0.01642

FROM_MOD=964

OBS	NEXTOP	POP_DEN
64	SCF	0.00146
65	IP	0.01509
66	IS	0.98160
67	DISP9	0.00186

FROM_MOD=965

OBS	NEXTOP	POP_DEN
68	IP	0.00010
69	IS	0.96096
70	DISP9	0.03894

Dataset fin_all: details the density flow at the population level using formats for nextop
CALCULATIONS BASED ON ALL SORTPLANS

FROM_MOD=971

OBS	NEXTOP	POP_DEN
71	OP	0.00324
72	OS	0.22364
73	MMP	0.05603
74	SCF	0.16971
75	IP	0.13970
76	IS	0.40523
77	DISP9	0.00245

FROM_MOD=972

OBS	NEXTOP	POP_DEN
78	OS	0.20784
79	MMP	0.13216

80	SCF	0.38804
81	IP	0.16772
82	IS	0.10415
83	DISP9	0.00008

FROM_MOD=973

OBS	NEXTOP	POP_DEN
84	MMP	0.02879
85	SCF	0.16471
86	IP	0.11989
87	IS	0.66258
88	DISP9	0.02403

FROM_MOD=974

OBS	NEXTOP	POP_DEN
89	SCF	0.05274
90	IP	0.04665
91	IS	0.86026
92	DISP9	0.04035

FROM_MOD=975

OBS	NEXTOP	POP_DEN
93	IP	0.04633
94	IS	0.94838
95	DISP9	0.00528

FROM_MOD=MLOCR/ISS - OP

OBS	NEXTOP	POP_DEN
96	OP	0.02617
97	OS	0.21899
98	MMP	0.04995
99	SCF	0.14094
100	IP	0.10443
101	IS	0.45895
102	DISP9	0.00057

FROM_MOD=MLOCR/ISS - OS

OBS	NEXTOP	POP_DEN
103	OS	0.17695
104	MMP	0.18171
105	SCF	0.50145
106	IP	0.08010
107	IS	0.05979

Dataset fin_all: details the density flow at the population level using formats for nextop
CALCULATIONS BASED ON ALL SORTPLANS

FROM_MOD=MLOCR/ISS - MMP

OBS	NEXTOP	POP_DEN
108	MMP	0.04284
109	SCF	0.16035
110	IP	0.09720
111	IS	0.68549
112	DISP9	0.01412

FROM_MOD=MLOCR/ISS - SCF

OBS	NEXTOP	POP_DEN
113	SCF	0.09131
114	IP	0.05841
115	IS	0.84668
116	DISP9	0.00365

FROM_MOD=MLOCR/ISS - IP

OBS	NEXTOP	POP_DEN
117	IP	0.07677
118	IS	0.91455
119	DISP9	0.00868

FROM_MOD=MPBCS/DBCS - OP

OBS	NEXTOP	POP_DEN
120	OP	0.00172
121	OS	0.17530
122	MMP	0.17016
123	SCF	0.13574
124	IP	0.11844
125	IS	0.19197
126	DISP9	0.20667

FROM_MOD=MPBCS/DBCS - OS

OBS	NEXTOP	POP_DEN
127	OS	0.01314
128	MMP	0.49845

129	SCF	0.23996
130	IP	0.17251
131	IS	0.06744
132	DISP9	0.00848

---------- FROM_MOD=MPBCS/DBCS - MMP ----------

OBS	NEXTOP	POP_DEN
133	MMP	0.00841
134	SCF	0.21030
135	IP	0.09321
136	IS	0.60931
137	DISP9	0.07876

---------- FROM_MOD=MPBCS/DBCS - SCF ----------

OBS	NEXTOP	POP_DEN
138	SCF	0.00843
139	IP	0.04279
140	IS	0.89922
141	DISP9	0.04956

From Anal_4.sas 17:19 Friday, February 27, 1998 11

Dataset fin_all: details the density flow at the population level using formats for nextop
CALCULATIONS BASED ON ALL SORTPLANS

---------- FROM_MOD=MPBCS/DBCS - IP ----------

OBS	NEXTOP	POP_DEN
142	IP	0.01079
143	IS	0.87466
144	DISP9	0.11455

From Anal_4.sas 17:19 Friday, February 27, 1998 12

Dataset fin_all: details the density flow at the population level using formats for nextop
CALCULATIONS BASED ON ALL SORTPLANS

CONTENTS PROCEDURE

Data Set Name:	DATA.FIN_ALL2	Observations: 144
Member Type:	DATA	Variables: 5
Engine:	V612	Indexes: 0
Created:	17:24 Friday, February 27, 1998	Observation Length: 40
Last Modified:	17:24 Friday, February 27, 1998	Deleted Observations: 0
Protection:		Compressed: NO
Data Set Type:		Sorted: NO
Label:		

-----Engine/Host Dependent Information-----

Data Set Page Size:	8192
Number of Data Set Pages:	1
File Format:	607
First Data Page:	1
Max Obs per Page:	203
Obs in First Data Page:	144

-----Alphabetic List of Variables and Attributes-----

#	Variable	Type	Len	Pos	Format
1	FROM_MOD	Num	8	0	9.
2	NEXTOP	Num	8	8	9.
5	POP_DEN	Num	8	32	
3	RXOVSTR	Num	8	16	
4	XOVSTR	Num	8	24	

CHAIRMAN GLEIMAN: The OCA is the only party that has requested oral cross-examination of the witness. Is there any other party that wishes to cross the witness?

If not, Ms. Dreifuss, you can begin when you're ready.

CROSS EXAMINATION

BY MS. DREIFUSS:

Q Good morning, Mr. Miller.

A Good morning.

Q Shelley Dreifuss of the Office of the Consumer Advocate.

I'd like to talk to you about your Exhibit 17-B first, please.

A I'm sorry, what was that?

Q Exhibit 17-B.

Could you tell me the time frame for developing the figures in this exhibit?

When did -- well, let me just ask you first. When did the work on this exhibit begin? And on the underlying information?

A I believe this exhibit -- the work on developing the costs for this exhibit began in December.

Q Do you remember whether it began just after the filing of OCA Witness Willette's testimony, or prior to that time?

A I'm not really sure as to when the actual date that this request was made.

Q What would have been the first sets of figures developed in this exhibit or the earliest sets of figures?

A The cost information in section B and section C was developed first.

Q Okay. So you got some information. Let's go to section B, column 2 or item 2.

That came from the FY '97 USPS annual report; is that correct?

A Yes.

Q When would that have been available?

A I believe I received my own copy in the mail in December, but I'm not sure as to the exact date.

Q All right. Thank you.

How about item 3, the printing cost per piece? That was -- that apparently is an estimate provided to the Postal Service by Young, Rubicam. Is that correct?

A Yes.

Q Do you know when the work contract was executed with Young, Rubicam?

A The printing cost per piece for both B and C? Those were obtained through informal channels, through postal employees that work with Young, Rubicam. This wasn't part of any formal request.

Q Okay. So Young, Rubicam provided these figures to postal employees, and then those employees provided them to you?

A Yes, that's correct.

Q Do you know when Young, Rubicam provided those figures to the postal employees who then furnished them to you?

A I believe I also obtained this information in December, but I'm not sure when the person that gave me this information actually obtained it.

Q Was that from a postal employee?

A Yes.

Q Is there any other information available either in the record or as a library reference on how this four-cents-per-piece figure was developed?

A No, I don't believe so.

Q Now you also got some information from Cohn and Wolfe; is that correct?

A Yes, it is.

Q What did Cohn and Wolfe provide to the Postal Service?

A Provided a schematic media plan which included these cost estimates.

Q Was that pursuant to a work contract with them?

A I'm not really sure what the specific contractual

nature of the request was. I know we submitted a request, and this was the information they gave us.

Q Were you the one who dealt with Cohn and Wolfe, or was it another Postal Service employee?

A It was another employee.

Q The information that I see displayed in Exhibit 17-B -- when did you first see that information? I'm talking about the Cohn and Wolfe information right now.

[Pause.]

A To the best of my knowledge I believe I first saw this information around the middle of February.

Q And presumably Cohn and Wolfe had provided it to the employee who then provided it to you sometime before that.

A Well, I received this information pretty quickly after the other employee received it, so they probably would have provided it around the same time.

Q Okay. The schematic that you alluded to a moment ago -- has that been furnished anywhere in the record or as a library reference?

A I don't believe so.

Q Let's turn to your Exhibit C, please.

[Pause.]

When did work begin on Exhibit C? I'm sorry, this is 17-C. When did work begin on Exhibit 17-C?

A To the best of my recollection I think work began in the middle of January.

Q Did it evolve, would you say? Did you have a preliminary set of figures and then later you had a more refined set of figures? Is that the way it worked?

A To some extent I'd say that's true.

Q About when did you have the preliminary figures?

A I would say it's probably sometime close to the end of January.

Q Okay. Let's look at Exhibit 17-D, please.

[Pause.]

When did work begin on that exhibit?

A I believe work on Exhibit D began in the middle of December.

Q Generally the work on Exhibit 17-D utilizes information already filed in this docket or in previous dockets; is that correct?

A Yes, that's true.

Q Could you turn to your testimony at page 20, please? On line 16, you cite a figure of 73 million transactions; is that correct?

A Yes.

Q Is there anything on the record or filed as a library reference which shows the development of that figure?

A No, there is not.

Q Look at footnote 32, that refers back to figures concerning booklet vending machines; is that correct?

A Yes.

Q And the figures that came from the National Vending and Machine Report, fiscal year 1997, which is cited in footnote 32, would those be the 9,060 figure appearing on line 22, and the total figure of 37,631 appearing on line 23?

A Yes, that's correct.

Q Is there anything in the record or filed as a library reference which shows how those figures were developed?

A Not that I'm aware of.

Q Could you turn to your testimony at page four, please? There you state beginning at line 26, any lack of standardized CEM markings would hamper efforts to educate the public and increase the potential for confusion. Is that correct, you state that?

A Yes, it is.

Q Does the Postal Service specify the exact message that appears in the postage area for business reply mail, do you know?

A Yes, they do.

Q Does the Postal Service specify the language that

may go into a postage box area on a regular first class piece of mail, do you know?

A I'm not sure what you are really asking by that last question.

Q For example, on a courtesy reply mail piece, the statement might appear, "will not deliver without proper postage" or something like that.

A I thought you were talking about --

Q I switched to a regular first class mail piece.

A Oh, I thought you were talking about a postage box, like a post office box.

Q I'm sorry. I meant that part of an envelope where the statement appears "will not be delivered without proper postage." Is that the mailer's choice of language or does the Postal Service specify what language may go into that box?

A I'm not really sure if there's a requirement that be standardized, but it's definitely not standardized, if you look at different courtesy reply mail pieces.

Q Did you have any misunderstanding in my question about BRM, that I was referring to the box on the front of an BRM envelope, which indicates that no postage is necessary, or did you understand my question to mean that?

A Where a stamp would usually go on a non-BRM mail piece?

Q Right now I'm talking about a BRM mail piece.

A You are talking like where a stamp would usually go on a non-BRM type mail?

Q Yes, that is right.

A No, I understood your question. There's a requirement that it says "no postage necessary if mailed in United States."

Q Thank you. Could you turn to page six of your testimony, please? I want to talk to you about your testimony beginning at line four, please. There you state that consignment outlets that chose to offer both stamps could experience difficulties related to stocking and selling two denominations. That's your testimony, correct?

A Yes, it is.

Q Have you contacted any such consignment outlets to determine what their concerns are?

A An informal study was conducted, and the result was basically qualitative comments about what it would be like having to stock two stamps, but the result wasn't a determination as to how many would participate.

Q When was that informal study conducted?

A I believe it was sometime in January.

Q And the question that was asked of the consignment outlets was whether they would have an objection to stocking two different denominations of stamps?

A I believe it was an explanation as to what the CEM proposal entailed and then it was just basically an open ended question as to how they felt about it.

Q Did you get a variety of reactions, some positive and some negative?

A I'd say there was a mixture.

Q Do you know whether the consignment outlet managers were asked if they'd be willing to stock booklets that held two denominations of stamps? That is only one booklet would need to be handled but that booklet would carry two different types of stamps. Did that question come up?

A I don't believe that was an element.

Q For those outlets that only wanted to stock one kind of booklet, if the booklet had two different denominations in it, that probably wouldn't pose a problem for the consignment outlets, would it?

A I would think that would depend on the consumer response.

Q What do you mean by that?

A If some consumers only used one type of stamp and they could only get mixed booklets, I think they might be upset about that fact.

Q I guess in such cases, the consignment outlet, if it chose to stock just one type of booklet might very well

stock the kind that was most desired by consumers; does that sound reasonable?

A I'd say so.

Q Could you turn to page nine of your testimony, please? Beginning at line 17, please, you state there, the current CRM mail stream would be separated into two distinct pre-bar coded mail streams that require different postal rates, yet have identical mail processing cost characteristics. You state that, don't you?

A Yes, that's true.

Q Do you agree that for those consumers who don't choose to use CEM, that will enhance the revenues of the Postal Service? That is, that they could use a discounted CEM stamp but they choose not to? Instead, they apply the full postage. That would enhance Postal Service revenues, wouldn't it?

A The specific act you describe could enhance postal revenues, but it could also be offset on the flip side by people that incorrectly use the discounted stamp. I would look at the total picture in terms of the impact.

Q Are you familiar with a response that was placed into the record this morning to a request of the Chairman to have the Postal Service provide revenue figures and volume figures on short-paid and overpaid mail?

A This was filed this morning?

Q I think it was filed on March 13, but it was placed into the record this morning.

A I'm aware of that.

Q Were you aware that the results reported in this answer by the Postal Service indicated that generally overpayment is about twice that of short payment? Does that sound about right to you? That is, the number of overpaid pieces is about twice the number of short-paid pieces. Does that sound right?

A I would say that's roughly correct in terms of the pieces.

Q Do you know why it is that mailers tend to overpay rather than underpay?

A I would think for the most part it's a convenience issue.

Q Would you think also that in the case of bill payments such as those that could be made with CEM that mailers would want to take great care that their bill payments do arrive at their intended destination and in a timely manner? Would you agree to that?

A I would think the American public takes great care in applying postage to all their mail pieces.

Q And that's true of bill payments as well, isn't it?

A Yes.

Q And it may be true particularly of bill payments. Does that sound right?

A I would imagine that's true.

Q On page 9 you indicate that CRM providers may have a negative reaction to new CEM requirements. Is that true?

A Yes, that's true.

Q Are you familiar with a letter sent to the Postal Service recently from a group of major mailers asking the Postal Service to withdraw PRM?

[Pause.]

A I'm aware of that letter, but I'm not aware of any evidence on the record that opposed PRM.

Q You are aware, though, that a group of major mailers did write to the Postal Service and ask them to withdraw the prepaid reply mail proposal.

A Yes, I believe I just stated I was.

CHAIRMAN GLEIMAN: Excuse me, Ms. Dreifuss.

What did you mean by you're not aware of anything on the record?

THE WITNESS: Any testimony on the record that opposed PRM.

CHAIRMAN GLEIMAN: You've reviewed the entire evidentiary record of this hearing and to the best of your knowledge -- I'm not talking about just testimony, but there's nothing on the record at all? Not direct testimony

alone.

THE WITNESS: Well, I was specifically referring to testimony. In talking to the legal staff at the Postal Service I'm not convinced I really completely understand what on the record actually means. But I'm not aware of any testimony that opposed PRM. In fact, there's at least one mailer that supported PRM.

CHAIRMAN GLEIMAN: Okay. I just was kind of curious as to what you meant by on the record, because sometimes I get confused about what's on the record too. Sometimes the Commission does, and it winds up in court.

BY MS. DREIFUSS:

Q I'll just pursue that, because I'm interested also.

Do you know whether the Postal Service has provided a copy of that letter anywhere at the Postal Rate Commission up to this point?

A I believe it was actually a library reference.

Q So it is here as a library reference?

A Yes.

Q As far as you know.

Are you aware that in that letter the signatories stated that prepaid reply mail is bad for consumers?

A I would say, upon reading that letter, it's obvious mailers have some concerns, but it's really

difficult for someone like me to form an opinion when there's really nothing in the form of testimony supporting what they're saying.

Q Well, would you accept, subject to check, that there is a statement in that letter -- and I'll quote it -- "Pre-paid reply mail is bad for consumers." Do you remember reading that statement?

A I'll accept that it's part of the letter.

Q Are you aware of any similar letter being submitted to the Postal Service in this docket concerning CEM?

A Are you referring to any letter or letters on the part of mailers?

Q Letters on the part of mailers, yes. That's what I'm asking you about.

A I'm not aware of any, but I am aware that there was an interrogatory where, I believe, Witness Willette said mailers weren't contacted about CEM.

Q Right. But I'm asking you whether the Postal Service has been contacted by mailers by letter where they would indicate --

A Oh. Not that I'm aware of.

Q Okay.

Could you turn to page 11 of your testimony, please? On page 11, you state that the costs for processing

reply mail could increase if the use of two stamps obscured FIM markings. Is that correct? That's generally your testimony?

A Yes, it is.

Q When the Postal Service increases the regular first-class rate, is it sometimes necessary for consumers to buy an additional stamp to pay the increased postage and, therefore, they would be using two stamps on the envelope?

A Yes, they would.

Q In past instances when rates have increased and two stamps have been used, do you know whether there has been a serious problem in obscuring the FIM markings of such pieces?

A I've personally never analyzed that situation, and I'm not aware of any studies that were conducted to analyze that situation.

Q Has any problem of that type been brought to your attention?

A I've seen problems of that type working in a processing and distribution center, for example, if someone used two postcard stamps to mail a first-class letter. I've seen those problems first-hand. I haven't really analyzed the problem at the time of a rate increase.

Q If the Postal Service only permitted a single CEM stamp to be used on CEM pieces, then that would probably

avoid the problem of covering the FIM mark. Is that correct?

A Well, this specific instance wasn't referring to CEM qualified pieces. It was referring to CRM that did not convert to CEM.

If somebody had a courtesy reply mail bill that wasn't properly marked as CEM qualified but they usually only kept a 30-cent stamp, they would have to apply additional postage to cover the 33 cents for that non-qualified piece, and that's what I was referring to here.

Q Well, even today, there is nothing to prevent a mailer from using more than one stamp on a courtesy reply envelope, is there?

A No, there is not, but we currently only have one first-class single-piece rate for mail less than one ounce.

Q Well, if some mailers, for example, happen to have some postcard denomination stamps on hand and several one-cent stamps besides, nothing would prevent them from putting them all on a courtesy reply envelope. Is that correct?

A That's true.

Q Could you turn to page 14 of your testimony, please?

A Yes.

Q On page 14, the heading of this section of your testimony is that, "A recent USPS survey shows the public

strongly prefers the current one stamp system." Is that correct?

A Yes, it is.

Q Let's turn to -- well, let me ask first, did you bring Mr. Ellard's testimony with you today?

A Yes, I did.

Q Could you turn to page 17 of his direct testimony? This would be USPS-RT-14. In Table 3 appearing at the top of that page, and let's just look at the column labeled "32 cents/29 cents". Forty-four percent of the respondents indicated that they were very likely to buy and use both stamp denominations. Is that correct?

A I'm sorry. Could you repeat that?

Q In Table 3 of Witness Ellard's testimony, it appears at the top of page 17, and I am looking at the column marked "32 cents/29 cents" and I am going down to the third line, which states "Very likely". Do you see that?

A Yes, I do.

Q And what is very likely is that both stamp denominations would be bought and used, is that correct?

A Well, the title of that table says, "Likelihood of buying and using stamp denominations and values," and for those specific rates, it said 44 percent.

Q Right. So 44 percent of the respondents were very likely to buy and use both CEM and regular First Class

stamps, is that correct?

A Well, for those rates, just as it shows that 32 percent said they were likely to buy 33 and 30 cent stamps, which I believe is the actual rates proposed by the OCA. But I would note in my testimony also that on page 14, I stated at line 24 that Witness Ellard's survey shows that a likelihood to purchase a discounted stamp does not necessarily mean that the public wants to see the Postal Service implement a two stamp system.

Q Let's continue to focus, however, on the public's reaction to a discounted rate under today's rates. And let me just state that the reason I want to focus on that is that when we question Mr. Ellard later in the week, we may ask him questions about the fact that sometimes the respondents may react negatively to the idea of any type of rate increase, and that is why we are veering away from the 33 cent and 30 cent answer, and just looking at the 32 cent and 29 cent answer.

But, at any rate, under 32 cents and a 29 cent rate for CEM, that is, 32 cents for the full First Class rate, 29 cents for the CEM rate, 44 percent of the respondents indicated that they were very likely to buy and use two stamps, is that true?

A Yes.

Q And 24 percent indicated that they were somewhat

likely to buy and use two stamps, is that true?

A I believe that is true.

Q And that sums to 68 percent who are either somewhat likely or very likely to use two different denominations of stamp, is that true?

A That's true. But, once again, I would reiterate that I don't think that necessarily means the public wants to see a two stamp system.

Q Just to --

COMMISSIONER LeBLANC: Ms. Dreifuss, can I interrupt you just one moment?

MS. DREIFUSS: Yes.

COMMISSIONER LeBLANC: That is your opinion then, is that correct, then? Based -- I mean the statistics would indicate that that is a pretty high, 66 percent.

THE WITNESS: Well, there is a question later that actually directly asks the consumer if they want a one or two stamp system, and I believe the cumulative response was 60 percent said they wanted a one stamp system. That's what I am referring to, is the result from question 9.

COMMISSIONER LeBLANC: Okay. So that is what you are referring to, not necessarily your opinion, though. You are just -- you are referring back to the survey on the other question? In response to Ms. Dreifuss?

THE WITNESS: Yes. Despite the fact that 60-some

percent say they would buy two stamps if they were available, --

COMMISSIONER LeBLANC: I was just trying to clarify the record here. The way you made it sound --

THE WITNESS: Yes.

COMMISSIONER LeBLANC: Okay. Good. Thank you. Thank you, Ms. Dreifuss.

BY MS. DREIFUSS:

Q Well, it does sound like the answer that I am looking at, in Table 3, top of page 17 of his testimony, is somewhat inconsistent with the answer that you just referred to, is that correct?

A I am really not sure what you mean by that.

Q Well, 68 percent say they are very likely or somewhat likely to buy and use two stamps. We just established that a minute ago, is that correct?

A Yes, but I believe we were referring to question 9, which had to -- which asked consumers if they wanted one or two stamps, not if they were likely to purchase two stamps.

Q You don't see any inconsistency between those two sets of answers?

A Well, these sorts of questions would probably be best directed at Mr. Ellard, but I think it's a completely different question to ask people if they would use two

stamps if they were available, compared to asking them if they wanted to have a system that relies on one or two stamps.

Q I think you are right. I'll pursue that with Witness Ellard later in the week.

Let's turn to page 15 of your testimony, please. I guess we are there. You state that based on the results of question P-2, where respondents were asked the number of payments they mailed per month using a reply envelope, it looks doubtful that the average household in any income category would save $4 to $5 a year.

Let me just ask you, do you have a feel for how many reply envelopes you mail each month?

A Yes, I do.

Q What would be your figure?

A Are you referring to pre-bar coded? Are you talking about current courtesy Reply FIM A mail pieces?

Q Yes. Yes, I am.

A For me, that would be seven per month.

Q Seven per month.

Now look at -- I guess we'll have to turn back to Witness Ellard's testimony, page 85 -- I'm sorry -- page ~~885~~ A85. For question P-2, isn't it correct -- let me direct you to part of the page that I'm interested in. Turn to question P-2, and there's a statement in parentheses

following the question and it states "your best guess will do." Do you see that?

A Yes, I do.

Q Does that indicate that the answer given is really just a guess, a rather offhand response?

A I think these questions are probably best directed to Witness Ellard, but the questions in parentheses are probed or only asked if they got no response when they asked the question, so they weren't always asked 100 percent of the time.

Q I think I will pursue that with Witness Ellard.

Turn to your testimony at page 18, please. There you estimate that the educational cost of informing consumers about CEM would be $33 million; is that correct?

A Yes, that's correct.

Q Do you know how much it will cost to inform the public about the proposed increase in the first class rate of one cent, if it were to be implemented and adopted?

A My understanding is that for something as basic as that, a system that's been in place for years, that we basically rely on the news media for that sort of education.

Q It is possible that years from now, if CEM were to be adopted and implemented, that you could rely on the news media in the same way, couldn't you, if CEM rates were to increase along with other postage rates? Isn't it true that

you might get there sometime in the future?

A That's a really difficult question for me to answer. A lot of things I pointed out in my testimony had to do with mail piece design and what's going to happen to the current courtesy reply mail stream, and I don't think it's as simple as just saying that some day, everyone is going to catch on. It depends on how much confusion there is on the part of consumers and how many problems we find in many different areas. I don't know if I could say yes or no to that question.

Q You would agree, though, that the confusion is likely to decrease over time as consumers become more and more familiar with the types of envelopes to which they may apply CEM postage. Don't you agree to that?

A I don't believe that's necessarily true.

Q You don't think there's a learning curve involved in using CEM?

A There may be a learning curve to some extent for -- depending on what happens, but I don't think it's necessarily going to completely go away. I think past studies have shown that even consumers think there could still be problems.

Q What studies are you referring to?

A Well, I believe OCA Witness Thomas, in R90-1, conducted a study, and 47.6 percent of the respondents

indicated that the CEM proposal was going to be difficult to learn and understand, and to me, that indicates confusion.

Q Did Dr. Thomas ask them whether, once they became familiar with the use of CEM, that there would be continued confusion?

A I don't believe, on that particular question, he pursued it any further.

I know, on the one that had to do with 70 percent of the respondents thinking there would be a problem with misusing the stamp, he asked it again, and after he clarified it to some extent, I still believe there was a significant percent that thought people would still misuse the stamp.

I think that also indicates to me there's going to be confusion.

Q Have there been any studies, to your knowledge, that focused precisely on the issue, whether there would be confusion some years in the future, after CEM had been in place for a long period of time?

A Not that I'm aware of, but I don't really believe confusion is totally an issue that consumers are responsible for. I think we're creating the situation where they're more likely to be confused.

Q Has the Postal Service estimated the costs of educating the public about proper use of PRM?

A I'm not really aware of that, but I believe Witness Fronk outlined PRM in his testimony. I'm not sure if that was an element that was discussed or not.

Q Are you familiar with Postal Service campaigns to have the public vote on new stamp designs -- for example, the Elvis stamp and an upcoming Olympics -- an Olympics series where mailers will get a chance to vote on their favorite types of stamps? Are you aware of such campaigns?

A I'm aware of the campaign. I'm not sure as to the specifics of how it works.

Q Do you have any idea how much it costs the Postal Service to run such campaigns?

A I have no idea how much that would cost.

Q Do you know how much -- or do you know of any Postal Service estimates of how much it will cost to educate the public about the proposed delivery confirmation service?

A That wouldn't be something I'm familiar with.

Q Do you have any idea how much the Postal Service spends today on educating the public about proper mailing practices and proper postage?

A No.

Q What gives you the confidence to believe that the $33 million figure is an accurate estimate of the costs of educating the public about CEM?

A Well, I believe that the channels we went through

to develop that estimate are the same channels we go through to conduct similar campaigns, and in addition, some of the elements of that estimate -- for example, the direct mailing -- Cohn and Wolfe actually included a direct mailing cost in their proposal, and theirs was significantly higher than what we had in ours. So, I believe, if anything, these costs might be somewhat conservative.

Q We don't know what exactly comprises that $33 million figure, do we?

A I believe we were just looking through Exhibit B. Are you talking about in more detail than what's included there?

Q Yes, how each of those figures in section A, for example -- well, for all sections. And in particular the Cohn and Wolfe and the Young, Rubicam estimates. We established earlier that we don't know how those figures were arrived at.

A I personally don't know how -- the details of how these figures were arrived at. Some of them in my opinion, for example the printing costs, look reasonable to me. I think Witness Willette in her testimony had costs of up to 1.2 cents just to amend an envelope with the CEM marking. So four cents for an entire mail piece doesn't seem unreasonable.

As far as the television, radio, and newspaper

advertising, I wouldn't be able to evaluate.

MS. DREIFUSS: I have no further questions, Mr. Chairman.

CHAIRMAN GLEIMAN: Followup?

Questions from the bench?

Mr. Miller, early on in the cross-examination by OCA counsel you indicated that you accepted information from Cohn & Wolfe and Young & Rubicam, and it was either given to you directly or indirectly by another postal employee. Why is it you accept information from other postal employees who get it from Cohn & Wolfe and Young & Rubicam, but when a bunch of mailers send a letter in to the Governors that you have some reluctance to accept what they're presenting as gospel?

THE WITNESS: Well, in the case of the estimate for education costs, it was obtained through people I know that I work with, and it's part of their job and it included specific costs, whereas this letter I don't believe really outlined any specific costs related to PRM implementation. I'm just not -- my whole point was I just don't feel like I could really read this and completely evaluate or understand where they're coming from.

CHAIRMAN GLEIMAN: So if it's people who you're familiar with, and they give you numbers, then it's more readily acceptable to you than if it's people that you don't

ordinarily deal with?

THE WITNESS: I would say in general that's true.

CHAIRMAN GLEIMAN: Did you ever hear of the Mailers' Technical Advisory Committee -- Council, Committee, whichever it is?

THE WITNESS: I'm not really familiar with that organization.

CHAIRMAN GLEIMAN: Have you heard -- you've never heard of it?

THE WITNESS: Could you repeat the --

CHAIRMAN GLEIMAN: Mailers -- MT -- Mailers' Technical Advisory Council. MTAC.

THE WITNESS: The acronym sounds familiar, but I really don't know what their function is.

CHAIRMAN GLEIMAN: Do you think that the Postal Service talks to its customers when it formulates proposals, whether they're rate or classification proposals or whether they're activities that are done within the administrative authority of the Postal Service to collect information from those customers?

THE WITNESS: Did you have a specific customer in mind? Are you talking about like the general public or mailers or --

CHAIRMAN GLEIMAN: Well, let me read you a list of customers -- American Bankers Association; American

Financial Services Association; Major Mailers Association; National Postal Policy Council; National Retail Federation; Direct Marketing Association; AT&T; Allstate Insurance Company; American Express Company; Bank of America; Bell Atlantic; Citicorp/Citibank; CSG Systems; Fidelity Investments; First Chicago NBD; First Data Corporation; International Billing Systems; JC Penney & Company; Moore Business Communications; MBNA America Bank; Sears Roebuck & Company; U.S. West, Inc.; and Wachovia Bank.

Do you think the Postal Service ever talks with any of those people when it is formulating policies either that would have to come before the proposals that would have to come before the Commission or policies that it could implement on its own?

THE WITNESS: I can only speak for myself and I have never talked to those people.

I would think there are postal employees that have communication with those organizations but I wouldn't really know the answer to that question.

CHAIRMAN GLEIMAN: Well, assuming for the sake of discussion that postal officials did talk with companies and organizations akin to those that I listed on here, would you think that those are, quote, "channels that we went through" and are the ones we are used to -- usually use?

I mean would they be -- do you think somebody in

the Postal Service -- you seem to be comfortable -- let me back off.

You seem to be comfortable with Cohn & Wolfe and Young & Rubicam and you characterize them as channels that you usually went through. Those are people that you usually use.

If there are other people in the Postal Service who deal with this long list that I read you, would you characterize them as channels that those other people usually use and that they might be comfortable with?

THE WITNESS: You're saying that -- I don't know if I -- I didn't mean to give the impression that I directly deal with Cohn & Wolfe or Young & Rubicam. I was more I deal with people in the work environment that I am comfortable with and they have their own sets of channels.

I would imagine that there are people in the Postal Service that deal with these organizations that they're just as comfortable with the people at these organizations they deal with.

CHAIRMAN GLEIMAN: On page 3 of your testimony, at line 3, it says, "In fact, the implementation of CEM would seriously undermine the success of PRM" and then on page 7 you continue by saying "Businesses would therefore not be as likely to adopt PRM" and it goes on.

Have you read this letter that I just read you the

list of signatories to and that Ms. Dreifuss asked you about -- the letter that may or may not be in the record?

[Pause.]

THE WITNESS: Yes. I've read it.

CHAIRMAN GLEIMAN: Do you think that these signatories to this letter are representative of the types of businesses that you would anticipate in the absence of CEM would be hopping onto the PRM bandwagon?

THE WITNESS: I'm sorry, what was that question?

CHAIRMAN GLEIMAN: In the absence of CEM -- look at the signatory page on the letter -- you have read the letter. Do you think these groups, these companies are indicative of the types of companies that you think in the absence of CEM are going to be more likely to adopt PRM?

THE WITNESS: I think based on the comments in this letter that this list of companies would be likely.

CHAIRMAN GLEIMAN: And you have no sense whether this list of signatories represents kind of a cross-section of large volume mailers who use either courtesy reply or business reply mail currently?

THE WITNESS: I wouldn't know specific volume information but it's obvious that some of them are high volume mailers.

CHAIRMAN GLEIMAN: Okay. Well, I thank you -- and I don't want to draw the conclusion and don't want you to

believe I draw the conclusion that by virtue of signing this letter that these people endorse CEM, but there's, you know, a balancing act laid out in your testimony between CEM and PRM and we need to understand better how people feel about PRM because if PRM -- if businesses aren't going to jump on PRM it's not likely that the existence of CEM would deter them to any great degree, but be that as it may, just so that there is no question about what is in the letter and we have talked -- what's in the record, and we have talked around this letter, I am going to provide two copies of Library Reference H-342 to the reporter and ask that it be transcribed into the record and entered as evidence.

[Library Reference H-342 was received and transcribed into the record.]

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

POSTAL RATE AND FEE CHANGES, 1997

Docket No. R97–1

NOTICE OF UNITED STATES POSTAL SERVICE OF FILING OF LIBRARY REFERENCE H–342

The United States Postal Service hereby gives notice that it is filing today the following library reference in response to an information request of the Presiding Officer posed during hearings on February 18, 1998 at Tr. 21/10797-99:

H–342 Letter To USPS Governors Regarding
Docket No. R97-1 Prepaid Reply Mail Proposal

Respectfully submitted,

UNITED STATES POSTAL SERVICE

By its attorneys:

Daniel J. Foucheaux, Jr.
Chief Counsel, Ratemaking

Michael T. Tidwell

CERTIFICATE OF SERVICE

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

475 L'Enfant Plaza West, S.W.
Washington, D.C. 20260–1137
(202) 268–2999; Fax –5402
February 26, 1998

Michael T. Tidwell

DOCKET SECTION

January 16, 1998

Dear Chairman Winters and Members of the USPS Board of Governors:

The undersigned trade associations and companies collectively represent many of the largest customers of the U.S. Postal Service. We are writing to express our strong opposition to Prepaid Reply Mail (PRM), as included in the Postal Service's July rate case filing, and to request that the proposal be withdrawn.

Mailers have been working in good faith with postal management since last July to communicate our concerns regarding PRM. USPS management, to this point, refuses to withdraw PRM and maintains that PRM is good for consumers and good for mailers. We disagree. If implemented, PRM will produce many unintended and harmful consequences for businesses and PRM will harm consumers. PRM will also greatly accelerate the diversion of remittance mail to electronic alternatives thereby threatening the Postal Service's long-term viability.

Prepaid Reply Mail is Bad for Businesses

Business mailers have worked closely with postal management over the last decade to implement work-sharing programs to improve the efficiency of the U.S. mail system and to help hold down costs for commercial and consumer mailers alike. Today, business mailers invest significant resources in equipment and systems in order to prepare automation ready mail. In addition, the majority of remittance mailers provide free courtesy envelopes to their customers. We believe this spirit of cooperation has contributed, in part, to the recent service performance and financial results of the USPS.

It is for these reasons that mailers were surprised to first learn about PRM in the USPS public press release announcing the rate case on July 1, 1997. Given the magnitude and scope of the proposal's impact on mailers, our organizations should have been consulted in advance. However, we were not.

If PRM is implemented, it will force mailers to incur significant new operations, systems, customer service and postage costs, and it will create multiple new administrative compliance burdens. For example:

PRM will require multi-million dollar changes in billing systems and equipment for account statement insertion and remittance processing since mailers are required to administer this new rate program. In addition, these onerous changes will divert much needed attention and resources away from critical technology and systems priorities including Year 2000 compliance efforts.

Customer service call centers will be inundated by requests for additional PRM envelopes to replace lost or misplaced originals and by inquiries from confused customers which cost between $2.00 and $4.00, on average, to handle and between $12.00 and $20.00 to research if a resulting case file is established.

In some industries, fierce market competition will force mailers to assume the additional postage expense for the PRM remittance mail piece in addition to the outbound account statement.

Companies that choose not to participate in PRM risk being labeled as anti-consumer.

Prepaid Reply Mail is Bad for Consumers

Consumers, ironically, will also face new costs if PRM is implemented. Today's billing and payment processing systems are highly complex and costly. To comply with the extensive range of new costs, businesses would have to make large new investments in equipment, business process redesigns, and training for customer service staff. These unnecessary costs will ultimately need to be recovered.

Consumers are also likely to be confused about PRM. In this regard, the Postal Service has exacerbated this problem by hyping the proposed new discount in its July 1st press release and in subsequent advertisements in postal lobbies. These actions have created the false impression in the minds of millions of U.S. consumers that PRM will be available for all bill payments, while in fact the USPS intends to restrict the program from the participation of many mailers including small- and medium-sized businesses.

Action Requested

In summary, our organizations encourage the USPS Board of Governors and USPS management to continue to work with business mailers to initiate new work-sharing programs that hold down future postal rate increases and improve mail service performance for the benefit of all Americans. However, the drastic and expensive Prepaid Reply Mail proposal is not the answer. Therefore, we request that the USPS Board of Governors withdraw PRM from the pending rate case immediately.

We would welcome the opportunity to discuss this matter or any questions. For further information contact any of the undersigned, or call Mike Cavanagh at 703-684-3147, Katherine Graham at 202-783-7971, or Jim Cole at 301-236-1083.

Sincerely,

American Bankers Association
American Financial Services Association
Major Mailers Association
National Postal Policy Council
National Retail Federation
The Direct Marketing Association

AT&T
Allstate Insurance Company
American Express Company
Bank of America
Bell Atlantic
Citicorp/Citibank
CSG Systems
Fidelity Investments
First Chicago NBD
First Data Corporation
International Billing Systems
J.C. Penney Company
Moore Business Communications
MBNA America Bank
Sears, Roebuck, and Company
US West, Inc.
Wachovia Bank

cc: William Henderson, Chief Operating Officer
Allen Kane, SVP & Chief Marketing Officer
Michael Riley, SVP & Chief Financial Officer
John Ward, Vice President-Marketing Systems
John Wargo, Vice President-Customer Relations
Thomas Koerber, Secretary for the Board

MR. TIDWELL: Mr. Chairman, does that include or does that mean that any factual assertions in the letter are being regarded as evidence by this Commission?

CHAIRMAN GLEIMAN: Well, why don't we just transcribe it into the record, if that will make you less concerned about that.

Just so that everybody knows that the letter exists and where it is and what it says and doesn't have to go to the docket room or the Postal Service library to find a copy of the letter.

Yes, sir, Mr. Hall?

MR. HALL: Yes, Mr. Chairman, thank you.

Just so that we are very clear here, I want to specifically object to the admission into evidence of this document --

CHAIRMAN GLEIMAN: I just withdrew -- Mr. Hall, I just withdrew that. I asked that it be transcribed into the record, not admitted into evidence.

I appreciate your concern and Mr. Tidwell's. It is not in evidence, but I think it is important for us to have a record that people can look at.

Quite frankly --

MR. HALL: Let me say that Brooklyn Union in this case went to a great deal of trouble including paying my fees for coming down and testifying before you.

They put on a witness. The witness was sworn and he was available for cross examination by any party, and it I believe offends common notions of due process to even suggest that a letter which wasn't even submitted to this Commission originally but went to the Board of Governors, so bypassed this Commission, should now come in and receive any semblance of evidentiary status.

CHAIRMAN GLEIMAN: Mr. Hall, you didn't hear me. I initialled said transcribed and admitted. When Mr. Tidwell raised the question, I modified my request and said transcribed into the record.

I think just as you feel it would be an injustice for us to insert the letter, and I don't disagree with you, as evidence, likewise I think it would be a fiction if we didn't have the letter available for people to read.

It is not evidence. Would you like me to mark it as a cross-examination exhibit? I will be more than happy to do that if it will satisfy --

MR. HALL: As long as we have the understanding, Your Honor, that it is not evidence.

CHAIRMAN GLEIMAN: Please -- I am not Your Honor. I am just a Presiding Officer and I am sure that some people after what I have done probably think I am a lot less than honorable --

MR. HALL: Well, you are to me.

[Laughter.]

CHAIRMAN GLEIMAN: Thank you. I think --

MR. HALL: You are still My Honor.

CHAIRMAN GLEIMAN: Thank you. I appreciate your vote of confidence. At least I have it for the moment.

Let's make clear the letter in question, the Library Reference 342 I believe is the number is not in evidence. It is transcribed into the record.

I have asked questions about it. Ms. Dreifuss has asked questions about it. It was submitted by the Postal Service as a Library Reference and it is just now in the body of the transcript so that it is convenient for folks to take a look at if they want.

I find it very difficult to walk all the way down from one end of the hall to the other to get library references. It's just a terrible thing that I have to do, walking that 100 or so yards every once in a while to dig out a library reference. This just makes it easier for me and maybe some other folks, too.

I appreciate your comment about what your client has done. Quite frankly, and I've said this outside of the hearing room in speeches that I've made, including a speech last Spring to one of the signatories to the letter, that I find it troublesome that when there's an issue before the Commission, that some parties to the proceeding will take

these issues and run with them outside of the hearing room, because it makes it difficult for all of us, and then frequently, what we have is a complaint case filed later on where somebody says, oh, wait a minute, I don't like a half tray or a whole tray or 150 pieces or 250 pieces or whatever it is.

Well, this is the proceeding. This is the hearing. This is where these things ought to be worked out, but you know, other people make decisions to do things in other venues and so be it.

I think that while it's not evidence, we do have to recognize that there are some concerns. I'm sorry if it offends people's sensibilities, and I've rambled on too long and it's getting into the lunch hour.

Now, I've really done it because my colleague had time to think a little bit and he has questions.

MR. TIDWELL: Mr. Chairman, point of clarification. When you say it's not evidence but the Commission needs to recognize there are concerns --

CHAIRMAN GLEIMAN: Well, I can recognize that there are concerns from the cross examination that took place. You know, would you like me to mark it? I'll ask a question. I have asked several questions. I'll mark it as a bench cross examination exhibit. Would you -- I'm not sure I understand what --

MR. TIDWELL: I was seeking clarification of your statement that it's not evidence, but the Commission wants it there as indicating some concerns.

CHAIRMAN GLEIMAN: Let's leave it this way. You read the transcript tomorrow and you look at the question or questions that Ms. Dreifuss asked and you look at the questions or question that I asked, and let's just leave it as though it were a cross examination exhibit based on the questions and answers that we got. Okay? It's nothing more and it's nothing less.

If you all would be happier at this point, I'll be willing to withdraw it. You think that's going to make a difference? I'll leave it up to you, gentlemen. You are wise people, and you think it's going to make a difference.

MR. TIDWELL: I don't think it will make a difference but I'd be pleased if you would withdraw it.

CHAIRMAN GLEIMAN: Mr. Reporter -- Mr. Hall?

MR. HALL: Your Honor, I think we can all agree that the letter was written. I guess I would stipulate to that. I don't have any knowledge that the letter was written. The letter wasn't written to you. This Commission only came into possession of the letter because the existence of the letter became known through the media.

MR. TIDWELL: Before it was received by the Governors.

MR. HALL: Well, I don't have any knowledge on that subject, but in any event, this letter comes to the Commission in a very strange and I would say abnormal way. I don't have any problem with you copying it into the record as long as we all recognize that it's just a letter that's been sent.

CHAIRMAN GLEIMAN: Let me try one more time. I initially said transcribe and enter into evidence. Mr. Tidwell was concerned. Before he had a chance to complete his objection, I backed off of asking that it be entered into evidence. It is transcribed into the record. Several questions have been asked about the letter. The letter could have been however it was received and whoever it was sent to, whether it was in the press before it got to the Governors, I don't know anything about that, all I know is that it exists, that it was submitted as a library reference by the Postal Service, and that for all intents and purposes, it's serving the purpose of a cross examination exhibit.

MR. TIDWELL: And I have no problem with it being in the record on that basis so long as there is an understanding that it is not accepted into the record on the basis of any of the facts that are asserted therein, other than it's a letter that's been sent.

The difficulty, you must appreciate, is that once

again, those of us who were interested in your proceedings and the specific proposals that the Postal Service placed before you, presented witnesses who were subject to cross examination. The letter contains various factual assertions but no one has been offered to support those assertions.

CHAIRMAN GLEIMAN: The letter is a cross examination exhibit. That is in effect, even though it was not marked as a cross examination exhibit, the status that it has. It's been transcribed into the record. I'm going to leave it transcribed into the record. If you think, any of you think that I have yet again done something wrong, you are more than welcome to submit a motion in writing, and I will take very careful notice of whatever you send in and will make a final judgment, if you all think it is necessary.

Now, Commissioner LeBlanc, I think, has a question.

COMMISSIONER LeBLANC: I don't know if I want to follow that. I'll try. Thank you.

CHAIRMAN GLEIMAN: Do you have one or not, sir?

COMMISSIONER LeBLANC: No, I don't.

CHAIRMAN GLEIMAN: Is there any follow up to questions from the bench? If not, Mr. Tidwell, would you like a few moments with your witness to determine whether you want to do any redirect?

MR. TIDWELL: Could we have ten minutes?

CHAIRMAN GLEIMAN: You may have ten minutes, sir.

It is my intention after we finish with this witness to break for lunch, so that any of you who are scheduled to cross examine witnesses this afternoon can plan accordingly.

[Brief recess.]

CHAIRMAN GLEIMAN: Mr. Tidwell, before you get started, if you do in fact have redirect, let me just make one further short comment which I think will clarify and hopefully satisfy the concerns that you and Mr. Hall have expressed.

The questions that were asked where reference was made to this letter that was sent to the Board of Governors were questions in my mind about CEM.

The relevance of the letter is really with respect to CEM and the effect that CEM would have on some other proposal that really is not a matter of discussion with this rebuttal witness. So as far as I'm concerned, the relevance and importance of that letter has to do with whether CEM would have an impact on something else, not the pluses or minuses of the something else, which in this case happens to be PRM.

I hope I've made it clear and made the existence of that letter in our record less -- of less concern.

Mr. Hall.

MR. HALL: Thank you, Mr. Chairman.

I think it has for me, and I appreciate your clarification.

CHAIRMAN GLEIMAN: In other words, the assertions in that letter with respect to the pluses or minuses of PRM are not relevant as far as I'm concerned.

I will skip over those paragraphs when I read the transcript.

Mr. Tidwell.

MR. TIDWELL: Mr. Chairman, we have just very brief redirect.

REDIRECT EXAMINATION

BY MR. TIDWELL:

Q Witness Miller, during cross-examination by the OCA, there was a description of a requirement -- assuming the implementation of CEM there was a description of a proposed requirement that CEM postage on a qualified piece be affixed by means of a single specific stamp for those mail pieces.

Can you describe for us some of the enforcement issues that such a requirement could raise? I mean, does the Postal Service presently -- does the Postal Service presently require on any mail currently that the postage be affixed only with a particular stamp?

A I believe any mail piece would be accepted as long as the postage requirement was met, regardless of what stamp or how many stamps were applied.

Q And what would the Postal Service do to enforce a requirement that CEM mail only bear a CEM stamp?

A Well, I believe I discussed in my testimony that it currently isn't possible to use technology to detect that, so you'd have to introduce manual operations into the system to check each mail piece if you had to use a specific stamp.

Q And so if a mailer applied the appropriate postage but didn't apply the right stamp, what penalty would the Postal Service impose upon those mailers, and why would it impose any penalty on them?

A I wouldn't know the answer to that question. As long as it met the postage requirement, I don't know what sort of penalty you could possibly apply.

MR. TIDWELL: No further questions.

CHAIRMAN GLEIMAN: Recross?

If there is no recross, then, Mr. Miller, I want to thank you. We appreciate your appearance here today and your contributions to our record. And you're excused.

[Witness excused.]

Mr. Olson, before we break for lunch --

MR. OLSON: Mr. Chairman, thank you. William

Olson, representing CTC.

We've been -- when the scheduling occurred of the witnesses, John Clark, who's provided rebuttal testimony in this case, was out of the country, and upon his return advised us that the date on which he was scheduled, Thursday, was unavailable unfortunately. He has made arrangements to make himself available Friday, nonetheless.

I have checked with Mr. McKeever, who is the only person who's filed a notice of intent to cross with respect to UPS, and he is agreeable to putting this over till Friday. I've not been able to speak to Mr. May, whose testimony Mr. Clark's testimony relates to, but he has not filed a notice of intent to cross, and I've spoken to counsel for the Postal Service, Mr. Reiter, who has no problem with putting this over till Friday.

If it's possible, we would ask that it would be sometime after noon so that he could fly out on a 7:00 o'clock flight and be in at noon, and I suspect it would be more like midnight instead of noon, but we would ask anytime after 12 noon that that would be accommodated.

CHAIRMAN GLEIMAN: I don't think it'll be 12 midnight, but certainly it will be after 12:00 noon, somewhere in between, and certainly we can accommodate you, and I'll rely on your good offices to check again with Mr. May and make sure that he's not terribly inconvenienced by

all this.

And with that, it's time for lunch. When we come back, we'll pick up with Postal Service Witness Murphy, and we'll come back at quarter to 2:00.

[Whereupon, at 12:42 p.m., the hearing was recessed, to reconvene at 1:45 p.m., this same day.]

AFTERNOON SESSION

[1:46 p.m.]

CHAIRMAN GLEIMAN: Mr. Tidwell, if you can identify your next witness.

MR. TIDWELL: The Postal Service calls Michael Murphy to the stand.

Whereupon,

MICHAEL MURPHY,

a witness, was called for examination by counsel for the U.S. Postal Service and, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. TIDWELL:

Q Mr. Murphy, I've placed before you two copies of a document which is entitled the Rebuttal Testimony of Michael Murphy on behalf of the United States Postal Service. It's been designated for purposes of this proceeding as USPS-RT-18.

Was this document prepared by you or under your supervision?

A Yes, it was.

Q If you were to give the testimony contained in that document today orally, would that testimony be the same?

A Basically yes. In review of this testimony

yesterday I discovered a reference on page 2 to a library reference for a cost figure for UAA mail, and I recognized that the reference was incorrect, so we have corrected that and inserted it into the document, and for the convenience of those here to avoid having to research back into the references, we've indicated in the footnote the formula for that cost figure for UAA mail.

Other than that, it is correct as prepared by me.

MR. TIDWELL: With that, Mr. Chairman, the Postal Service would move that the Commission admit into evidence the rebuttal testimony of Mr. Murphy.

CHAIRMAN GLEIMAN: Are there any objections?

Hearing none, Mr. Murphy's testimony and exhibits are received into evidence, and I direct that they be transcribed into the record at this point.

[Rebuttal Testimony and Exhibits of Michael Murphy, USPS-RT-18, was received into evidence and transcribed into the record.]

USPS-RT-18

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

Postal Rate and Fee Changes, 1997	Docket No. R97-1

REBUTTAL TESTIMONY
OF
MICHAEL MURPHY
ON BEHALF OF
UNITED STATES POSTAL SERVICE

TABLE OF CONTENTS

AUTOBIOGRAPHICAL SKETCH

My name is Michael Murphy, I am currently the Manager of the Office of Address Management at United States Postal Service Headquarters and the United States Postal Service's National Customer Support Center (NCSC) located in Memphis, TN. I testified before this Commission In Docket No. MC95-1.

My current responsibilities include providing policy and support for all aspects of USPS address management, including development and operational support for address information systems, products, services, address quality improvement and customer support programs. I provide technical guidance in all areas of address technology management and have extensive experience in the implementation and support of computer-based information systems. I actively participate in and frequently speak at mailing industry association meetings, National Postal Forums and the Mailers' Technical Advisory Committee (MTAC). I am a featured speaker at Postal Customer Council sessions, on such subjects as address quality and Move Update services which can assist large and small mailers in managing their address files and/or improving their mailing operations. In 1988, I established "Partners in Tomorrow," a representative work group of vendors and mailers who meet several times a year to establish quality and performance goals for commercial address-matching programs.

The National Customer Support Center plays a major role in the development and implementation of programs and services to support the Postal Service's goals for customer service and automation. See Appendix I for a description of services of the

National Customer Service Center. In the past ten years, we have spent a great deal of time in many different mailing industry worksharing groups in joint development of solutions for problems related to address quality and change-of-address updates. This effort is truly a "work in progress," as we jointly strive to raise the quality standards for both the industry and the Postal Service.

While in the Postal Service, I have held various training, finance, mail processing, information systems, and delivery positions at the field, regional and headquarters levels. My background includes 23 years with the Postal Service, 9 years in the private sector, and 5 years in the US Navy Submarine Service. In the private sector, I was employed as a field and staff computer engineer with Control Data Corporation. During a 2 1/2 year hiatus from the Postal Service, I founded and managed a successful computer company, COMP-U-TYME Systems.

I. PURPOSE OF TESTIMONY

The purpose of my testimony is to rebut the testimony of the National Association of Presort Mailers (NAPM) witness MacHarg concerning the potential for the recently mandated Move Update requirements to reduce forwarding costs for workshared First-Class Mail in the test year.

Mr. MacHarg testified that there will be at least a 25 percent reduction in the costs of forwarding for First-Class presort or worksharing mail due to the newly implemented Move Update requirements for FY 1998, Tr. 27/14956-57. I believe that currently there is insufficient information, little experience and no validated operational numbers to support this claim. It would be extremely optimistic to expect such a large reduction so soon. Below, I describe the Move Update requirements, their implementation, and the reasons for caution in estimating the savings to be expected for the current fiscal year. These reasons, which I discuss more fully below, are:

- The delays in implementing the Move Update requirements and the exemptions granted after the implementation have certainly reduced the potential savings for this fiscal year. This is particularly true in the commercial MLOCR presort mail stream where the FASTforward$_{SM}$ option was the Move Update tool of choice. Due to technical and operational difficulties, approximately 87 commercial MLOCRs still are waiting for FASTforward$_{SM}$ licensing and operational use.
- First-Class worksharing mail was experiencing some impact by existing Move Update tools before utilization of such tools was required as a result of classification reform. While perhaps new for NAPM members and not aggressively utilized by all

of the industry, the use of existing Move Update tools was growing each year and was not a totally new concept for many First-Class bulk mailers.

- The reduction in both operational cost and mail volume related to forwarding that is achievable by FASTforward and the increased use of other Move Update tools is likely to be significant in the long run, but it is premature to estimate its efficacy today.

II. MOVE UPDATE REQUIREMENTS

Because the American public is very mobile, Move Update requirements are an important component of our program to improve address quality. Each year approximately 40 million permanent Change of Address orders (COA) are filed with the Postal Service. Due to the magnitude of these COAs, the Postal Service has created an infrastructure that is dedicated to attempting to affect delivery for mail that must be re-routed because the addressee has moved. The FY 1993 estimated annual volume of Undeliverable-As-Addressed (UAA) mail was 4.8 billion pieces. Of that amount, 51 percent is estimated to be First-Class Mail.[1] Handling this re-routed mail is costly for the Postal Service, since each additional UAA mail piece costs $0.2432.[2] UAA mail also creates the likelihood of delivery service delays for mailers and their customers. Thus, improving customer service and reducing costs associated with UAA mail are important needs for the Postal Service and its First-Class Mail business customers.

[1] Docket No. MC95-1, USPS-LR-MCR-76, Section 4.2. UAA mail is either forwarded, returned or treated as waste.

[2] This is a weighted average of the additional cost of handling mail pieces which are either forwarded, returned or treated as waste. See Docket No. MC95-1, USPS-LR-MCR-76, Section 4.2.

of the industry, the use of existing Move Update tools was growing each year and was not a totally new concept for many First-Class bulk mailers.

- The reduction in both operational cost and mail volume related to forwarding that is achievable by FASTforward and the increased use of other Move Update tools is likely to be significant in the long run, but it is premature to estimate its efficacy today.

II. MOVE UPDATE REQUIREMENTS

Because the American public is very mobile, Move Update requirements are an important component of our program to improve address quality. Each year approximately 40 million permanent Change of Address orders (COA) are filed with the Postal Service. Due to the magnitude of these COAs, the Postal Service has created an infrastructure that is dedicated to attempting to affect delivery for mail that must be re-routed because the addressee has moved. The FY 1993 estimated annual volume of Undeliverable-As-Addressed (UAA) mail was 4.8 billion pieces. Of that amount, 51 percent is estimated to be First-Class Mail.[1] Handling this re-routed mail is costly for the Postal Service, since each additional UAA mail piece costs $0.2432.[2] UAA mail also creates the likelihood of delivery service delays for mailers and their customers. Thus, improving customer service and reducing costs associated with UAA mail are important needs for the Postal Service and its First-Class Mail business customers.

[1] Docket No. MC95-1, USPS-LR-MCR-76, Section 4.2. UAA mail is either forwarded, returned or treated as waste.

[2] This is a weighted average of the additional cost of handling mail pieces which are either forwarded, returned or treated as waste. See Docket No. MC95-1, USPS-LR-MCR-76, Page 5-5 for the unit costs and volumes. The computation of the weighted average is (.2316*1,915,174+.7507*838,964+.0498*2,088,133)/4,842,271.

These two key business reasons provide the basis for the Move Update requirements for bulk First-Class Mail, which were adopted as a part of classification reform.

In order to qualify for First-Class presort and automation rate discounts, mailers must reflect (update) recent COA activity within 180 days (6 months) prior to the date of the mailing, using one of five methods approved by the USPS:

1. endorse each piece using Address Service Requested or Return Service Requested, or

2. participate in Address Change Service (ACS), or

3. process their electronic mailing list using the National Change of Address [NCOA] service provided by commercial vendors licensed by the Postal Service, or

4. process mail via a presort bureau licensed to provide the FASTforward for Multiline Optical Character Reader (MLOCR) and Remote Video Encoding (RVE) service, or process an electronic mailing list using the FASTforward for Mailing List Correction (MLC), or

5. mailers who state that their addresses are up-to-date and at least as accurate as Postal Service addresses can apply for approval to process their addresses under a 99% rule (also called 1% Move Accuracy). This option allows mailers to demonstrate that they have an existing Move Update program that maintains a less than 1% move rate in their mailing system. If they meet the 99% rule, then they are exempt from the Move Update requirement for 1 year.

A more detailed description of each option is contained in Appendix I.

III. IMPLEMENTATION OF THE MOVE UPDATE REQUIREMENTS

The Move Update requirements, as defined in classification reform, would have been implemented in July, 1996. Implementation was delayed across-the-board until July, 1997. This delay was granted to allow mailers time to evaluate and implement the most effective Move Update option for their mail. Subsequent to July 1, 1997, that

segment of the Multiline Optical Character Reader (MLOCR) presort industry which had elected to use FASTforward as its vehicle to meet the Move Update requirements was granted an extension to October 30, 1997. This additional extension was based on technical complexities and equipment modifications encountered by MLOCR manufacturers.

IV. MAILER USE OF MOVE UPDATE TOOLS PRIOR TO IMPLEMENTING THE MOVE UPDATE REQUIREMENTS

In making his projection of a 25 percent decline in forwarding associated with workshared First-Class Mail which he attributes to the mandatory implementation of the Move Update requirements, Mr. MacHarg does not take into account the degree to which bulk mailers were already employing these tools. Mr. MacHarg testified that presort bureau mailings for First-Class presort were prepared without using any Move Update approach prior to the mandatory requirements, and that he did not have information on the Move Update practices of other mailers of bulk First-Class Mail. [3]

With the exception of FASTforward, the other Move Update options -- NCOA, ACS, and endorsements -- have been in place for years. NCOA has been available since 1986, and ACS since 1985. Coupled with the endorsement option, records show these programs have increasingly been employed by mailers prior to the mandatory implementation of the Move Update requirements. In Exhibit USPS-RT-18A, one can see the incremental growth of the ACS in total. In Exhibit USPS-RT-18C, ACS volumes

[3] See Tr. 27/14977 where Mr. MacHarg indicates "I don't have the inside to the presorters that do it via list."

are provided for First-Class Mail. Exhibit USPS-RT-18B shows the incremental growth of the NCOA program, including the volumes for which addresses have been updated to reflect moves. The main evidence of mailers' use of the Move Update tools in FY 1996 is that NCOA licensees processed over 62 billion addresses and matched (provided new address information) 4.7% of this figure for use in mailings for all classes. The NCOA data are not collected by class, but it is my observation that workshared First-Class Mail has long made significant use of NCOA.

It is common business practice for First-Class mailers to make address correction notations when change of address information is provided directly by their customers. Indeed, mailers such as utility companies have as much as or more current address information than the Postal Service. [4]

The use of NCOA, ACS, and ACR, by workshared First-Class Mail definitely began before the mandatory requirements of classification reform. Many mailers of bulk First-Class Mail maintain very accurate address information based on their own interaction with their customers. Therefore, it is extremely difficult to measure, in the short term, without full industry compliance, the impact of the Move Update requirements on forwarding and other UAA volumes.

[4] These mailers comply with Move Update requirements by using the fifth option listed above in part II, which is the 1% Move Accuracy test.

V. WITNESS MACHARG OVERSTATES THE EFFECTIVENESS OF MOVE UPDATE REQUIREMENTS

Mr. MacHarg both underestimates the difficulty of reducing UAA volumes and overstates the effectiveness of the FASTforward system and other Move Update alternatives. At Tr. 27/14956, lines 21 to 23, he claims that volumes processed through FASTforward will "be free of most all forwarding costs to the USPS." He also says (at Tr. 27/14957, lines 2 to 5), that the other Move Update alternatives, aside from FASTforward, eliminate all but the first forward.[5]

It is important to remember that no Move Update method we have developed can eliminate all UAAs. Periodicals mailers have long been strong supporters and users of the Move Update tools. It is noteworthy that despite their extensive use of ACS, NCOA and other alternatives, Periodicals mailers are still faced with a 2 percent UAA problem.[6] This is mostly due to incomplete and inaccurate addresses. These incomplete and inaccurate addresses result in undeliverable pieces which are marked *return to sender, no such number, no such street*, or *attempted not known*. If the address cannot be validated or matched to the USPS ZIP+4 directory, then it cannot become a candidate for NCOA or FASTforward processing, and no new address can be assigned or applied to the mail piece. Also, as discussed below, COA orders can only be used to update addresses via Move Update methods if the address contains the exact name(s) and/or family name associated with the COA. The UAA percentage

[5]Specifically he says (at Tr. 27/14957, lines 2 to 5): "[A]lthough such Move Update procedures other than FASTforward do not avoid the need of the USPS to forward an UAA mailpiece the first time, such Move Update procedures should result in additional substantial reductions in the number of mail pieces which need to be forwarded by the USPS."

[6] Docket No. MC95-1, USPS-LR-MCR-76, Section 4.2.

of 2.69 percent for First-Class Mail[7] attests that certain segments of the First-Class Mail stream have also worked hard to get UAA volumes down. But the experience of Periodicals mailers suggests the difficulties facing First-Class Mailers in attempting to achieve further reductions of UAA volumes.

It is important to note that FASTforward contains only the most recent 6 months of COAs. As a result, it does not correct addresses for older COA orders. In addition, the most frequently used FASTforward method (as described in Appendix I) does not provide the mailer (the presort bureau's customer) information on new addresses for the pieces that are updated. This primary FASTforward method will update the destination address on the mail piece, thereby avoiding forwarding during the initial 6 months after a move. When the COA record is removed from the FASTforward files after 6 months, the mailer has no record of the COA and the risk of delivery to the old address resumes.

Given the inherent technological complexity of MLOCRs, coupled with the harsh environment in which they operate, lifting an accurate image off of live mail drastically reduces the match rate, when compared to computerized list correction processes. In addition, mail pieces on which the MLOCR cannot read the name and address, or which are rejected by the MLOCR, or which are sorted with a non-delivery point barcode (e.g., 5-digit barcode), do not receive the benefit of FASTforward. The current average match rate of FASTforward is 1.13 percent, somewhat lower than the average 4.27 percent achieved in NCOA.[8] Another important limitation of FASTforward

[7] Docket No. MC95-1, USPS-LR-MCR-76, Section 4.2.
[8] FastForword match rate from National Customer Service Center records. NCOA match rate from USPS-RT-18B.

is that it can only be used to update addresses associated with COA orders if the address contains the exact name(s) and/or family name associated with the COA. Nicknames or first initials will often prevent an update.

If used once every 6 months, as specified in the Move Update requirements, NCOA does not eliminate every possible mail forwarding. This is because the Postal Service processes approximately 100,000 new change of address orders (COAs) daily, with the data being updated weekly. If an address list is being processed via NCOA every six months, there will still be a lot of mail forwarded. More frequent use of NCOA, which is not imposed by the Move Update requirements, would increase the effectiveness of NCOA. Again, as for FASTforward, the inherent technical limitations of computer programs to accurately separate and match the components of the names and addresses cause some potential moves to be missed. NCOA is also limited in the same way as FASTforward, in that it requires name matches between the mail piece address and COA order with exacting specifications, before an address update is provided. NCOA does provide the optional service, which is not necessary to meet the Move Update requirement, of receiving information on near matches (the NCOA Nixie Service), which the mailer can then investigate to determine if there has been a move.

Despite the limitations of FASTforward, I am somewhat discouraged by the fact that a significant number of the MLOCRs of presort bureaus and other commercial mailers are not using nor intend to use the FASTforward technology as the method of

compliance.[9] Apparently, much of the planned or actual compliance of presort bureau mail is via NCOA, ACS, and ACR. I fear that, in some cases, there may be no compliance at all.[10] We are preparing to implement a compliance review process across the mailing industry to determine how and what mailers are doing in this area.

Clearly, the use of Move Update tools has increased since FY96. Unfortunately there is no evidence of a reduction in the UAA volumes. The primary example of the increase use of Move Update tools is shown in USPS-RT-18B, *NCOA Statistics*. In FY97, the NCOA licensees processed over 80 billion addresses and found over 3 billion customer moves, which represents a 4.18 percent match rate. On the surface, one might expect those kinds of numbers to have resulted in a decrease in mail volume in the Computerized Forwarding System (CFS) sites. However, Exhibit USPS-RT-18C, *First Class Mail Comparisons*, shows that CFS First-Class Mail volume for FY 97 went up four percent from FY96. The year-to-date FY98 CFS volumes by AP for First-Class Mail are at the same levels as for FY97, as shown in Exhibit USPS-RT-18D. Unfortunately, we are not yet seeing declining UAA volumes, and certainly not the 25 percent decline estimated by Mr. MacHarg.

[9] Out of 1094 MLOCRs used by presort bureaus and commercial mailers which are currently MASS certified (and 71 MLOCRs for which MASS certification applications have been made, but are not yet approved), there are 259 MLOCRs currently certified and licensed for FASTforward, with 87 applications pending. Less than one-third of the mailers' MLOCRs will be certified and licensed for FASTforward.

[10] Presort bureaus insisted that they would not use NCOA, ACS and ACR (See PRC Op. MC95-1, page VI-10), which is why the FASTforward system was developed.

VI. CONCLUSION

In my opinion, it is premature to draw conclusions related to the operational and cost impact of the FASTforward Move Update requirement. There currently is insufficient utilization of FASTforward by the commercial presort industry over an adequate time frame on which to base any reasonably accurate assessment of its correct utilization, overall compliance and operational impacts.

The ultimate impact of the Move Update requirement on Postal Service operations and costs will depend on which alternatives and options are used by mailers, how well they employ these tools, and how effectively they integrate the correct address information into their business and mailing systems.

The Postal Service plans to aggressively review industry compliance, collect data and monitor the integration of Move Update tools into business processes. This will enable us to accurately quantify the impact of NCOA, ACS, FASTforward, ACR and the 1% Move Accuracy options on postal operations, CFS mail volumes and UAA mail. Once address quality programs and Move Update processing tools are fully integrated into the business processes of bulk First-Class mailers, I am confident that there will be consistent and measurable reductions in all types of UAA mail. We trust that Mr. MacHarg and his peers will continue to work closely with us and continue to make valuable contributions to these efforts.

APPENDIX I

Description of The Methods for Meeting Move Update Requirements and Other Services of the National Customer Support Center

The National Customer Support Center (NCSC), offers the following methods or options for meeting Move Update requirements.

A. Address Correction Service

Currently, Address Correction Service offers two mailer endorsements options for First-Class Mail:

1. **Return Service Requested** (RSR--formerly Address Correction Requested) under which the Postal Service does not forward a UAA mail piece. Instead, during Months 1 to 18 relative to the effective date of a Change of Address order, the mail piece is returned to the sender, along with new address information. Alternatively, if it is undeliverable for reasons other than a move, the reason for non-delivery is noted. This returned mail containing the address information can then be used by mailers to update their address database. There is no address correction fee charged for this service. The mailer then has the choice of re-mailing the piece to the corrected address to affect delivery to the intended recipient.

2. **Address Service Requested** (ASR--formerly Forwarding and Address Correction Requested) under which the Postal Service forwards the mail piece during months 1-12 relative to a Change of Address effective date, and sends a separate address correction notice to the mailer. The mailer is charged $0.50 for the address

correction notification.[1] If the mail piece is undeliverable for reasons other than a move, the piece is returned to the sender with the reason for nondelivery noted on the piece. There is no charge if the mail piece is returned. During months 13-18 relative to the effective date of a Change of Address order, the mail piece is returned to the sender along with new address information or, if undeliverable for reasons other than a move, a notation specifying the reason for non-delivery. There is no ASR fee in this case.

B. Address Change Service (ACS)

Address Change Service, which is an electronic enhancement to the traditional manual address correction process, currently has 3,072 active participants (FY97). These participating companies have been provided over 654 million electronic change of address notifications since inception in 1985. The ACS process was developed in cooperation with mailers who saw value to the expeditious updating of customer mailing addresses electronically. It greatly reduces the time and money required for labor-intensive operations associated with this activity, such as manual sorting/handling and data entry, for both the mailer and the Postal Service. Since mailers' addresses are updated expeditiously, fewer undeliverable-as addressed mail pieces enter the mailstream, providing service improvement and cost savings to the Postal Service and the mailing community.

ACS notifications are less expensive for the Postal Service to provide and therefore the cost to the mailer is less. The current (and proposed) fee

[1]This is both the current and proposed fee, see witness Needham, USPS-T- 39, p. 8.

for ACS notifications is 20 cents each, compared to 50 cents each for manual notifications.[2]

C. National Change Of Address (NCOA)

Created in 1986, the **National Change of Address** service electronically reflects move activity on a mailing list before a mail piece is created. This is accomplished by a computer based matching process that identifies, (via strict Postal Service defined and approved name and address matching logic), individuals, families and business who have moved and filed a permanent change of address order (COA) with the Postal Service. The NCOA file that is matched against a mailer's name and address list contains approximately 115 million change of address orders that reflect a running three-year period, relative to the effective date of a COA order. The NCOA file is updated to reflect move activity weekly. The NCOA service is provided to the mailing industry via 23 commercial companies licensed by the Postal Service.[3] When a mailer submits its file to a licensee for processing, the list is ZIP+4 and delivery point coded (DPC). The list also is standardized using CASS certified software. Then, it is processed against the NCOA file. If a match is made to the NCOA file, then the new address information is provided to the mailer for the purpose of updating its mailing list. Additionally, every list processed is returned with a National Delivery

[2] See witness Needham, USPS-T- 39, p. 8.
[3] Additionally, there is an NCOA license approved for the U.S. House of Representatives for usage by the House and Senate and other federal agencies.

Index (NDI) evaluation attached, thereby providing the list owner with additional quality assessment data (information on how good the list is and where is it deficient).

To safeguard against false move updates, NCOA only provides a move update if the name matches between the mail piece address and COA order with exacting specifications. . As a result, some addresses, for which there is a COA order, will not be updated by the NCOA process, because the NCOA process obtained only a near match.[4] NCOA does provide the optional service, which is not necessary to meet the Move Update requirement, of receiving information on near matches (the NCOA Nixie Service), which the mailer can then investigate to determine if there has been a move.

An NCOA licensee is required to process and return the mailer's file within seven working days unless the mailer grants a written wavier. These licensees also provide a broad range of mailing related services to the mailing industry. They have the knowledge and technology to support any mailer, small or large. One licensee is specifically designated by the Postal Service to provide low-cost diskette processing to personal computer users. As an indication of just how accessible and accepted this service is, during FY 1997, over 100,000 customer lists were processed by the licensees. In

[4] An example of a near match is if an addressee in a mailer's list is M. Murphy, and there is a COA for a Michael Murphy. This near match is not used to directly update an address, in order to avoid erroneous updates.

FY 1997, NCOA processed more than 80 billion addresses in the commercial market place, with a match rate of 4.2%.

To meet the Move Update requirement, mailers must check their addresses with the NCOA service in the six months prior to mailing. More frequent use, however, will further enhance the mailing list.

D. FASTforward$_{SM}$

The FASTforward system is available in two distinct versions.

1. FASTforward for Multiline Optical Character Reader (MLOCR) and Remote Video Encoding (RVE) interfaces with commercial mail-processing equipment.
2. FASTforward for Mailing List Correction (MLC) provides licensees the ability to update computer-based name and address mailing lists electronically prior to creation of the mail piece.

The presort industry utilizes FASTforward for the mailings which they prepare with MLOCRs. The system consists of a licensed computer system containing very rigid name and address matching software and the COA database. The database reflects COA data for the previous six months. The Postal Service is the sole owner and distributor of the FASTforward hardware and software components that comprise the FASTforward system. Licensed systems are also required to have a FASTforward interface, provided by certified vendors, that meets USPS specifications. Using FASTforward for MLOCR, mailpieces can be processed in one of three different modes:

1. Re-address the matched mail pieces and submit directly to the USPS. Eighty-seven percent (87%) of all mail processed via FASTforward for MLOCR is processed using this mode.
2. Re-address the matched mail pieces and return to the mailer. This represents 13 percent of all mail processed via FASTforward for MLOCR.
3. Re-address the matched mail piece facsimiles and return to the mailer. Less than 1 percent of mail processed using FASTforward for MLOCR is processed in this mode.

The latter two modes have the added benefit of providing the new address information to the mailer.

E. Mailers Whose List Update Process Is 99% Accurate

Move Update alternate processing provides yet another method for those mailers who, because of their own address list updating process, state that their addresses are up-to-date and at least as accurate as the Postal Service's addresses. Mailers must apply for and be approved for this processing service. The submitted list will be processed (matched) against the most recent NCOA information to identify move activity that has not been incorporated into the mailer's list. Addresses that are identified as being in need of updating will be flagged on the mailer's list, but the new address information will not be provided. Processing of the mailer's list will generate a summary that will determine the percentage move rate within the mailer's list.

If the move rate is determined to be one percent or less, the mailer must resubmit the mailing list for a second evaluation in 90 days. The list must reflect all

activity that occurred during this interim period. If the determined move rate is still one percent or less, the mailer will receive documentation indicating that mailings generated from the tested list will meet the Move Update requirement for a period of 1 year from the date of the second evaluation. The mailer must then re-test the following year using the same two-step process to extend the Move Update qualification.

National Customer Support Center

The National Customer Support Center, previously named the National Address Information Center, has developed and provides the following services : Coding Accuracy Support System (CASS), Multiline Accuracy Support System (MASS), Delivery Sequence File (DSF), Address Element Correction (AEC), National Change of Address (NCOA), Address Change Service (ACS), FASTforward$_{SM}$, Correct Address Notification (CAN), Move Validation Letters (MVL), and Customer Notification Letter (CNL). For more information, see The Official Guide to Postal Products, Services, and Publications,USPS-LR-MCR-120, Exhibit A. in Docket No. MC95-1.

CHAIRMAN GLEIMAN: I need to go off the record for just a second.

[Discussion off the record.]

CHAIRMAN GLEIMAN: Only one participant, the American Bankers Association, Edison Electric Institute, National Association of Presort Mailers filed a request for oral examination. Does anyone else wish to cross-examine Witness Murphy?

[No response.]

CHAIRMAN GLEIMAN: If not, Mr. -- I always have to look up to see who's going to be here -- Mr. Hart, will you please begin.

MR. HART: Thank you, Mr. Chairman.

CROSS EXAMINATION

BY MR. HART:

Q Again, Henry Hart, on behalf of American Bankers Association, Edison Electric Institute, and National Association of Presort Mailers.

Good afternoon, Mr. Murphy.

A Good afternoon, Mr. Hart.

Q Could you please turn to page 9, footnote 9 of your testimony.

You reference there 1094 MLOCRs used by presort bureaus and commercial mailers which are currently mass certified, and then parenthetically 71 MLOCRs for which mass

certification applications have been made but not yet approved.

I was frankly surprised at that high number of MLOCRs. Do you know the basis for that number?

A Yes, sir. The basis for that number are applications on file at the National Customer Support Center, the U.S. Postal Service facility in Memphis, Tennessee, who administers the coding accuracy support and multiline accuracy support system programs, and these are applications from either the owners or operators of those multiline OCRs requesting mass certification, which is a requirement under the current regulations.

Q Is it possible that you might have two mass -- I'm wondering if there was some double-counting, totally innocently, but you might have two applications for a mass certification on a single machine. So that you're really counting certification applications, right, not necessarily machines?

A No, the number should reflect as -- the intent should reflect the number of machines, because that's what we're trying to certify is a machine.

Q But in fact what was counted was -- correct me if I'm wrong -- but in fact what was counted was applications for mass certification.

A I believe my understanding of the collection of

this information as I asked for it was to research the applications and count the number of machines.

Q One more question in this regard. Do you know, would a machine, would a particular MLOCR, could it have two types of software which might require a mass certification?

A If the machine were in certain configurations such that it had a remote video encoding attachment to it, then there is a separate process for verifying the remote video encoding, and in that case there could be some additional paperwork or additional account there, but still we would count it as one machine for the mass certification part of that.

Q At page two of your testimony, in footnotes one and two, you reference a library reference, USPS-LR-MCR-76 from Docket No. MC95-1; correct?

A Yes, sir.

Q Am I correct that this is the most recent study which the USPS has conducted concerning the cost of forwarding undeliverable as addressed or so-called UAA mail?

A To my knowledge, yes, sir, it is.

Q I show you, and I very well may not request that it be transcribed, but for purposes of convenience, I have given you a set of cross examination exhibits which I showed to you and I presume your counsel showed to you -- I showed to your counsel, faxed it to him yesterday at noon.

You have had a chance to look at those, is that correct?

A Yes, sir; I have.

MR. HART: Mr. Chairman, as I mentioned, for the convenience of the Commissioners, I do have a set up there. There is an extra set at the table next to me. There are about four of them, if someone needs them. I thought it might help us work our way through this.

BY MR. HART:

Q If you will turn to what has been marked, although again, I don't intend to introduce it for transcribing, but has been marked as cross examination exhibit number one for Murphy, do you see it there? It's a two page exhibit, page one of two and two of two?

A Yes, sir.

Q Subject to checking, will you accept that this is the executive summary contained in that Price Waterhouse study that consisted of that library reference, LR-MCR-76?

A Subject to check; yes, sir.

Q Would you agree that if you turned to the second page of that executive summary in the last paragraph, just to get an overall view of the amount of money that we are talking about on potential savings for forwarding of mail, that in fiscal 1993, this study estimated that the cost of processing related UAA mail were approximately $1.5 billion?

A Yes, sir. That's what's stated.

Q Would you turn to cross examination exhibit number six, which is I believe the same table, 5.2 or page 5-5, which is referenced in your supplemental testimony, so I assume you are familiar with that table. This is from the library reference as well.

A Yes, sir. I saw it yesterday.

Q If we look at that table and we try to -- do you see in about the middle of that page on cross examination exhibit number six, total cost, and over to the right, 1.473266 billion?

A Yes, sir.

Q Presumably that's their rough estimate in the executive summary of 1.5 billion. That's the total cost of forwarding.

A It would seem like a logical conclusion; yes, sir.

Q If we try to take the portion of that that is attributable to first class, if we go up to number two and we say mail pieces forwarded, and then number three, mail pieces returned, do you see in the right-hand column the cost? Now, I believe under number three, you have A, which is free, and then B, which is postage due.

Am I correct that postage due would be periodicals or something other than first class?

A Gee, I --

Q I realize this isn't your library reference.

A I don't know. I don't know that I could make that assumption. I would assume it goes across all the classes of mail, in fact, the way it's presented, but I don't know that.

Q If you will turn to exhibit two -- I'm sorry, stick with exhibit six. If you add up the free mail piece, which is returned free, it's 62 cents a piece, the cost is $470,000,583?

A Yes, sir.

Q Then if you add to that the mail pieces forwarded as opposed to return -- I'm sorry. The mail pieces returned are another $470,000,583? It looks like there is about a billion dollars of first class costs on returning and forwarding first class mail from this study. Would you agree with that?

A Yes. As a round number, I think that might be correct.

Q If you will turn to cross examination exhibit number two, unfortunately, the top seems to be cut off. It just says for Murphy, USPS-RT-18. If I told you, subject to check, that this is the response of Anthony Pajunas in MC95-1, which has been designated for the record in this proceeding, and again, I'm not asking you to assert to the correctness of this, but if I give you a minute to read

that, I guess I would ask you, does that look as though Pajunas concluded that this same 1993 Price Waterhouse study showed almost a billion dollars or $965 million of forwarding costs attributable to first class mail?

A There certainly is an entry on there for first class of $965 million and it's under the category of total costs of forwarding mail, so I would assume -- it's attributed to him so that must be the representation.

Q If you will turn the page and go to cross examination exhibit number three, and again, subject to check, I would tell you that this is section 3.1 from that same 1993 Price Waterhouse study, the library reference.

If you look at the last sentence of Section 3.1, does it not state that over 90 percent of UAA mail is sent by businesses?

A Yes, sir; that's what it says.

Q Then if you look at the next page, cross examination exhibit number four, again, from the same Price Waterhouse study, in particular, if you look at the top table, 4.8.1.1, in the second column under first class, would you confirm that this portion of the Price Waterhouse study indicates that in fiscal year 1993, over 89 percent of first class UAA mail was machineable letter mail?

A There is -- I do see the reference for 89 percent under machinable letter mail, under the First Class column,

yes, sir.

Q Thank you. In summary then, does not the Price Waterhouse study for UAA mail for fiscal year '93 indicate that the cost for forwarding and returning First Class mail was $965 million, that approximately 90 percent of that mail was attributable to machinable mail sent by businesses?

A Quite honestly, to draw that conclusion I would like to do a little research on this. I don't know. I don't know if that was the conclusion they were trying to draw or illustrate.

Q Separate and apart from this study, based on your intuition, do those figures surprise you -- that 90 percent of mail forwarded would be sent by businesses and that 89 percent of First Class mail forwarded would be machinable letter mail?

A No, sir, that doesn't surprise me.

Q Wouldn't you also think then that if you look at First Class work-sharing mail or automated mail, don't you believe that most of that mail falls into machinable mail sent by businesses?

A Are you asking for my gut reaction to that?

Yes, sir, I think from that perspective it's probably true.

Q Okay. So then First Class work-sharing mail is certainly a candidate pool for recognizing a substantial

portion of that $965 million of potential forwarding costs,' savings of forwarding costs?

A Yes, sir.

Q If you would turn to page 7 of your testimony, line 1 -- and you cite, again citing the Price Waterhouse study that 2.69 percent of First Class mail was UAA in fiscal year 1993?

A I'm sorry --

Q Isn't it true -- the bottom of page 6 -- carrying over to page 7 citing the Price Waterhouse study, do you not state that 2.69 percent of First Class mail in fiscal year '93 was undeliverable as addressed?

A I guess I am having trouble following. You are in Exhibit 7?

Q No, I'm sorry. I am in your testimony at page 7.

A Oh, I'm sorry.

Q And not the appendix but the testimony itself at page 7. It's really the last line at page 6 and then going over to the top of page 7.

A Yes, sir -- 2.69 percent.

Q It looks as though from that study in fiscal year '93 2.69 percent of First Class mail was UAA?

A Yes.

Q Is it your position that this percentage of First Class mail which is UAA today has not decreased since 1993?

A Well, we certainly have no numbers to support that. There's been no studies such as this previous 1993 study by Price Waterhouse to validate that.

I think there's from the numbers that you see in my exhibits -- and I'll find it for you -- for the CFS volumes on Exhibit USPS-RT-18A, which is the first of the exhibits, it shows CFS total mail volume and it shows the percentage of change that has occurred since the 1988 timeframe down through 1997.

As you can see, there are certain declining years where the volumes decreased and now as of the latter years since '93 there's been an increase.

Obviously it indicates there's some increased volume going through the CFS sites, which would indicate UAA in general -- that's directly move forward, forwardable moves and so forth, so yes, there is an increase.

Q Isn't this in fact, at least in part, why the Postal Service was not satisfied with the voluntary nature of move-up date and decided to make it mandatory in MC95-1?

A Yes, sir, it was one of the factors that prompted us to look at it as a requirement program as opposed to a voluntary one, particularly from the First Class side.

Q At page 4 of your testimony, line 3.

A Yes.

Q You state that the presort industry, which had

elected to use fast forward as a vehicle to meet move up date requirements was granted an extension to October 30, 1997.

A Yes, sir.

Q In fact, based on the type of manufacturer they were using, weren't some presort bureaus given through as far as December of 1997 to start implementing fast forward and comply with move up date requirements?

A The definition of that process was that as an industry and as a mode or tool, if you will, to use fast forward to meet the move up date option by a multiline OCR equipment owner, they were generally given a blanket extension to the October 30th date. At that point, we felt that the majority of them had met the requirements and were in compliance. We had some that were still scheduled for implementation that were due to the Postal team, and the number of people and the number of sites that we had to go to, we couldn't get everywhere by October 30th, and then there were some technical problems on some specific machines that went across all manufacturers, not a certain manufacturer, and on a case by case basis, we evaluated those and granted them a temporary delay in implementation to accommodate getting that technical problem fixed and/or the Postal team being on site to do the licensing and certification work.

Q And in fact, in some cases, that took them through December of 1997?

A That's correct.

Q Really, the move up date requirement, at least as fast forward was concerned, were not fully implemented even in the middle of 1997, of December 1997?

A Fully? Yes, sir.

Q Let me ask again. In fact, those move up date requirements with respect to fast forward were not fully implemented even as of the middle of December 1997?

A Pardon me. Would you say that again?

Q I'm sorry. I think we are on the same wavelength but I'm not sure it came out correctly on the record.

Would you confirm that in light of this sort of rolling extension, that the move up date requirements with respect to fast forward were not fully implemented as of the middle of December of 1997?

A I don't mean to pick at a word here but I guess the "requirement" for the move up date, the requirements were all in place, there were just specific companies who could not meet that requirement, so in our cooperative work environment, we granted them a delay and gave them time to get their equipment operational. If that's what you are trying to say, that's a true statement, but all of the requirements were there and the requirements didn't change

for how and what and where and when, it was just that some people couldn't do it because of technical deficiencies in specific equipment, so that we accommodated that.

Q There was not full compliance with the move up date requirements even as late as the middle of December of 1997?

A There was not full compliance at that point. I'd question whether there's full compliance today, as a matter of fact.

Q Could you please turn to your exhibit, 18C?

A Yes, sir.

Q In the column of the second in from the right, entitled CFS, computer forwarding systems, first class mail volume in billions, you only give figures for 1995 through 1997. Is there a reason why you don't give us those CFS volume figures for 1993, 1994? For those two years, 1993 and 1994?

A No, sir. I don't recall why we did that. Those volumes are indicated in a previous section.

Q I believe in 18A.

A Yes, sir.

Q That's not broken down by first class mail. There, the volume is just total CFS mail; right?

A Let's see. No, sir. I don't know why. I apologize. It's just the way we had it prepared.

Q Would you agree that in looking at 18C, that if you did have that information, we would be better able to tell whether on an absolute basis, the volume of CFS mail -- let me rephrase that. Strike that.

Would you agree that if we had that information, we could compare it with the overall volume of first class mail as shown in the first column of 18C, and then we would be able to tell whether those increases in CFS volume were attributable to more UAA mail as opposed to just more first class mail in general?

A Yes, I think I would concede that. It's obvious it would be there. I'm searching my brain as to why we didn't put it there. I'm thinking that maybe we didn't have the CFS first class mail volume break out, and that's why we didn't put it there. On 18A, we have total mail volume, not first class volume. That may be why it's not there.

Q Could you please turn to 18-D, as in dog, your exhibit, and could you tell me what month of 1998, or is it a four-week period, define those accounting periods for me, AP-1 through AP-5. What -- on a calendar basis what is that?

A AP-1 is the first postal accounting period, and it begins in September. This year I believe it was around the middle of the month, the 15th or 16th, somewhere --

Q That's when it begins?

A Yes, sir.

Q And it's a four-week --

A And it's a 28-day count.

Q So roughly if we use months, and I realize that's not exact --

A Right.

Q But roughly AP-1 would take you through October 15?

A Roughly. Yes, sir.

Q AP-2, November 15. AP-3, December 15. AP-4, January 15. And AP-5, February 15.

A Roughly. Yes, sir.

Q And move up date was not being fully enforced until January 1 of '98?

A Well, I wouldn't put it that way; no, sir. I'd have to say no to that question. Move up date was fully enforced as of July of '97 as the requirement went into place granting to the multiline OCR users an exception to October 30, and then selectively based on technical difficulties to individuals from that point. But as a requirement and as a business process, it was all in place in July of '97.

Q Am I correct that not all UAA mail goes to a computer forwarding center?

A Yes, sir. You're correct in that.

Q Would you look at Exhibit -- Cross-examination Exhibit 5 for a minute in section 4.2 again of the Price Waterhouse study in '93?

A Yes, sir.

Q Doesn't the first paragraph of that study say that 47.8 percent of UAA mail is sent to CFS units?

A Yes, sir; that's what it says.

Q Okay. In addition, if you look at Cross-examination Exhibit No. 4 and table -- the middle table, 4.8.1.2, does that not indicate in the bottom left-hand column that 530 million pieces of First Class mail -- of First Class UAA mail were not sent to CFS units?

A Yes, sir; that's what it says.

Q And if you go up to the first table, that's compared to total UAA mail, where you had a First Class volume of almost 2.4 billion.

A Yes, sir.

Q So it looks like roughly about 20 percent of that 2.4 billion total or 530 million, about 20 percent of UAA First Class mail at least in fiscal year '93 was not sent to CFS centers?

A Roughly.

Q Now, if we turn back to your Exhibit D, all you're showing us here is the portion of UAA mail that went to CFS; is that correct?

A Yes, sir.

Q We don't have any information in your testimony as to whether the volume of UAA mail that's not sent to CFS is increasing or decreasing.

A I don't know as I agree with that if you look at the percent change.

Q What chart sir? I'm sorry.

A Again on Exhibit 18-D.

Q Um-hum.

A It shows the First Class mail volume for the APs. It shows the CFS First Class volume. And it shows the percent change. And it shows some small drops of less than a percent for AP-1 and 2 and a 2.6-percent increase in AP-3 and a 1.61 increase in AP-4 and a minus 1 in AP-5.

Q But am I correct that that is only showing the portion of UAA mail that went to CFS?

A That's correct.

Q It's not talking about the perhaps 20 percent of UAA mail that didn't go to CFS.

A Yes, sir; that's correct.

Q And your testimony doesn't address whether that volume, the non-CFS volume, may be dropping like a rock or exploding in an increase. We just don't know.

A No, sir, we don't. You're right.

Q So really then from this chart, this chart -- do

you agree that this chart does not demonstrate that all -- that the volume of all UAA mail is increasing?

A Say that again?

Q Would you confirm that your Exhibit 18-D does not enable us to determine whether the total volume of all UAA mail has increased or decreased over the period of time shown in this chart?

A I agree with that.

Q And that is because it doesn't reflect the UAA mail that didn't go to the CFS center?

A That's correct.

Q Okay. Let's turn, if you would, to the cost of -- the Postal Service's cost of forwarding mail. In particular, at page 2 of your testimony, line 17, you state that "Each additional UAA mail piece costs 24.32 cents" and this is covered then by your corrected or supplemental testimony that you filed today where you explained that in a footnote?

A Yes, sir.

Q And that is a weighted average, as the footnote explains, where you consider based on volume and cost the cost of the Postal Service of forwarding mail or returning mail or destroying it?

A Yes, sir.

Q Turn, if you would, to Exhibit -- the Table 5.2 of

the 1993 Library Reference, which is Exhibit 6, Cross Examination Exhibit 6.

I want to understand the way you calculated this weighted average. I think I know from your footnote, but I think if we look at Table 5.2 we can confirm it.

Do you have that table in front of you?

A Yes, sir.

Q Am I correct that you took basically three categories of mail, what are numbers 2, 3 and 4 on that chart -- mail pieces forwarded was number 2; mail pieces returned was number 3; and mail pieces treated as waste was number 4.

A That's correct.

Q And you took the volumes of each of those -- 1.9 million of mail pieces forwarded, 750 million -- I'm sorry, 838 million of mail pieces returned and a little over 2 billion of mail pieces treated as waste. Right?

A That's correct.

Q And then you go to the cost of each of those pieces and it varies based on whether they are forwarding it or returning it or treating it as waste, correct?

A Yes, sir.

Q If they forward it, it costs 23 cents -- a little bit more than 23 cents.

A Oh, yes.

Q If they return it, it costs based on whether it's free or postage due -- well, it costs on an average of 75 cents, right? -- 75.07?

A Yes, sir.

Q But if they treat it as waste, it costs under 5 cents, doesn't it, apiece?

A Yes, sir.

Q So when you did this weighted average to get the cost of the Postal Service of forwarding mail, that four cents had a big effect because you had 2 billion pieces treated as waste, right, which was more than the 1.9 million that was forwarded. Right?

A Yes, sir.

Q Would you turn to Exhibit Number 5 -- Cross Examination Exhibit Number 5 and look at the second paragraph of that.

Do you see the sentence there that says, "As expected, almost all, 99.9 percent, of mail treated as waste is Second or Third Class?

A Yes sir.

Q Do you think -- do you recognize that ABA and EEI and NAPM in this case and specifically their Witness MacHarg is addressing the forwarding costs of First Class mail?

A Generally, yes sir.

Q Do you think it is fair and accurate to measure

and talk about the cost to the Postal Service of forwarding First Class mail to include in it 2 billion pieces of waste that are, 99.9 percent of which are Second and Third Class mail and cost less than 5 cents as opposed to 62 cents or 23 cents for First Class mail?

A Well, fair is hard to define. I was not trying to be fair or unfair in my characterization.

I am not a cost person. I think I have made that point clear to this Commission before in testimony -- that I am not real bright about numbers sometimes, and what I tried to do, because people always ask for a round number -- where are you when you talk about cost? -- I just ask my folks to give me an average cost so we'd have something to illustrate in our conversation and as a point of reference.

Whether the number for First Class is a little higher or a little lower, I'll concede that, given that somebody would do the analysis on that and who is knowledgeable in that effort. Yes, sir.

Q Could you just keep your thumb on that Table 5.2, which is Cross Examination Exhibit 6, and turn one more page and go to Exhibit Number 7.

A Yes.

Q And what that exhibit tries to show is it takes out the Second and Third Class mail which is waste, and I did share this with your counsel yesterday, but would you

agree subject to checking the numbers, if you haven't had a chance to do it yet, that essentially that makes the same calculation that you made in your footnote that you put in your revised testimony today, but it takes out the two billion pieces of mail that are treated as waste that cost .0498 cents apiece and it focuses just on the mail that is forwarded under Number 2 of that Table 5.2 or returned under Number 3 of that Table 5.2.

A Subject to check and someone explaining those numbers to me, yes, sir, I could concede that.

Q And that gets you closer to 39 cents as to the cost to the Postal Service in Fiscal Year '93 of forwarding or returning First Class mail, correct?

A I assume that your numbers are correct, yes.

Q Well, let's go to Table 5.2 for a second.

A Yes.

Q If we want a weighted average of the mail in number two and number three there, mail forwarded and mail returned, wouldn't we take the total cost, which would be $443,503, in number two, and the total cost of three, which is $629,820, and add those two together? If you go to exhibit seven, to get that $1,073,323 total cost figure?

A Yes, sir.

Q Then if you wanted to weight that, wouldn't you then add the volume of those two categories, being

$1,915,174 of mail pieces forwarded, and $838,964 of mail pieces returned?

A Yes, sir.

Q If you add those up again over at table seven, and if I can add, you'd get $2,000,754,138, right, and then if you divided the cost by the volume, you'd get the cost per piece? Weighted to reflect the volume of each type, and that gets you the 39 cents; is that correct?

A Yes, sir. I'll concede that appears to be good math.

Q Which figure do you think is more meaningful to the Commission, if they are trying to determine what it costs the Postal Service to forward and/or return first class mail pieces, the 39 cents figure in exhibit seven or the 24 cents figure in your testimony?

A Well, I'd hate to speak for the Commission. I don't know what they would ask for. I assume they would ask for an expert to bring forth to them numbers that would explain and present the cost of that process and operation in the Postal Service. I didn't assume they were asking me to do that. I didn't assume it in my rebuttal testimony to Mr. MacHarg. We were trying to establish that as a specific number. I was addressing Mr. MacHarg's testimony where he implied that there was a 25 percent reduction in cost and/or in volume due to the implementation of the move up date

requirement, and my point in rebuttal was that's just not there. There is no 25 percent, no matter what the cost of it is, if it's 39 cents, then we are still a long way from getting where we need to be.

Q At page seven of your testimony, you state that the current average match rate of fast forward is 1.13 percent?

A Yes, sir; the most recent number we have.

Q Would you agree that those pieces where you get the match on fast forward, you are going to save either 24 cents or 39 cents or whatever that figure is, the Postal Service isn't going to have to forward that piece?

A Yes, sir; I would concede that.

Q In determining the savings to the Postal Service of first class mail, which is what is subject to the move up date requirements, first class automated mail, don't you think the 39 cents figure is more relevant than the 24 cents figure in your testimony?

A Yes, sir; I would.

Q Thank you. Do you believe that those costs to the Postal Service, assuming for the moment at 39 cents in fiscal year 1993, do you think they have increased today?

A I'd have to guess. I don't know. Everything seems to be higher so.

Q Wouldn't you feel pretty comfortable with that

guess?

A Yes, sir.

Q What would you say if I told you they were 57 cents today?

A I'd say it sounds like a lot of money.

MR. HART: If I may, I'm not asking to introduce this letter. I'd just like to show it to the witness to refresh his recollection.

MR. TIDWELL: Anything that enhances mail volume, we're in favor of, but this is going a bit far.

THE WITNESS: Unfortunately, I paid for this postage.

BY MR. HART:

Q Do you recognize the letter?

A Yes, sir.

Q This, is it not, is a letter from you to a Jim Yarborough of Image Technology dated August 18, 1997?

A Yes, it is.

Q Did you tell Mr. Yarborough in that letter that the Postal Service's cost of forwarding mail was 57 cents a piece?

A Yes, sir.

Q Thank you. Turning to the match rate again on the fast forward and the performance of fast forward --

A If I may address that, again, it's a

qualification. These numbers were addressing a specific technical issue related to a proposal provided by the industry to us and I couldn't sit here and tell you today that 57 cents in general applies to the Postal Service's operational rate for CFS sites and for the forwarding of UAA. It was our rough calculation from our very narrow view of the world, of what that cost could be in the scenarios that they described in their technical paper.

I mean if we are trying to establish a cost, if you will, I would suggest that this may not be the right way to establish an accurate cost for what it cost the Postal Service to process UAA mail. This is a very narrow view and in response to a very specific technical proposal.

Q But you did talk, did you not, about an effective cost per piece forwarded of the customer of 40 cents and then comparing your cost, that's the customer's, of 40 cents per piece to the U.S. Postal Service's cost of 57 cents per piece?

A Yes, sir; we did do that. Yes, sir.

Q Okay. Thank you.

Turning to the match rate of Fast Forward and the 1.13-percent figure most recently recognized, that's the percentage, if you put 100 pieces through an MLOCR that has Fast Forward on it, your statistics have been coming up with 1.13 pieces of those hundred would get a match, which means

that they would have an address corrected, put on the piece, and the Postal Service wouldn't have to forward or return it. Is that correct?

A No, sir, it's not. Based on a 100-piece count, it was an average of an extremely larger population that in the multimillions, it was an actual number derived from actual pieces processed.

Q I didn't mean to suggest that it wasn't.

A Okay.

Q But just from a simplistic standpoint, a thousand pieces, it would mean -- now this is going to confuse me -- 13, right, or -- but that's what it means, is that percentage of pieces that go through the MLOCR will end up getting the address corrected and put on the piece.

A Yes, sir.

Q Okay. When you first developed Fast Forward, did you have any projections as to what the match rates would be?

A My expectation was that we would achieve somewhere between a 1 and a 2-percent match rate in the initial deployment of the Fast Forward system.

Q Do you believe it will improve?

A I believe it will improve; yes, sir.

Q Okay. Does the USPS impose requirements upon work-share mailers if you have no confidence level that

those requirements will in fact achieve savings for the USPS?

A I'm sorry?

Q Is it a policy of the USPS to impose requirements upon work-share mailers if you don't have any confidence level that those requirements will in fact achieve savings for the USPS?

A If I understand the question correctly, I don't think we do that.

Q In other words --

A And the implication here is we didn't do that with move update. We had an expectation based on historic information that I've illustrated in my exhibits that if you employ some type of move update processing against an address list and you apply those matches to your address list before you mail, that in fact you will reduce the amount of mail that goes to a CFS site.

Q Right. So that -- and perhaps my question was convoluted. I apologize. But that, put it affirmatively, the USPS must have confidence that its -- that its work-sharing requirements are going to in fact bring savings to the USPS before it imposes them on workers.

A Yes, sir.

Q Doesn't the USPS propose rates all the time based on projections such as volume projections, automation

savings projections, and labor-cost projections?

A I don't know as I'm a good witness to answer that question. I would say conceptually I believe that to be true, but --

Q In fact, aren't most rate increases based upon projected cost increases?

A I believe that's true; yes, sir.

Q Why won't the USPS make an effort to quantify projected savings of move update requirements which will flow from the additional costs which such requirements will shift to mailers?

A Well --

MR. TIDWELL: I'm going to object to the question why won't we make that estimate for this case in our rebuttal testimony.

MR. HART: The question was why won't the USPS make an effort to quantify projected savings of move update requirements which will flow from the additional costs which such requirements will shift to mailers.

MR. TIDWELL: And we don't have a cost witness here or anybody who's involved in development of costs related to our various services, and so I don't think he'd be the appropriate witness to ask what our policy is for development of cost studies.

MR. HART: Can I explain the reason why I asked

the question? I'm almost done, for what it's worth.

ABA, EEI, and NAPM put on a witness to demonstrate that there would be substantial cost savings from move update requirements. Mr. Murphy has been put on by the Postal Service to rebut that witness. We put on that evidence because the Postal Service didn't make apparently any effort to quantify what are clearly in our opinion cost savings that they're going to get from that. So the question was why didn't the Postal Service try to quantify the --

MR. TIDWELL: That gets down to a matter of legal strategy, and -- which I'd be happy to reveal if I were filing my brief today.

MR. HART: I'll withdraw the question.

CHAIRMAN GLEIMAN: Thank you.

BY MR. HART:

Q In preparing this case did the USPS make any effort to quantify the amount of work-sharing mail which would be placed through Fast Forward during the test year?

A No, we did not, and if we can go back, Fast Forward was not originally envisioned as one of the options that would be made available to the mailing industry when we originally proposed a move update program in classification reform.

As we moved to the point of classification reform

implementation, the presort industry in general suggested that they were being blocked from full participation in a move update program by the nature of their business, that they could not use the National Change of Address program or the address change service program nor the manual endorsements on the mail piece, and therefore there was no viable option for them.

Again, as cooperative work partners, we sat down with them and developed, if you will, the concept of fast forward. They bought into that as a viable tool for them at the time, and said that they would do that if we would develop it. We spent time and money to do that. We made the system available, based on its very high technology implementation in a very high-performance technical environment of the multilines, and the variety of machines and optics and transports that are in the industry. It proved a very formidable challenge to the industry to implement those technically.

In addition there were some operational issues to overcome. The timing of that caused us to delay that along with other implementation issues that the industry in general raised about move update program, so we delayed the entire move update implementation a full year, from '96 to '97, again trying to accommodate an industry that we were trying to work as partners with to achieve a high degree of

address quality.

In getting to that point we conceded that there were some changes to be made and implementation schedules to be adjusted, given that we again as you outlined a little earlier and I attested to that the schedule from July of '97 through December and/or January of '98 had some piecemeal effects to it. There has not been adequate time from an operational perspective to measure the impact of a move update environment.

The move update by many mailers again is illustrated in one of my exhibits, that NCOA and ACS have been used for a good many years, from 1985 and 1986, and have had some impact, and it was from that impact that we could see that we were very comfortable that ultimately with a broader utilization of a move update program and a more formalized program that we could impact the operational cost that the Postal Service incurs.

Again, not knowing how the industry would implement that and how they would feed that information back into their systems, there was no way and there isn't today, quite honestly in my opinion, to measure the full impact of that activity.

At best we would hope, given the numbers we are seeing at this point, that we are holding our own because of the increase in volume in First Class, that we are at least

holding our own in operational costs and volumes going into the CFS sites.

Whether we ultimately bring them or not will depend upon how the industry as a whole responds to taking this change of address information that they are getting and how they put that back into their systems and feed that in as an ongoing process in the business activity of mailing.

Q One more question for you, Mr. Murphy. As a result of the purported inability of the Postal Service to measure the cost savings for -- resulting from Move Up Date requirements, until the implementation of the next rate case, whenever that is, whatever portion of this $1 billion of First Class forwarding and return costs are avoided by Move Up Date requirements, don't you agree that the Postal Service will get 100 percent of that benefit and won't share it with the work-share mailers?

A I have no way to answer that question, sir. You are asking me to speculate on what we might do in the future with something we might measure and we might have and that we might see -- I don't know.

Q No, that's not the intent of what I am trying to do.

What I am saying is that if this rate case doesn't have any cost savings from delivery then the discounts for work share and mail won't reflect any cost savings from

delivery, so that any cost savings that are ultimately achieved until we get the next rate case are all going to benefit the Postal Service, right?

MR. TIDWELL: Are you speaking for the test year or some period well beyond the test year?

MR. HART: Until we establish new rates where we might get the benefit of those costs.

MR. TIDWELL: Well, my understanding is that this proceeding is focused on the test year and then if you are asking the witness to speculate about what might happen beyond the test year in the event that Fast Forward might produce some cost savings that won't be recognized until we file the next rate case I think it goes well beyond the scope of his testimony, much less the scope of this proceeding.

MR. HART: May I respond?

CHAIRMAN GLEIMAN: Go ahead.

MR. HART: The intent of the question is simply to get the witness to acknowledge that the failure of the Postal Service to measure cost savings means that the discounts won't reflect any cost savings from Move Up Date requirements.

CHAIRMAN GLEIMAN: Enough. This is not oral arguments, folks, and it is not a debate.

Mr. Hart, if you could rephrase the question to

limit it to the test year to get the information that you want, then fine. Perhaps you have made your point by asking the question.

MR. HART: Well, I would like to ask the witness the question, and that is, if the postal Service does not include any savings in this case from Move Up Date requirements, don't you agree that the Postal Service and not the mailers will get the benefit during the test year of any cost savings from Move Up Date requirements?

MR. TIDWELL: Well, Mr. Chairman, our objection still stands because -- we have two objections.

One -- and the second was this isn't a rate policy question. This goes to rates and costs and Mr. Murphy is neither a rate witness nor a cost witness. He is simply here to address the operational impact of Fast Forward Move Up Date requirements that were implemented on a rolling basis this year.

He is not presenting any cost testimony to try to measure the impact and he is certainly not presenting any rate testimony.

MR. HART: I will withdraw the question.

CHAIRMAN GLEIMAN: Thank you, Mr. Hart.

MR. HART: That's all I have. Thank you.

CHAIRMAN GLEIMAN: Is there any follow-up? Questions from the bench?

Mr. Murphy, did you know that the Year 2000 is the 100th Anniversary of the submarine service?

THE WITNESS: Yes, sir, I did.

CHAIRMAN GLEIMAN: Did you know that on initial request of a former President of the United States the Postal Service has rejected a commemorative stamp honoring the 100th Anniversary of the silent service?

THE WITNESS: Yes, sir. I remain silent on that officially --

[Laughter.]

THE WITNESS: -- but, yes, sir, I was aware of it.

In fact, we recently had our 30-something year reunion for the James Monroe, which I was on, and we have a petition to the Postal Service asking them to create a commemorative stamp for the submarine service also.

CHAIRMAN GLEIMAN: I received a call from a retired Admiral not too long ago asking me if I had any ideas about how he could move things along.

I just thought I would take advantage of a former submariner on the witness stand.

THE WITNESS: And I appreciate that very much. I will cite this testimony in the future references -- trying to move this along. I have good friends in the stamp program and it doesn't seem to do me any good, so -- but I guess that's the way it goes sometimes.

CHAIRMAN GLEIMAN: It is not doing you or the Admiral who contacted me any good. It is really just commemorating something that has been an important part of this country's history, but in any event --

THE WITNESS: I agree and I thank you for mentioning it.

CHAIRMAN GLEIMAN: Any follow-up as a consequence of lobbying from the bench?

[Laughter.]

MR. TIDWELL: I will call my brother during the break. He spent some time in the Navy and maybe that will influence our redirect.

CHAIRMAN GLEIMAN: Did you want some redirect?

MR. TIDWELL: I would like the usual period of time to contemplate.

CHAIRMAN GLEIMAN: Sure. Would you like 10 minutes? You can have 10 minutes, sir.

MR. TIDWELL: Can we round it to 3 o'clock? I have been late for the buzzer the last couple of times.

CHAIRMAN GLEIMAN: Well, I would rather take a chance of having you be late for the bus than us be early tomorrow morning before we get out of here, so every five minutes --

[Recess.]

CHAIRMAN GLEIMAN: Mr. Tidwell, you have some

redirect, I take it?

MR. TIDWELL: Yes, we do. Yes, we do, Mr. Chairman.

REDIRECT EXAMINATION

BY MR. TIDWELL:

Q Mr. Murphy, early in your cross-examination by counsel for the Mailers, you had discussion about cross-examination, their Cross-Examination Exhibit No. 6. I just wanted to make clear that the data on that Cross-Examination Exhibit applies to forwarding, returned and treated as waste mail and not just forwarding. I think there was -- the conversation you all were having focused on forwarding and discussed the Cross-Examination Exhibit as if pertained only to forwarding. I just wanted to make clear that it pertained to all three categories of mail.

A To the point of my 24 cent illustration number, that is correct.

Q And so it didn't apply just to First Class mail?

A No, it was universal and to the various components that make up that UAA number.

Q You also had a conversation with counsel about your Exhibit D, and your Exhibit D reports some recent CFS volume trends. Why do you believe that CFS volume trends are an indicator -- or increases in CFS volume trends are an indicator of increasing UAA mail volumes?

A Well, CFS is a mechanical, computerized process that has been in place for a long number of years. It has a fairly consistent operational environment around it. The numbers are gathered electronically by the computer as the mail is processed, and it therefore provides us a more consistent, stable collection process than would a manual review of what mail is flowing through the floor and manually being processed.

And, again, for the long number of years that we tracked, since 1985-86, with the NCOA program and the ACS program, it provided us a good, stable, consistent platform with consistent data gathering methods from which we could evaluate impacts. And, clearly, we saw an impact from the implementation of NCOA in 1985-86, on that CFS volume, as that mail was -- as that volume increased through the NCOA program, we saw a consistent impact in the UAA mail going into the CFS sites.

So we feel comfortable that it is relatively illustrative today of what is happening in the industry.

Q You also had an exchange with counsel with regard to their Cross-Examination Exhibit 7. And I believe a question was put to you as whether the cost figures reflected in that exhibit provided a better measure of the impact of Fast Forwarding on First Class mail costs than the cost estimate reflected at page 2, line 17, of your

testimony. Do you recall that exchange?

A Yes. If that was where Mr. Hart was comparing my 24 cents to his 38 cents on Exhibit 7, is that correct? Yes, I remember that.

Q I'm glad you answered that question. Now, just to be clear, the illustrative UAA costs reflected at your page 2, line 17, pertain to First Class mail, periodicals and standard mail, is that correct?

A Yes.

Q And on Exhibit 7, provided by Mr. Hart, it reflects -- or it purports to reflect an average cost of forwarded and Return to Sender for those same mail classes, is that correct?

A That is correct.

Q Well, specifically with reference to First Class mail, would you consider that Return to Sender volumes or costs would be relevant to determining the impact of Fast Forward?

A To the impact that Fast Forward would have --

Q Or Move Update generally.

A Yeah, Move Update generally. Either way. The Move Update program, as we envisioned it, and have developed the systems to support it, specifically go to the issue of customer moves. The data that is there is intended to make that direct comparison to a customer at their current old

address and to match it to a mailing list and then to provide back the new address the customer has told us they move to.

There is no feature, if you will, in the Move Update processing, neither in NCOA and/or Fast Forward, that supports a Return to Sender correction. Generally, Return to Sender mail looks more like, you know, missing apartment number, missing suite number, missing house numbers, or wrong house numbers, misspelled streets, et cetera. Basically, the old incorrect, inaccurate address that I have spoken about many times before.

And by the nature of the matching systems that are employed within NCOA and Fast Forward, those kinds of records would not become candidates for customer move processing in most circumstances, because it requires a very good, high quality match to our data base in order to be able to standardize the address and correctly identify the nine digit zip code so that we can then go look for a customer move. So I don't think the Return to Sender, personally, would have much of an impact. If I were asked to prepare a cost impact, I would not consider Return to Sender as part of the impact in a Move Update scenario.

MR. TIDWELL: That's all we have.

CHAIRMAN GLEIMAN: Is there any recross?

Mr. Hart?

RECROSS EXAMINATION

BY MR. HART:

Q Mr. Murphy, let me understand the last point. Are you saying the type of mail which is corrected by Fast Forward would not be the type of mail that would be returned to sender if it hadn't been corrected?

A By the nature of the requirements, yes, sir, it would generally not fall into a return-to-sender category, because it is, by definition, to fall into the program for evaluation, a high-quality address. It has all of its components and they're identifiable and matchable to the national zip plus four database.

Q Is that true also of NCOA and ACS?

A It's true of NCOA in its purest move update form. Some of the licensees offer an option called the NIXI option, which can go through and look for those kinds of questionable addresses and bring them out, flag them so that the customer can go back and look at them.

The ACS program also has that feature as part of it, to provide information back if it's potentially undeliverable.

Q Have you ever yourself conducted or are you aware of any studies that have tried to measure what percentage of mail which is corrected by, say, Fast Forward would have been returned to sender had it not been so corrected?

A With Fast Forward, no, sir, we have not.

Q Are you aware --

A It's just too new. We haven't had time to do that.

Q Are you aware of any studies on the other move update requirements that indicate what percentage of the mail that's corrected by those move update characteristics would have been returned had it not been corrected?

A We have not done a study per se to look at the return-to-sender impact. We have analyzed and we do test the system using addresses that would fall into the return-to-sender category, if that makes sense.

We deliberately make bad addresses to not have apartments and all of -- some other components so that we can test the effectiveness of the matching logic of the NCOA licensee to ensure they do not make bad matches or incorrect matches.

So, as part of that process, we know for a fact that those kinds of things are not normally matched.

Q Not normally. Do you have any percentages on that?

A Well, they're not normally matched by the definition of our test, the accuracy requirements of the test, which are in the 98, 99 percent requirement that they cannot mis-code, if you will, or mismatch an address that we

have said shouldn't be matched.

Q But if you take 1,000 pieces of mail that are candidates for return to sender and put them through address -- through move update requirements, you don't have any studies that indicate what percentage of those would be corrected?

A That might be corrected --

Q If you took 1,000 pieces of mail that are defective and that would be the type of mail that would be returned to sender and if you put them through either Fast Forward or NCOA or ACS, do you have any studies that demonstrate what percentage of those would be corrected?

A No, sir, there is no study on that.

MR. HART: That's all I have.

CHAIRMAN GLEIMAN: Mr. Tidwell?

FURTHER REDIRECT EXAMINATION

BY MR. TIDWELL:

Q You indicated that there are no studies, but what forms the basis for your judgement in the absence of such a study?

A Well, again, we have been doing audits on each of the NCOA licensees. There are 23 commercial licensees and one government agency who are licensed to provide NCOA service. We audit them anywhere from two to three to four times per year.

The output of those audits are analyzed in detail by the staff at the National Customer Support Center, and we specifically look for that kind of mis-assignment or mismatch of addresses that would fall into that category of deficient and incorrect addresses and try and find where they are making matches with them.

In each case -- that's the basis of my knowledge of that, is that we have done that for thousands and thousands of records and hundreds of tests and audits, and we know what they do.

MR. TIDWELL: That's all I have.

CHAIRMAN GLEIMAN: If there is nothing further, we want to thank you, Mr. Murphy. We appreciate your appearance here today and your contributions to our record. You're excused, sir.

THE WITNESS: Thank you. It was my pleasure to be here.

Gentlemen, thank you.

[Witness excused.]

CHAIRMAN GLEIMAN: Our next witness is Donald M. Baron, appearing on behalf of the Postal Service. Mr. Baron is already under oath.

Mr. Cooper, if you would introduce your witness and his rebuttal -- enter his rebuttal testimony.

Whereupon,

DONALD M. BARON,

a rebuttal witness, was called for examination by counsel for the United States Postal Service and, having been previously duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. COOPER:

Q Mr. Baron, I'm handing you two copies of a document entitled "Rebuttal Testimony of Donald M. Baron on Behalf of United States Postal Service," marked as USPS-RT-1. Are you familiar with this document?

A Yes, I am.

Q Was it prepared by you or under your direct supervision?

A Yes, it was.

Q If you were to be giving testimony orally today, is this the testimony that you would give?

A It is.

MR. COOPER: Mr. Chairman, I ask that this testimony be admitted into the evidentiary record and transcribed.

CHAIRMAN GLEIMAN: Are there any objections?

[No response.]

CHAIRMAN GLEIMAN: Hearing none, Mr. Baron's testimony and exhibits are received into evidence, and I

direct that they be transcribed into the record at this point.

[Rebuttal Testimony and Exhibits of Donald M. Baron, USPS-RT-1, was received into evidence and transcribed into the record.]

USPS –RT-1

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

POSTAL RATE AND FEE CHANGES, 1997

Docket No. R97-1

REBUTTAL TESTIMONY OF DONALD M. BARON ON BEHALF OF UNITED STATES POSTAL SERVICE

CONTENTS

TABLES

Autobiographical Sketch

Please refer to the autobiographical sketch contained in my direct testimony, USPS-T-17.

Purpose and Scope

My rebuttal testimony is divided into two parts. Part 1 responds to the direct testimony of Antoinette Crowder[1] I review three major arguments made in that testimony. These arguments criticize the current method used by the Postal Service to estimate accrued load-time costs. They also criticize some of the procedures in my direct testimony for estimating volume-variable load-time costs, and they propose alternative cost estimates.

Part 2 responds to the direct testimony of Sander Glick.[2] I describe the error that witness Glick discovered in the segment 10 workpapers that accompanied the direct testimony of Postal Service witness Joe Alexandrovich.[3] I then propose a superior correction to that error than is proposed by Mr. Glick, whose correction is faulty.

[1] Docket No. R97-1, JP-NOI-1.
[2] Docket No. R97-1, MPA-T-3.
[3] Docket No. R97-1, USPS-T-5, WP B, W/S 10.0.3 and 10.1.1 through 10.2.2.

Part 1 – Section 1. Overview of Witness Crowder's Testimony and My Rebuttal

Witness Crowder's first argument is that the Postal Service's accrued SDR, MDR, and BAM load-time cost estimates, which are based on STS proportions, far exceed the comparable costs derived from the load-time regressions. These costs derived from the regressions are called model-based costs. Ms. Crowder claims that the model-based costs are more realistic, and should be used in place of the STS-based costs.

I withhold final judgment on the merits of this model-based approach as a general methodology for deriving accrued cost. I believe that the discrepancy witness Crowder has revealed between model-based and STS-based costs is a serious concern requiring further evaluation. However, I also raise some issues relating to Ms. Crowder's specific application of the load-time regressions to derive her own model-based accrued cost estimates.

Ms. Crowder's second argument applies to the residual of accrued load-time cost over the product of the aggregate elasticity of load time with respect to the volume variables and this accrued cost. Consistent with the previous methodology applied by the Commission in its Docket No. R90-1 decision, Ms. Crowder calls this residual "coverage-related load time" cost.[4] She purports to prove that it exists by first claiming that system-wide accrued load-time cost can be accurately represented by an equation

[4] JP-NOI-1, Attachment B, page 5, line 12.

that defines accrued cost as load time at a stop receiving the average volume per stop times the total number of actual stops. She then differentiates this equation with respect to total system-wide volume to derive a formula that defines system-wide volume-variable load-time cost as the sum of an elemental cost component and the volume-variable portion of accrued coverage-related load-time cost. Moreover, Ms. Crowder interprets this accrued coverage-related cost as being variable with respect to volume in the same way that access time cost is variable with respect to volume. Thus, her measure of system-wide volume-variable coverage-related cost equals the elasticity of actual stops with respect to volume times the system-wide accrued coverage-related cost.

This entire analysis contradicts my direct testimony and interrogatory responses, which argue that the residual of accrued load time cost over the product of the aggregate volume elasticity and accrued cost is simply institutional cost, just as is the residual of accrued cost over the product of a volume variability and accrued cost in other cost segments and components. I argue in my direct testimony that like any other pool of institutional cost, this residual cost is, by definition, not assignable to individual mail subclasses.

Ms. Crowder's third argument rejects my direct testimony's estimates of volume-variable MDR and BAM costs that account for what I call the delivery effect. These volume-variable costs equal the elasticities of load time with respect to deliveries times the elasticities of deliveries with respect to volumes. Ms. Crowder claims that by including these costs in the volume-variable total, I double count costs already included in other calculations.

My response is presented in three sections, which follow the order of the above summary of Ms. Crowder's arguments. Section 2 considers Ms. Crowder's proposal to use the model-based estimates of accrued load time costs in place of the traditional STS-based estimates. I neither endorse nor reject the general notion that estimates of system-wide accrued load-time costs derived from the load-time regressions are more reliable and more consistent with the field studies than are the STS-based accrued costs. However, I identify a few analytical problems raised by Ms. Crowder's specific model-based estimates, her interpretation of these estimates, and her derivation and interpretation of the volume-variable portions of these estimates.

Section 3 shows why Ms. Crowder's purported mathematical proof of the existence of the residual, accrued coverage-related load time cost is flawed. I begin by showing why Ms. Crowder's equation that defines system-wide accrued load-time cost as the product of load time at the average stop and the total number of actual stops is mathematically incorrect. I observe that since this initial equation is incorrect, Ms. Crowder's derivations of accrued coverage-related cost and volume-variable coverage-related cost from that equation are also incorrect, and must be rejected.

Section 4 takes issue with Ms. Crowder's recommendation to exclude the delivery-effect measures of volume-variable MDR and BAM costs. I show that, contrary to Ms. Crowder's assertion, the volume terms in the MDR and BAM equations do not already account for the separate, distinct effects on load time of increases in deliveries that result from volume growth. Thus, the delivery terms must be explicitly included in the derivation of total volume-variable load time cost to ensure that this deliveries effect is accurately measured.

Part 1 – Section 2. Measuring Base Year Accrued Load-Time Costs

A. Overview

As witness Crowder observes, the Postal Service's estimates of initial base year FY 1996 accrued load-time costs for SDR, MDR, and BAM stops are calculated through multiplication of total street time cost by the Street Time Survey (STS) load-time proportions. These proportions are derived from the 1986 Street Time Survey. The results are $995,848,000 for SDR stops, $600,905,000 for MDR stops, and $186,333,000 for BAM stops.[5]

Ms. Crowder asserts that a better method for deriving accrued costs is to use the SDR, MDR, and BAM load-time regressions that produce the load-time volume variabilities. For each stop type, her approach first uses the appropriate regression to estimate load times at the average stop. This average stop is defined as one that:

1. receives the average daily FY 1996 CCS volumes for letters, flats, parcels, and accountables,
2. contains the average FY 1996 CCS number of possible deliveries,
3. provides average daily collection mail equal to the average 1985 LTV study collection volume per stop, and
4. reports the average 1985 values for the container and receptacle dummy variables in the load-time regressions.

[5] These costs are derived in USPS-T-5, WP B, at W/S 7.0.4.2, lines 46-48.

The load times at this average stop are virtually the same predicted SDR, MDR, and BAM load times that I used, in combination with corresponding predicted partial derivatives, to derive the FY 1996 "volume-effect" elasticities presented in tables 8,10, and 11 of my direct testimony.[6] These seconds per stop are presented in the table at page 9 of Attachment A to the Crowder testimony, in the column labeled "LTV Model Sec./Stop."

Next, Ms. Crowder multiplies the load-time seconds per stop by estimates of total number of system-wide actual stops to calculate annual load-time seconds by stop type. She then multiplies these annual seconds by an average FY 1996 city carrier wage rate of $24.75 per hour to obtain the annual accrued load-time costs shown in the last column of her table. These "model-based" costs are listed in column 2 of table 1 below. Column 3 of table 1 presents the corresponding STS-based estimates, and columns 4 and 5 of table 1 show the differences between the two sets, in absolute and in percentage terms.

[6] USPS-T-17 at pages 26-30. Ms. Crowder's estimates of seconds per stop differ slightly from the estimates I used in deriving these elasticities. Ms. Crowder's table at page 9 of Attachment A to her testimony reports 8.29, 50.51, and 19.50 seconds per stop for SDR, MDR, and BAM stops, respectively. The corresponding estimates used to derive my elasticities are 8.28, 50.45, and 19.29 seconds per stop. I regard these differences as small enough to be considered rounding error.

Table 1. Comparison of STS-Based and Model-Based Estimates of Base Year 1996 Accrued Load-Time Costs ($1,000)				
Stop Type	**Crowder's Model-Based Cost Estimates[7]**	**STS-Based Cost Estimates**	**Excess of STS over Modeled Cost**	**Excess as a Percentage of Model-Based Cost**
SDR	**$702,622**	**$995,848**	**$293,226**	**41.7%**
MDR	**$351,733**	**$600,905**	**$249,172**	**70.8%**
BAM	**$159,278**	**$186,333**	**$27,055**	**17.0%**
TOTAL	**$1,213,633**	**$1,783,086**	**$569,453**	**47.0%**

The rationale presented by Ms. Crowder for judging the model-based estimates to be more accurate than the STS-based estimates of accrued costs is derived from her understanding of the objectives and implementation strategies of the field studies that produced the STS and LTV data sets. Because I have not had sufficient time to thoroughly analyze its implications, it is not my intention to criticize or endorse this rationale at this time. However, I do want to focus on certain technical problems created by Ms. Crowder's new methodology. These problems must be resolved before any specific model-based methodology can be effectively implemented.

Subsections B through C of this section of my testimony explore two such problems. One is the ambiguity of Ms. Crowder's treatment of the excess of the STS-based costs over her estimated model-based costs. A second concern results from the implication that if the model-based approach is appropriate for measuring accrued

[7] Source: Testimony of Antoinette Crowder, Docket No. R97-1, JLP-NOI-1, Attachment A, page 9.

load-time cost, it must likewise be appropriate for measuring other accrued costs in segment 7. The specific problem is that Ms. Crowder provides no guidance as to whether and how the STS proportions defined for street-time activities other than load time should be used to estimate accrued costs for those activities.

Observe, also, that the analysis of these two problems will assume, for the sake of argument, that Ms. Crowder's calculations of model-based accrued load-time costs are accurate. This, however, identifies a third problem. Those calculations are derived from an equation that defines system-wide accrued load time as the product of load time at a stop getting the average volume and total system-wide actual stops. In fact, this equation is **not** valid. It is based on the false premise that the true average load time over all actual stops equals load time at the stop receiving the average volume.

Section 3 of this testimony explains why this premise is wrong, and why this error invalidates Ms. Crowder's accrued load-time equation, and the model-based estimates of system-wide costs derived from that equation.

B. Allocation and Interpretation of the Excess of STS-based Costs Over LTV Model-Based Costs

The ambiguity in Ms. Crowder's interpretation of the excess of the STS-based accrued load-time costs over the model-based costs is important primarily because the amount of this excess is so substantial. It totals $569,453,000 over the three stop types. Ms. Crowder proposes to add all of this amount to accrued access costs. The results of doing so are shown in tables 1 through 3 of Ms. Crowder's direct testimony. For example, table 1 adds the $293,226,000 excess of STS-based SDR cost over model-based SDR cost to a category called "fixed stop time." Table 1 shows that the

volume-variable portion of this $293,226,000 is $24,418,000, which equals $293,226,000 times the 8.327% that the Postal Service estimated as the elasticity of SDR actual stops with respect to aggregate volume.[8]

Thus, the calculations in Ms. Crowder's tables 1-3 interpret the excess of STS-based accrued load-time costs over her LTV model-based accrued load time costs as constituting strictly accrued access costs. Moreover, the label "fixed stop time" that the tables assign to this excess establishes it as not only accrued access cost, but also as strictly the cost of fixed-time at stops. The necessary implication is that the higher of the two alternative accrued costs – the STS-based total - must equal accrued load-time cost plus "fixed-time at stop" access cost. The lower of the two - the LTV model-based cost - must be pure load time – that is, non-fixed time, meaning, specifically, time that **does** vary with volume. This latter point is reiterated explicitly by Ms. Crowder at lines 5-8 on page 4 of her testimony's Attachment A. There she states that "the LTV definition of load time can be considered a narrower definition which encompasses **only** the carrier's direct handling of mail, mail-related equipment, and customer requirements at the load point." (Emphasis added).

However, the analysis elsewhere in Attachment A offers a different view. In other paragraphs, Ms. Crowder backs off from the quote just cited from page 4, and from her interpretation in tables 1-3. For example, at page 2, lines 8-9 of Attachment A, Ms. Crowder states only that the "excess of STS time over LTV modeled time is **"likely** fixed-stop **related."** (Emphasis added). Then at page 3, lines 4-6 of

[8] This 8.327% stops elasticity is derived in Docket No. R97-1, USPS LR-H-138.

Attachment A, she states that the STS-based accrued cost "**likely includes** both the volume-related (LTV-defined) stop time plus **relatively fixed** (non-volume-related) stop time, and **perhaps even a portion** of access time." (Emphasis added). Moreover, instead of viewing LTV load-time as encompassing "only the carrier's direct handling of mail, mail-related equipment, and customer requirements," as she does at page 4 lines 6-7, Ms. Crowder at page 2, lines 5-6 states only that "the LTV load time definition **principally encompasses** the time the carrier actually handles mail, mail equipment, or customer requirements...." Thus she implies that LTV load time might include some interval other than strictly volume-related time.

Phrase such as "likely fixed-stop related," "relatively fixed," and "principally encompasses" confuse the operational interpretation of the excess cost. They undermine confidence in Ms. Crowder's decision to add the excess to the access cost pool. The key problem is that the imprecision in the words is in sharp contrast to the precise calculations and labels presented in tables 1-3. The words indicate a reluctance to acknowledge that the excess of STS-based accrued cost over model-based accrued cost is definitely both accrued access cost and the cost of fixed-time at stops. As noted earlier, the tables show no such hesitation. They clearly label the excess "fixed stop time." They multiply the excess by the same elasticities of stops with respect to volume that the Postal Service applies – apparently with Ms. Crowder's approval – **strictly** to accrued access cost.

Ms. Crowder's contradictory interpretation of the excess of STS over modeled accrued load time cost is understandable, given the implications of accepting the interpretation given in tables 1-3, and in the quotation from page 4, lines 5-8 of

Attachment A. If, as these tables and the quotation indicate, the excess is indeed fixed-time at stop cost, and the remaining LTV model-based accrued cost is strictly the time spent handling mail, mail-related equipment, and customer requirements, then that model-based cost must be pure load time cost. No part of it can be fixed-time at stop. There is simply no way that a block of time spent entirely in the handling of mail and mail related equipment and customer requirements can be fixed time with respect to the amount and mix of volume at the stop. By its very definition, it must increase or decrease as volume loaded, the equipment containing that volume, or the accountables associated with the customer requirements increase or decrease. Therefore, no part of that block of time should be treated the way fixed-time at stop cost - that is, access cost - is treated; for access cost is cost that is fixed at each actual stop and that varies only as the number of actual stops varies.

The implication is clear. If model-based cost is pure load-time cost, and none of it is access cost, it is invalid to multiply the elasticities of stops with respect to volume by any part of the model-based cost, as Ms. Crowder does in tables 1-3, and in Attachment B to her testimony. Thus, the "volume-variable coverage-related" costs of $22,809,000, $8,000, and $2,396,000, which Ms. Crowder derives for SDR, MDR, and BAM stops, respectively, by multiplying the accrued coverage-related portions of her model-based costs by the stops elasticities are incorrect. Those stops elasticities are elasticities of access cost with respect to volume. They should be applied only to access cost or to cost which has the key characteristic of access cost – that of being fixed at a given set of actual stops with respect to the volume at those stops. If LTV-model accrued cost is pure load-time cost, which is entirely a function of volume, then

only the elasticities of load time with respect to volumes loaded, volumes collected, and customer requirements serviced should be applied to that cost to derive volume-variable load-time costs. This is precisely what I do in my direct testimony.

C. Implications for Non-Load-Time Activities

The second problem with the Crowder proposal to substitute LTV model-based accrued load-time costs for the STS-based estimates is the implication of implementing this proposal for measuring accrued costs for city carrier street activities other than loading. As shown in WP B at W/S 7.0.4.1, lines 6 through 8b,[9] the Postal Service's segment 7 cost analysis defines five such activities: street support, driving time, Route/Access FAT, Route/Access CAT, and collection.

For two of these five, Route/Access FAT and Route/Access CAT, both the Commission and the Postal Service have derived regression estimations of the so-called running time equations for purposes of calculating volume-variable costs. These regressions, which are described in detail at pages 46-65 of my direct testimony,[10] define total running time on a route as a function of the number of stops accessed. They are used to calculate volume-variable costs through a three-step process. First, elasticities of running time with respect to actual stops are derived from the regressions. These elasticities are then multiplied by the accrued running time costs to produce accrued access costs. The last step defines volume-variable access costs as the product of these accrued access costs and the elasticities of actual stops with respect to volume.

---

[9] This worksheet is part of the direct testimony of Joe Alexandrovich, Docket No. R97-1, USPS-T-5.
[10] Docket No. R97-1, USPS-T-17.

However, neither the Commission's nor the Postal Service's analysis of the running-time regressions has ever proposed going beyond this volume-variable cost calculation. In particular, neither has proposed using the running time regressions in the way Ms. Crowder proposes to use the load-time regressions, namely to calculate the system-wide accrued cost itself. However, the theoretical rationale presented by Ms. Crowder to justify use of the regression model-based estimate of accrued load-time costs would, if accepted, compel the same substitution of model-based running time costs for STS-based running time costs.[11]

Ms. Crowder presents this rationale at page 11 lines 9-20 of her testimony. She states that the inconsistency of calculating volume-variable cost estimates through multiplication of elasticities derived from load-time equations to accrued costs obtained from sources (namely the STS system) other than these equations causes these cost estimates to be inherently biased. To avoid this bias, the same LTV regressions that produce the variabilities must also be used to estimate the accrued costs to which the elasticities are applied to produce the volume-variable costs.

Clearly, acceptance of this argument as justification for using load-time regressions to estimate accrued load-time costs would also mandate the use of the running time regressions to estimate accrued running time costs. The logic seems inescapable. If the use of the same equations that produce the elasticities to also estimate the accrued costs by which these elasticities are multiplied to get volume-

[11] Elsewhere in her testimony, Ms. Crowder supplements this theoretical justification with empirical arguments relating to the difference between the STS and LTV data collection methodologies. See, in particular, Attachment A to the Crowder testimony at page 2 and pages 5 – 7.

variable costs is mandated to achieve unbiased load-time results, it must also be required to achieve unbiased accrued and volume-variable access costs.

Of course, this logical imperative creates a new dilemma. In insisting upon the model-based calculation of accrued load-time costs based upon arguments equally applicable to running time, Ms. Crowder is unavoidably disrupting the entire STS system. She raises, but leaves unanswered, not only the question of whether model-based running time costs should replace the STS-based costs, but other obvious follow-up questions as well. For example, what if the model-based estimates of running time costs are lower than the STS-based estimates, just as the model-based estimates of load-time costs are lower than STS-based estimates? What should be done with the excess running time costs? Should the STS percentages for collection, driving time and street support be somehow adjusted upwards to offset the decline in running time costs? Alternatively, what should be done if the model-based running time estimates are higher than the STS-based estimates? Moreover, should model-based alternatives be sought for the established STS-based accrued costs for the street support, driving time, and collection activities?

Until these questions are answered, the substitution of model-based estimates of accrued load-time costs for STS-based estimates should be deferred. This would give all interest parties the time needed to more carefully examine and interpret the implications of the model-based approach for all city carrier street time costs and activities.

Part 1 – Section 3. Interpretation of the Coverage-Related Load-Time Residual

A. The Crowder Model

Sections B and C of Part 1 to this testimony have assumed, for the sake of argument, that witness Crowder's estimates of system-wide accrued load-time costs, as presented in her Attachment A table (reproduced in this testimony in table 1 on page 9) are mathematically valid. This part of my testimony shows why they really aren't valid.

In Attachment B, Ms. Crowder first defines total accrued load time cost in general mathematical terms. She then derives a mathematical proof that system-wide volume-variable load-time cost equals the sum of what she calls elemental load-time cost and volume-variable coverage-related load-time cost.

The derivation proceeds as follows. First, Ms. Crowder assumes that system-wide accrued load time can be accurately represented by a simple, mathematically tractable equation relating aggregate load-time to load-time at one stop. This equation is expressed as:

(1) $L = g(V/S) * S$

where L is aggregate system-wide accrued load time, and where:

V = aggregate system-wide volume,

S = aggregate system-wide number of actual stops, with S = S(V),

V/S = average volume per actual stop, and

g(V/S) = load time at the stop that receives this average volume per stop.

Ms. Crowder then takes the derivative of system-wide accrued load time, L, in equation 1 with respect to system-wide volume, V, to derive equation 2.

(2) $[(\partial L / \partial V) * (V / L)] * L = L * E_e + (L - (L * E_e)) * E_s$.

In this equation, the left-hand side, $[(\partial L / \partial V) * (V / L)] * L$, is the product of system-wide accrued load time, L, and the total elasticity of system-wide accrued load time with respect to system-wide volume, V. Thus, it is a measure of system-wide volume-variable load-time cost. Equation 2 says this cost is equal to "elemental load time cost," defined as $L * E_e$, plus "volume-variable coverage-related load time cost," which is the residual, $[L - (L * E_e)]$, times the elasticity of stops with respect to volume, E_S.

Moreover:

E_e = elasticity of load time at the average stop with respect to volume just at that stop.

$L * E_e$ = system-wide elemental load time cost, which is the elasticity of load time at the average stop with respect to volume just at that stop times system-wide accrued load time, L

$L - (L * E_e)$ = system-wide accrued coverage-related load time, also known as the residual, because it equals system-wide accrued load time, L, minus system-wide elemental load time.

The remainder of this section shows why this derivation of system-wide volume-variable load-time cost is mathematically incorrect. This critique also applies to the Commission's own restatement of this derivation of system-wide volume-variable load time, since that restatement, presented in the Presiding Officer's February 25th Notice of Areas of Likely Inquiry At Hearing, is essentially a replication of the Crowder analysis.

B. Why Witness Crowder's Definition of System-Wide Volume-Variable Load Time is Incorrect

A critical assumption in witness Crowder's derivation of her equation 2 measure of system-wide volume-variable load-time cost is, of course, that equation 1 is itself a valid representation of system-wide accrued load time. It turns out that the validity of equation 1 is critically dependent upon a very strong assumption that Ms. Crowder implicitly relies upon in deriving equation 2. To see this assumption, observe first that system-wide accrued load time, L, obviously does equal average load-time per actual stop times total number of actual stops, S. This is just a restatement of the mathematical truth that a total equals an average per unit times the total number of units.

But equation 1 does not really say this. It states instead that system-wide accrued load time equals **load time at a stop that gets the average volume** times total number of actual stops. Ms. Crowder's unstated but key assumption here is therefore that the average of load times over all S of the system-wide actual stops simply equals load time at a single stop that gets the average volume. She assumes, that is, that

(3) $(\sum_{i=1}^{S} l_i) / S = g(\sum_{i}^{S} V_i / S)$

where:

$\sum_{i}^{S} l_i$ = sum of the individual load times, l_i, over all the actual stops,

$(\sum_{i=1}^{S} l_i) / S$ = average of these individual load times,

$\sum_{i=1}^{S} V_i$ = V = aggregate system-wide volume

$\sum_{i}^{S} V_i / S$ = average volume per stop

$g(\sum_{i}^{S} V_i / S)$ = load time at the stop that receives this average volume per stop.

To repeat, the true system-wide accrued load time L equals average load time over all the actual stops times total actual stops. Equation 1 produces this true system-wide load time if and only if equation 3 holds. Equation 1 is valid, that is, only if average load time over all actual stops equals load time at the stop that receives the average volume.

In fact, however, the assumption that equation 3 holds is incorrect. The reason is a well-known law of mathematics. It states that, in general, if g is a function of a random variable x, the average (i.e. expected) value of g does **not** equal the value of g evaluated at the expected value for x. In other words, $E(g(x)) \neq g(E(x))$.[12] To apply this law to the load-time analysis, observe that in that analysis:

x = volume at one stop, v_i

g(x) = load time at that one stop,

E(x) = V/S (average system-wide volume per stop),

g(E(x)) = load time at the stop that receives the average system-wide volume per stop,

[12] This presentation of the law is found in Russell Davidson and James G. MacKinnon, Estimation and Inference in Econometrics, Oxford University Press, New York, 1993, at page 800.

E(g(x)) = the average of load times over all S stops.

Thus, E(g(x)) equals $(\sum_{i=1}^{S} l_i) / S)$, which is the left-hand side of equation 3, and g(E(x)) equals $g(\sum_{i}^{S} V_i /S)$, which is the right-hand side of equation 3. Moreover, since in general, E(g(x)) ≠ g(E(x)), it follows that $(\sum_{i=1}^{S} l_i) / S \neq g(\sum_{i}^{S} V_i /S)$. That is, equation 3 fails.

The only exception to this general result that the average of g(x) does not equal g evaluated at the average value of x is the case in which g is a linear function of x. That is, g(x) would have to equal to $\alpha + \beta * x$. In the load-time analysis, this exception would be the linear load-time per stop equation.

(4) $l_i = \alpha + \beta * V_i$

Clearly this exception does **not** apply. The real load-time equation used to predict load time per stop for each of the three stop types, SDR, MDR, and BAM is, in each case, a highly **non-linear** regression equation. This non-linearity occurs because each regression has several right-hand side variables that equal the square of volume for some of the five volume variables (letters, flats, parcels, accountables, and collections), plus cross products between various pairs of these volume variables.

Thus, it is clear that for load-time analysis, the mathematical law that the expectation of g(x) does not equal g evaluated at E(x) does apply. Equation 3 does not hold. Ms. Crowder's definition of system-wide accrued load time as equal to

$g(\sum_i^S V_i /S)$*S (where $g(\sum_i^S V_i /S)$ = g(V/S)) is therefore incorrect.[13] Moreover, since equation 1 does not hold, equation 2, which Ms. Crowder derives through differentiation of equation 1, is invalid. Ms. Crowder's conclusion that system-wide volume-variable load-time cost equals "elemental load-time" - the product of L and E_e - plus the product of the residual (L minus $L * E_e$) and the stops elasticity, E_S, must be rejected. Moreover, each individual component of this incorrect volume-variable load- time measure, including in particular, the system-wide coverage-related load time component, which is the residual, must also be regarded as invalid.[14]

[13] Although the failure of equation 3 ensures that system-wide accrued load-time cannot be defined as load time at the average stop times total actual stops, it does not in any way affect the Postal Service's calculation of load-time elasticities. Recall that one of the inputs to this calculation is the predicted load-time at the stop that is assumed to receive the average daily FY 1996 values per stop for letters, flats, parcels, and accountables, and the average 1985 test value for collections per stop, and to also contain the average FY 1996 actual deliveries. This evaluation of the elasticity at the average-volume stop is not the same as using predicted load-time at the average-volume stop to infer total system-wide load-time cost. Moreover, the Postal Service does not multiply the elasticity evaluated at the average-stop by such a model-based estimate of accrued load time to measure volume-variable cost. Instead, it multiplies this elasticity by the STS-based estimate of accrued load time to derive volume-variable cost.

[14] Ms. Crowder may have erroneously concluded that I implicitly endorsed the model-based approach to estimating system-wide accrued load-time cost because of how I purportedly calculated system-wide fixed-time at stop cost. At page 6, lines 20-23 of her testimony, Crowder claims that I estimated this cost by multiplying my estimate of fixed-time per stop by total system-wide actual stops. This would indeed be comparable to calculating system-wide accrued load-time cost by multiplying load-time per stop by the same total number of actual stops.

In fact, however, system-wide fixed-time at stop cost is not estimated in this manner. The actual calculation is performed in Docket No. R97-1, USPS-T-5, WP B at W/S 7.0.4.2, lines 48b-48d. For each stop type, this calculation first determines the ratio of my measure of fixed-time per stop to the average of the total stop times recorded in the 1985 LTV tests. This ratio is then multiplied by the total STS-based accrued cost to derive an estimated system-wide fixed-time at stop cost.

Part 1 – *Section 4. Critique of Witness Crowder's Argument that the Deliveries Coverage Effect Overstates Volume-Variable Cost*

As witness Crowder notes, my direct testimony also offers a new interpretation of the deliveries variables that appear on the right-hand sides of the MDR and BAM load-time regressions. I view these variables as proxies for the numbers of actual deliveries at a stop. My interpretation argues that the deliveries variables account for the distinct positive effect that an increase in deliveries caused by volume growth will have on load time at a multiple-delivery stop. Therefore, I calculate the total elasticity of load time at an MDR or BAM stop as the sum of the elasticities of load-time with respect to the five volume variables plus the product of the elasticity of load time with respect to deliveries times the elasticity of deliveries with respect to volume. The sum of the volume elasticities alone is called the "volume effect." The product of the elasticity of load time with respect to deliveries and the elasticity of deliveries with respect to volume is called the deliveries effect.[15]

Ms. Crowder rejects this measurement of the deliveries effect. She claims instead that "separately attempting to estimate a deliveries variability for MDR and B&M stops is unnecessary."[16] She argues that the volume effect alone already encompasses the increase in load time that results from the increase in deliveries caused by volume growth. Mr. Crowder argues, specifically, that:

---

[15] A more comprehensive explanation and evaluation of the deliveries effect is presented at pages 16-23 of my direct testimony (Docket No. R97-1, USPS-T-17).

[16] Docket No. R97-1, JP-NOI-1, page 8, lines 20-21

> *the variability measured from the stop load model already includes the effect of a* marginal volume change on stop load time caused by both (1) the actual loading of mail at existing deliveries....and (2) the number of new deliveries loaded....Attempting to estimate and include one of these variabilities a second time (in a different way) causes an over-estimate of load time variability.....[17]

Ms. Crowder's justification for this view is derived from her alternative analysis of the general functional form for the equation defining MDR or BAM load time at one stop as a function of volume and deliveries. This function is defined as equation 3 in my direct testimony, reproduced here as equation 5.

(5) $$LT = \alpha + \sum_{i=1}^{N} \gamma_i * R_i + \sum_{j=1}^{J} \delta_j * C_j + \sum_{k}^{K} \beta_k * V_k + \sum_{k}^{K} \beta_{kk} * V_k^2 + \sum_{k}^{K} \sum_{l}^{L} \beta_{kl} * V_k * V_l +$$

$$\theta_1 * PD + \theta_{11} * PD^2 + \sum_{k}^{K} \phi_k V_k PD$$

where, according to my interpretation, PD, although technically defined as possible deliveries, can be viewed as actual deliveries.

Ms. Crowder's new analysis is presented at page 4 of Attachment C to her testimony. It begins by hypothesizing a simplified, specific version of equation 5. This version defines load time at an MDR or BAM stop as:

(6) $C_S = F + (C_D * D)$, where:

C_S = load time per stop,

D = actual deliveries at the stop = $bv - cv^2$, with v equaling total stop volume, and

C_D = load time per actual delivery = f + p*(v/D) = fixed time per actual delivery plus the product of volume per actual delivery (v/D) and time per piece of volume (p).

[17] JP-NOI-1, page 9, lines 1-6.

As Ms. Crowder notes, this version ignores the effects of the receptacle and container dummy variables. It also assumes that only one type of volume is loaded, so that no cross product terms are needed.

Ms. Crowder next substitutes her definitions of D and C_D into the right-hand side of equation 6 to obtain the following expression for load time at a multiple-delivery stop:

(7) $C_S = F + [(f*b) + p]*v - (f*c)*v^2$.

She concludes that the expression [(f*b) + p] is the B_k coefficient in my equation 5, and that the expression (f*c) is the B_{kk} coefficient in that equation. Moreover, since B_k and B_{kk} in equation 5 are strictly coefficients for volume, Ms. Crowder concludes that the volume terms alone must be accounting for both types of increase in load time that occurs at a stop when volume grows. That is, the volume terms alone must be accounting for the increase in time that results from more pieces being loaded into pre-existing actual deliveries, and the increase that results from the accessing of new deliveries. Thus, Ms. Crowder concludes that there is no need to separately account for the second of these two effects – the increase due to new deliveries. Moreover, doing so would double count that effect, given that it is already captured by the volume terms.

My critique of this series of arguments consists of two major points. The first is that the assumptions Ms. Crowder makes in specifying her simplified load-time equation, equation 6, are incorrect. These errors imply that Ms. Crowder's transformation of equation 6 into equation 7 is also invalid. The second point restates

the operational basis for recognizing the existence of the two distinct load-time effects at a multiple-delivery stop. It emphases why that operational basis justifies the approach implemented in my direct testimony.

1. Flaws in Witness Crowder's Mathematical Analysis

Ms. Crowder's mathematical analysis contains two errors. First, it assumes that actual deliveries, D, at one stop is strictly a function of volume at that stop. It defines D as simply $bv - cv^2$. This is clearly incorrect. Actual deliveries at a stop depend not just on volume but on **possible** deliveries.

A second error is her assumption that the time taken to deliver mail pieces is a simple linear function of the volume of these pieces. This is what allows her to assume that time per piece at each delivery is simply a constant amount p. This assumption is at the very least unrealistically restrictive, and it negates the general applicability of Ms. Crowder's equation 7. It is also directly contradicted by the Commission's load-time regressions, which show that load time per additional piece is not constant as total pieces at a stop rises.

These errors in Ms. Crowder's assumptions nullify her analysis precisely because both assumptions are necessary to the derivation of equation 7. Had Ms. Crowder, instead, explicitly recognized that D is a function of total possible deliveries, as well as v, then instead of her equation 7, the resulting equation would have had possible deliveries as well as volume on the right-hand side. Furthermore, had Ms. Crowder explicitly recognized that load time at a stop is a non-linear function of pieces loaded, she would have derived an equation 7 that has more terms than just $[f*b + p]*v$ and $-(f*c)*v^2$ to account for the effect of changes in volume on load time. These

added terms would have invalidated Ms. Crowder's conclusion that the $\beta_k * V_k$ and $\beta_{kk} * V_k^2$ terms in equation (5) are the only ones needed to derive the total elasticity of load time at the multiple-delivery stop with respect to volume.

2. The Operational Basis of the Correct Multiple-Delivery Load-Time Analysis

The erroneous assumptions required to derive an equation for load time at an MDR or BAM stop, such as Ms. Crowder's equation 7, that assigns the entire load time effect of a volume increase to the volume terms alone, also conflict with the operational reality of the volume-growth scenario. An accurate operational perspective can be gained through a reexamination of equation 5. In keeping with Ms. Crowder's appropriate decision to remove irrelevant complicating factors from equation 5, this reexamination will, as did the Crowder analysis, ignore the terms involving the receptacle and container dummy variables, and it will assume that there is only one volume variable, V. The resulting simplification of equation 5 becomes:

(5a) $LT = \alpha + \beta_1 * V + \beta_{11} * V^2 + \theta_1 * D + \theta_{11} * D^2 + \phi * V * D$

A straightforward interpretation of the partial derivatives of this equation with respect to V and D reveals the operational reality. The first partial derivative produces the terms, $\beta_1 + 2 * \beta_{11} * V + \phi * D$, which clearly only account for the increase in load time at a multiple-delivery stop that occurs in response to a volume increase when actual deliveries are explicitly held constant. In this way, the partial derivative of LT with respect to V conforms exactly with the operational truth. The volume terms pick up only the first load-time effect of a volume increase – the increase in load time that results when more volume is loaded at deliveries that had already received mail prior to the

volume increase. Contrary to what Ms. Crowder argues, but can only justify through application of erroneous assumptions, these volume terms do not pick up the second load-time effect of a volume increase - the increase in load time that results solely from the accessing of new deliveries.

The partial derivative of LT with respect to D - which equals $\theta_1 + 2 * \theta_{11} * D + \phi * V$ - is clearly required to account for this second effect. This derivative quantifies, specifically, the increase in load time that results just from the increase in actual deliveries caused by a volume increase. The volume terms defined in the partial derivative of LT with respect to V are not sufficient to capture this secondary deliveries effect.

Indeed, the only way the MDR and BAM equations could be specified to ensure that the volume terms alone account for both of the two load time effects is quite obvious. The delivery variable would have to be explicitly deleted from the right-hand side of equation 5a before the regression estimation would be conducted. Simply put, the equation would have to first be specified as:

(5b) $LT = \alpha + \beta_1 * V + \beta_{11} * V2$

Only the estimation of this specification would produce estimates of volume coefficients that, by necessity, would account for all the effects of volume growth on load time at the multiple-delivery stop. This would be the case simply because no other variable would appear on the right-hand side to account for the deliveries effect.

Of course, neither the Commission nor I have ever recommended equation 5b as a legitimate specification for deriving an MDR or BAM regression. This rejection of the

equation 5b form clearly recognizes that the elimination of the deliveries terms would greatly worsen the regression fit. The R-square would fall substantially. So would the precision of the predicted values for both load time at the average stop and the marginal load-times, all of which are needed to derive the volume elasticities. The accuracy of the elasticities themselves would obviously decline as well.

The current specification of the Commission's regression equations, which does include the delivery variables explicitly to pick up the deliveries effect on load time, is, in contrast, clearly in sync with operational fact. Consider two simple scenarios at a multiple-delivery stop. In scenario 1, volume grows by one piece that goes to a delivery that had received mail prior to that increase. Load time grows only as a result of more volume being loaded into a receptacle. In scenario 2, volume grows again by just one piece, but this piece is inserted into a new previously uncovered receptacle. Clearly load time will grow by even more than in the first scenario, because, in addition to the loading of one more piece into a receptacle, an additional movement is required by the carrier to reach a new receptacle. Moreover, only the equation that directly accounts for this second load-time effect through the explicit inclusion of delivery variables can accurately account for the entire change in carrier activity caused by the change in volume.

Part 1 – Section 5. Conclusions

The proposal that I have rejected to eliminate the deliveries effect from the calculation of volume-variable MDR and BAM load-time cost is one part of witness Crowder's new methodology for estimating system-wide volume-variable load-time cost. The major foundation of this proposal is Ms. Crowder's equation for estimating system-

wide accrued cost. This equation defines total accrued cost as the product of cost at the stop that receives the average volumes for each volume type and that has the average possible deliveries times the total system-wide actual stops. Ms. Crowder uses this equation to derive total SDR, MDR, and BAM accrued costs that are far lower than the STS-based accrued costs.

My rebuttal testimony has shown that this equation violates a fundamental law of mathematics, and is therefore incorrect. Also incorrect is the measurement of system-wide volume-variable load-time cost that Ms. Crowder derives through differentiation of this equation. This error invalidates Ms. Crowder's proof that volume-variable load time includes a coverage-related component equal to the so-called residual, which is accrued load time minus the product of the elasticity of load time with respect to volume at a stop and this accrued time.

I have also emphasized that my analysis of Ms. Crowder's method for deriving system-wide accrued costs and volume-variable costs has assumed, for the sake of argument, that the entire model-based approach is valid to begin with, and should, as proposed by Ms. Crowder, replace the STS-based approach. I offer no judgement on Ms. Crowder's argument that the objectives and implementation of the field study that produced the load-time data establish the load-time regressions more appropriate than the STS proportions for measuring accrued costs. However, I do highlight problems created by Ms. Crowder's specific method of substituting her estimated LTV-based costs for the STS-based costs. These problems are Ms. Crowder's failure to provide a consistent, operationally-sensible definition of the excess of the STS-based costs over the LTV-based costs, and her failure to address the implications of these proposals for

the measurement of accrued costs in non-load-time components of city carrier street time activity. Clearly, further study is needed not only to fully address these problems, but to further evaluate Ms. Crowder's views that the LTV field study produced data more suitable to measuring accrued load-time cost than did the STS field study.

In contrast, the analysis presented in my direct testimony does not argue for or against a particular method for estimating accrued load-time cost. It takes the STS-based estimates as given. It avoids the problems Ms. Crowder creates in substituting an LTV-model-based set of estimates for the STS-based estimates, and in implementing a volume-variability analysis based on those model-based estimates.

My direct testimony's analysis is instead analytically straightforward. It calculates volume-variable load-time cost in accordance with the definition, well-established on the record, that such cost equals accrued cost times the elasticity of load-time with respect to volume loaded. It recognizes that there is more to measuring volume-variable cost for time at stops than accounting for the effect of an increase in volume at existing stops. It takes seriously the judgement from the Docket No. R90-1 Commission decision that there is a fixed component, called fixed-time at a stop, that is found at every actual stop, and that is fixed in length with respect to the amount and mix of volume at the given stop.

In accordance with this judgment, my direct testimony produces the only available measurement of a truly fixed time component. It separately and explicitly accounts for the increase in fixed time at stops that results solely from the increase in actual stops caused by a volume increase. It does so by first treating the entire pool of cost for fixed-time at stop as essential an access cost, which by definition, is also

invariant with respect to volume delivered at a given stop, It then multiplies this pool by the elasticity of actual stops with respect to volume. This approach ensures that the measured increase in fixed-time at stop with respect to an increase in number of actual stops is also strictly a fixed time interval, in the sense that it is wholly independent of the amount or mix of mail going to the new stop.

Finally, consistent with this recognition than an increase in volume increases time not only at existing actual stops, but also through an increase in numbers of actual stops, my testimony recognizes that there are likewise two distinct effects of volume growth at one multiple-delivery stop. The first effect is the increase in load time resulting from the increase in pieces going into receptacles. The second distinct effect is the increase in numbers of deliveries accessed. Just as the distinct stops effect must be accounted for, so must this distinct deliveries effect.

Ms. Crowder's argument that the volume terms in the MDR and BAM regressions alone somehow pick up the delivery effect as well as the volume effect is in direct violation of the correct interpretation of the right-hand side of the MDR and BAM regressions. This interpretation states, in accordance with the law of partial derivatives, that the volume terms measure only the increase in load time caused by volume growth when deliveries are explicitly held constant. The deliveries terms are needed to measure the second effect - the increase in load time caused by the increase in deliveries that occurs when volume increases.

Witness Crowder deserves credit for having identified significant issues pertaining to the traditional calculation of accrued load-time costs. Her proposed alternative methods, however, are problematic from a technical and conceptual

standpoint, and require substantially more analysis and refinement before a corrected version can be reliably implemented. It is also important to emphasize that witness Crowder and I are in agreement that the previous methods used to analyze load time have produced flawed estimates of volume-variable load-time costs. However, I believe that the volume-variable cost estimation methods presented in my direct testimony, and affirmed in my rebuttal, provide the theoretically valid, internally consistent procedures for eliminating these flaws and producing correct results.

Part 2 – Section 1. *Overview of Witness Glick's Testimony and My Rebuttal*

This second part of my rebuttal testimony evaluates issues raised by Magazine Publishers of America witness Sander Glick (MPA-T-3). In both the original and revised versions of his testimony, witness Glick argues that the segment 10 workpapers filed with witness Joe Alexandrovich's direct testimony (USPS-T-5, WP B, W/S 10.1.1 through 10.2.2) reveal discrepancies between two cost-per-piece measures. The first is the volume-variable cost per piece defined for each variable evaluation category (also known as evaluation item). This equals volume-variable costs allocated to the given evaluation category divided by the total FY 1996 Rural Carrier Cost System (RCCS) pieces reported for that category. Since volume-variable costs are distributed to mail subclasses, this cost per piece is also known as the distributed cost per piece. The second measure is the cost per piece implied by the category's evaluation allowance factor. For example, for the letters delivered category, this evaluation factor is 0.0791 minutes per piece. This implies a cost per piece, at the FY 1996 rural carrier salary of $21.07 per hour, of about $.028.

Mr. Glick finds that the ratio of the volume-variable cost per piece to this evaluation factor cost per piece is lower in the letters delivered category than it is in the flats delivered category. Mr. Glick's revised testimony proposes a change to the Postal Service's "flats-adjustment" procedure in order to increase the ratio in the letters delivered category to the point that it will equal the ratio for flats delivered.

The Postal Service's segment 10 workpapers allocate total FY 1996 volume-variable rural carrier costs to the different variable evaluation categories based on the

results of the FY 1996 Rural Mail Count (RMC)[18]. This RMC was a four-week count of all mail on the majority of rural routes. The counts were used to derive the amounts and percentages of total carrier time on the average route that were spent performing the different activities defined by the rural evaluation categories. The percentages were used to divide the total volume-variable rural carrier costs among the variable evaluation categories. These costs were then distributed to mail subclasses.

As noted above, the volume-variable, or distributed, cost per piece for each variable evaluation category equals the cost allocated by the Postal Service to that category divided by the yearly volume obtained from the FY 1996 Rural Carrier Cost System (RCCS).[19] Mr. Glick expected to find that the ratio of this volume-variable cost per CCS piece to the cost per piece implied by the evaluation factor – what I call the evaluation factor cost per piece - would be nearly the same in the letters delivered category as in the flats delivered category. He recognized that, for this to occur, the percentages of total letters plus flats RMC volume allocated to each of these two evaluation categories would have to be the same as the corresponding percentages of the total letters plus flats RCCS volume allocated to the two categories.

The Postal Service did attempt to accomplish this equality. It first calculated the total RMC letters plus flats volume recorded during the FY 1996 mail count, which was conducted during pay periods 20 and 21. It then calculated the percentage of this total that was letters, and the percentage that was flats. Next, it calculated total RCCS

[18] The Rural Mail Count data collection and the analysis of that data are documented in Postal Bulletin 21952 (8-14-97), pages 13-19, and in Docket No. R97-1, USPS LR-H-192.
[19] This system is documented in Docket No. R97-1, USPS LR-H-28 and USPS LR-H-31.

letters plus flats volume for the same pay periods, 20 and 21.[20] It applied the RMC percentages to this RCCS total to determine what the RCCS letters volume and the RCCS flats volume would have equaled during pay periods 20 and 21 had the RMC percentages applied. The result was that, during those pay periods, approximately 1 out of every 6.82 pieces identified by the RCCS as a letter would have been identified as a flat by the RMC counts. This occurred because the RMC flats percentage was so much higher than the RCCS flats percentage.[21]

To correct this discrepancy, the Postal Service reallocated 1 out of every 6.82 pieces recorded in the RCCS for all of FY 1996 from the letters delivered category to the flats delivered category. After this reallocation, known as the flats-adjustment, the percentages of total RCCS letters plus flats volume in each of these two evaluation categories became nearly the same as the corresponding percentages of RMC volume.[22]

Mr. Glick is correct in his assessment that this adjustment should have caused the ratios of volume-variable cost per piece over the evaluation factor cost per piece in the letters delivered category to become nearly equal to the corresponding ratio in the flats delivered category. The problem he uncovered was that the ratios calculated based on the data reported in the segment 10 workpapers accompanying Mr.

---

[20] Note that letters includes letter-shaped pieces plus cards.
[21] This calculation is documented in Docket No. R97-1, USPS LR-H-193, and in USPS-T-5, WP B, W/S 10.0.3.
[22] This adjustment is performed in Docket No. R97-1, USPS LR-H-201.

Alexandrovich's Docket No. R97-1 testimony (USPS-T-5) still remained quite different, even though the flats adjustment had been implemented.[23]

The problem Mr. Glick has uncovered is not, however, due to any fault in the flats adjustment procedure. Instead, it is caused entirely by the mistaken inclusion of DPS and sector segment volumes in the final allocation of the RCCS letters made to the letters delivered category. The mistake was that, even after the flats adjustment had correctly transferred 1 out of every 6.82 RCCS letter pieces from that category to the flats delivered category, the remaining letters delivered pieces still erroneously included DPS and sector segment pieces. This caused errors in the cost distribution procedure applied to the letters delivered category. In this procedure, the Postal Service first calculates the percentage distribution of RCCS pieces in the letters delivered category across the mail subclasses. This percentage allocation is known as the distribution key. Next, this key is applied to the total volume-variable cost allocated to the letters delivered category in order to distribute that cost across the subclasses.

One error caused by the incorrect inclusion of DPS and sector segment pieces in the total RCCS pieces placed into the letters delivered category was that it distorted the distribution key, causing the percentages of cost allocated to subclasses to be too high for some, and too low for others. Thus, the wrong cost amounts were distributed

[23] The volume-variable costs and allowance factors used to derive these ratios are documented in USPS-T-5, WP B, W/S 10.1.1 through 10.2.2. Docket No. R97-1, USPS LR-H-201 shows the allocation of RCCS pieces across the evaluation categories, and the subclass distribution of pieces within each category needed to create the distribution keys .

to the different subclasses. A second error was that because the inclusion of DPS and sector segment mail caused the total number of letters in the letters delivered category to be too high, the total volume-variable (i.e. distributed) cost per piece calculated by Mr. Glick was too low. This explains why, as Mr. Glick discovered, the ratio of this distributed cost per piece to the evaluation factor cost per piece in the letters delivered category fell below the corresponding ratio for the flats delivered category.

Correcting the mistake in the development of the letters delivered distribution key is the only necessary step to correcting this remaining discrepancy between the two ratios. The flats adjustment procedure itself does not need to be changed. The remainder of my testimony describes how this correction is implemented, and compares the correction to a different approach proposed by Mr. Glick. It then shows the effect of this correction on Periodicals cost.

Part 2 - Section 2. Adjusting the Letters Distribution Key to Remove DPS/Sector Segment Volumes.

DPS and sector segment volumes are estimated to make up 23% of non-presorted First Class letters[24] and 34.12% of presorted First Class letters. It is also estimated that DPS and sector segment account for 25.36% of Standard A regular presort letters, and 30.91% of Standard A nonprofit regular presort letters[25]. In Exhibit USPS-RT-1A, W/S 10.0.3, page 2, I use these percentages to remove DPS and sector segment volumes from the letters delivered category.[26] The new distribution of RCCS

---

[24] Docket No. MC95-1, USPS-T-7 Exhibit E, page 4 of 6.
[25] Docket No. R97-1, USPS LR-H-129, pages I-11 and I-12.
[26] This is a revision to the version of W/S 10.0.3 filed with Joe Alexandrovich's direct testimony, USPS-T-5. Note that Exhibit USPS-RT-1A includes a complete set of the segment 10 calculations presented from worksheet 10.0.3 through worksheet 10.2.2, including both the sheets that I have revised, and the ones that are the same as the sheets submitted with the Alexandrovich testimony.

volumes is shown in the column labeled "BASE YEAR 1996 Post-Adjusted Letters Minus DPS/Sector Segment."

I then adjust the letters delivered distribution key to account for these deletions. In addition, the deleted volumes go into a separate evaluation category defined for the combination of DPS and sector segment mail. The distribution key for the DPS/sector segment category is then adjusted to account for these additional pieces. The flats delivered distribution key remains unchanged.

Exhibit USPS-RT-1A, W/S 10.1.2 and 10.2.2 show these revised distribution keys. They also show the resulting revised distributions of costs in the letters delivered and DPS/sector segment categories. Observe that with these new distributions, the cost distributed per letter delivered is now 13.8% higher than the letters delivered evaluation factor cost per piece, as illustrated in table 1 below.

One difference between my results and Mr. Glick's results is in the method used to adjust the letters distribution key. In his response to USPS/MPA-T3-3, Mr. Glick uses the percentage of DPS and sector mail reported in the RMC to remove DPS and sector segment pieces from the letters delivered evaluation category. But this percentage figure does not provide any information regarding the relative proportions of DPS and sector segment mail by individual mail subclass. My method does estimate the percentages of DPS and sector segment mail in each mail subclass. These percentages are the same as those used to formulate the initial DPS/Sector Segment

distribution key.[27] Thus, my method not only correctly estimates the total number of pieces initially allocated to the letters delivered category that are really DPS and sector segment pieces, but it correctly determines how much volume should be removed from each individual subclass within the letters delivered category and moved into the DPS/sector segment category. It further correctly determines the distribution of the added pieces across the subclasses of the DPS/sector segment category.

Table 1. Cost Distributed per Piece and Evaluation Allowance Cost per Piece After Removing DPS and Sector Segment Volumes from Letters Delivered

Evaluation Item	Cost ($000)	Volume* (000)	Cost Distributed Per Piece	Evaluation Allowance Cost Per Piece	Difference
	(1)	(2)	(3) = (1)/(2)	(4)	(5)=((3)-(4))/(4)
Letters Delivered	450,698	14,263,536	3.16 cents	2.78 cents	13.8%
Flats Delivered	753,785	13,146,349	5.73 cents	4.97 cents	15.3%

* DPS and Sector Segment volumes were removed after the flats adjustment was applied.

Part 2 - Section 3. The Flats Adjustment Proposed by Witness Glick.

As indicated earlier, my correction to the distribution error does not require any change to the flats adjustment formula presented by witness Alexandrovich's workpapers. Mr. Glick, however, does modify this formula. As in the Alexandrovich procedure, he calculates the letters and flats percentages of the total letters plus flats RMC volume in pay periods 20-21. However, unlike Mr. Alexandrovich and myself, he does not then apply these percentages to the RCCS letters plus flats volume applicable just to those pay periods. Instead, he applies those percentages to the annual RCCS sum of letters and flats. This results in an adjustment different from the approximately

[27] USPS-T-5, WP B, W/S 10.1.2 and 10.2.2.

1 out of 6.82 letter pieces calculated in Mr. Alexandrovich's worksheet 10.0.3. The Glick adjustment moves more letters from the letters delivered category to the flats delivered category than does the Alexandrovich adjustment.[28]

Docket No. R90-1, USPS-T-13 at F-30 first proposed the mail shape adjustment, and it actually applies the same approach, just described, as Mr. Glick proposes. However, in Docket No. R94-1, USPS-T-4, WP B, W/S 10.0.3, the RMC percentages were applied only to the RCCS volumes recorded for the same 4-week period during which the RMC mail count was conducted. The fact that this was the method most recently employed, and was accepted by the Commission, explains why Mr. Alexandrovich employed it to produce the flats adjustment applied to the FY 1996 data. In the absence of any compelling argument to go back to the R90-1 procedure, I also decided to make no changes to the Alexandrovich flats adjustment.

Table 2 shows the consequence of modifying the mail shape adjustment as proposed by Mr. Glick. Since Mr. Glick's modification transfers more pieces from the letters delivered category to the flats delivered category than does the Alexandrovich adjustment that I endorse, it produces a distributed cost per piece for letters delivered, as shown in table 2, that is higher than the corresponding cost per piece produced by the Alexandrovich adjustment. (The Alexandrovich result is shown in table 1). Mr. Glick's method also produces a lower distributed cost per piece for flats delivered than does the Alexandrovich method.

[28] Mr. Glick's alternative adjustment is presented in his response to USPS/MPA-T3-3, and in MPA-T-3, Exhibit MPA 3-1.

As a result, Mr. Glick's proposed change in the adjustment factor actually increases the discrepancy between the ratio of distributed cost to evaluation allowance cost in the letters delivered category and the corresponding ratio in the flats delivered category. To see why, observe that the ratio of Mr. Glick's estimated distributed cost per piece for letters to the evaluation cost per piece for letters deviates from the his corresponding ratio for flats delivered by 4.3 percentage points (16.2% minus 11.9%). In contrast, the ratio of my proposed distributed cost per piece for letters to the evaluation cost differs from my corresponding ratio for flats by only 1.5 percentage points (15.3% minus 13.8%).

Table 2. Cost Distributed per Piece and Evaluation Allowance Cost per Piece with Glick's Modified Flats Adjustment

Evaluation Item	Cost ($000)	Volume* (000)	Cost Distributed Per Piece	Evaluation Allowance Cost Per Piece	Difference
	(1)	(2)	(3) = (1)/(2)	(4)	(5)=((3)-(4))/(4)
Letters Delivered	450,698	13,967,447	3.23 cents	2.78 cents	16.2%
Flats Delivered	753,785	13,542,194	5.57 cents	4.97 cents	11.9%

* DPS and Sector Segment volumes were removed after Mr. Glick's modified flats adjustment was applied.

Part 2 – Section 4. Conclusions and Implications for Periodicals Costs

Thus, although witness Glick correctly identifies inconsistencies between volume variable costs per piece and evaluation factor costs per piece for letters and flats, his solution is incorrect. In contrast, my analysis correctly reduces these inconsistencies to a very small level through the removal of DPS and sector segment volumes from the letters delivered evaluation category. I do this by using estimates of the percentages of DPS and sector segment letters found in each mail subclass to determine how much volume to

remove from each subclass in that category, and how much to add to subclasses in the DPS/sector segment category. The mail shape adjustment proposed by witness Alexandrovich's direct testimony in this docket, and affirmed in this rebuttal testimony, follows the methodology employed in Docket No. R94-1, and does not need to be modified.

Table 3 shows the increase in Periodicals cost for the base year between the methodology employed by witness Alexandrovich and my revised methodology. The total increase in Periodicals cost is $2.0 million for the base year. Specifically, Exhibit USPS-RT-1B estimates the increase in Periodicals in the test year to be $2.1 million, and, taking into account piggybacks, $2.5 million. Table 3 disaggregates this cost increase into subclasses.

Table 3. Increase in Periodicals Cost by Subclass using Revised USPS Methodology

Subclass	Cost Increase Base Year ($000)	Cost Increase Test Year with Piggybacks ($000)
In-County	$176	$224
Regular	$1,402	$1,779
Nonprofit	$442	$537
Classroom	$12	$12

Exhibit USPS-RT-1A

Revised Cost Segment 10 Workpapers

W/S 10.0.3

FY 1996 MAIL SHAPE ADJUSTMENT SUMMARY

1996 National Mail Count:

LETTERS	1,063,825,516	58.01%	Includes DPS&Sector Segment
FLATS	770,015,490	41.99%	
	1,833,841,006	100.00%	

FY 1996 2858R Survey Data:

LETTERS AND CARDS	1,546,130	67.35%
FLATS	749,690	32.65%
	2,295,820	

If the 1996 2858R data had the same percentages of letters and flats as the 1996 National Mail Count, there would have to be the following distribution:

LETTERS	1,331,823	58.01%
FLATS	963,997	41.99%
	2,295,820	100.00%

This would require an adjustment of 214,307 letters and cards pieces

RESULT: 1 out of ever 6.81994 letters would have to be reclassified as a flat.

Note: Such reclassifying can only occur if there are already both letters and flats in the category.

OBS		Letters		
5	Postalcards	4170		
6	NS Postcards	50189		
7	PS Postcards	30211		
13	Mailgrams	0	84570	
52	Total 2858	1546130		
	Tot. minus OBS(6,7,11,15)		1461560	0.14662885
				6.8199405

W/S 10.0.3 Page 2

	BASE YEAR 1996 Pre-adjusted Letters	Post-Adjusted Letters BASE YEAR 1996 Adjusted Ltrs Pre Ltrs times 0.85337	Difference	BASE YEAR 1996 Post-Adjusted Letters Minus DPS/ Sector Segment	BASE YEAR 1996 Post-Adjusted DPS/Sector Segment	BASE YEAR 1996 Pre-adjusted Flats	BASE YEAR 1996 Post-adjusted Flats
LTRS & PARCELS	6,348,432	5,417,569	930,863	4,171,528	1,246,041	748,470	1,679,333
PRE. LTRS & PARCELS	7,168,204	6,117,139	1,051,065	4,029,873	2,087,266	334,061	1,385,126
CAR PRESORT LETTERS	349,030	297,852	51,178	196,220	101,632	20,787	71,965
ZIP+4 FIRST	*0*	*0*	*0*			*0*	*0*
TOTAL PRESORTED	7,517,234	6,414,991	1,102,243	4,226,093	2,188,897	354,848	1,457,091
GOV'T POST CARDS	42,417	42,417	0	32,237	10,180	0	0
PRIVATE CARDS	615,117	615,117	0	467,489	147,628	0	0
PRESORT PRIV CARDS	353,285	353,285	0	232,739	120,546	0	0
CARR PRESORT CARDS	40,252	40,252	0	26,517	13,735	0	0
ZIP+4 PRIV CARDS	0	0	0			0	0
TOTAL PS PRV CARDS	393,537	393,537	0	259,256	134,281	0	0
TOTAL FIRST	14,916,737	12,883,630	2,033,107	9,156,603	3,727,028	1,103,318	3,136,425
PRIORITY MAIL	2,483	2,119	364	2,119		35,961	36,325
EXPRESS MAIL	0	0	0	-		0	0
MAILGRAM	325	325	0	325		0	0
SECOND-CLASS MAIL:	0	0	0	-		0	0
WITHIN COUNTY		0	0	-			0
OUTSIDE COUNTY	0	0	0	-		0	0
OTHER REGULAR RATE		0	0	-			0
2ND NONPROFIT		0	0	-			0
CLASSROOM		0	0	-			0
TOT. PUBLISHERS	297,675	254,027	43,648	254,027		2,543,919	2,587,567
TOTAL SECOND	297,675	254,027	43,648	254,027		2,543,919	2,587,567
THIRD-CLASS MAIL							
SINGLE PIECE RATE	3,217	2,745	472	2,745		4,613	5,085
BULK RATE - REGULAR				-			0
- CARR RT	1,825,310	1,557,667	267,643	1,557,667		2,798,495	3,066,138
- 3/5-DIG PRSRT	3,564,987	3,042,257	522,730	2,270,741	771,516	2,905,243	3,427,973
TOTAL REGULAR	5,390,297	4,599,924	790,373	3,828,408	771,516	5,703,738	6,494,111
BULK RATE - NP							0
- CARR RT	198,821	169,668	29,153	169,668		115,593	144,746
- 3/5-DIG PRSRT	1,301,467	1,110,634	190,833	767,337	343,297	468,378	659,211
TOTAL NONPROFIT	1,500,288	1,280,303	219,985	937,005	343,297	583,971	803,956
TOTAL THIRD	6,893,802	5,882,972	1,010,830	4,768,158	1,114,813	6,292,322	7,303,152
FOURTH-CLASS MAIL:	0	0	0	-		0	
TOTAL ZONE RATE	3,214	2,743	471	2,743		10,681	11,152
BOUND PRINTED MATTER	1,822	1,555	267	1,555		27,897	28,184
SPECIAL FOURTH	303	259	44	259		8,376	8,420
LIBRARY RATE	2,726	2,326	400	2,326		2,851	3,251
TOTAL FOURTH	8,065	6,882	1,183	6,882		49,805	50,888

W/S 10.0.3 Page 3

PENALTY-USPS	29,783	25,416	4,367	25,416		5,585	9,952
FREE BLIND/HNDC SERV	4,860	4,147	713	4,147		4,246	4,959
INTERNATIONAL MAIL	53,737	45,858	7,879	45,858		9,103	16,982
BUNDLED MAIL	0	0	0			0	0
TOTAL ALL MAIL	22,207,467	19,105,377	3,102,090	14,263,536	4,841,841	10,044,259	13,146,349
SPECIAL & OTHER SERVICES							
REGISTRY - FEES AFFIXED	0	0	0			0	0
INSURANCE	0	0	0			0	0
COD	0	0	0			0	0
CERTIFIED	0	0	0			0	0
SPECIAL DELIVERY	0	0	0			0	0
MONEY ORDER	0	0	0			0	0
REG & COD	0	0	0			0	0
RETURN RECEIPTS	0	0	0			0	0
TOTAL SPEC. SERVICES	0	0	0			0	0
TOTAL MAIL&SPEC SERV	22,207,467	19,105,377	3,102,090	14,263,536	4,841,841	10,044,259	13,146,349

BASE YEAR 1995
COST SEGMENT 10 -- RURAL CARRIERS
WORKSHEET 10 1.1 -- DEVELOPMENT OF EVALUATED ROUTES VOLUME VARIABLE COSTS
PAGE 1 OF 1

LINE NO	ROUTE EVALUATION ITEM	AVERAGE VALUE		EVALUATION FACTOR		EVALUATION ALLOWANCE				DELIVERED AND COLLECTED MAIL COSTS				LINE NO.
						UNADJUSTED	VEHICLE LOAD ADJUSTMENT	MARKUPS ADJUSTMENT	ADJUSTED	UNADJUSTED	BNDLD LTRS AND FLATS ADJUSTMENT	ADJUSTED	ADJUSTED (000,000)	
	(1)	(2)		(3)		(4)= (2)x(3)	(5) [c]	(6) [d]	(7)= (4)..(6)	(8) [e]	(9) [f]	(10)= (8)+(9)	(11)= (10)/1000	
1	COLUMN SOURCE>>	[a]		[b]										1
2	VOLUME VARIABLE													2
3	LETTERS DELIVERED	571,336	<	0.07910	<	45,192.68	836.34	833.41	*46,862.43*	*409,347*	102	*409,449*	*409*	3
4	FLATS DELIVERED	535,884	<	0.14160	<	75,881.17	1,404.30	1,399.34	78,684.81	687,319	171	687,490	688	4
5	PARCELS DELIVERED	16,967	<	0.33300	<	6,316.01	116.89	116.48	6,549.38	57,209	(273)	56,936	57	5
6	BOXHOLDERS DELIVERED	143,042	<	0.04000	<	5,721.68	105.89	105.51	5,933.08	51,826		51,826	52	6
7	COD DELIVERED	70	<	5.50000	<	385.00	7.13	7.10	399.23	3,487		3,487	3	7
8	ACCOUNTABLES DELIVERED	1,565	<	4.00000	<	6,260.00	115.85	115.44	6,491.29	56,702		56,702	57	8
8a	*DPS*	103,242	<	0.03330	<	3,437.96	63.62	63.40	3,564.98	31,140		31,140	31	8a
8b	SECTOR SEGMENT	62,453	<	0.04440	<	2,772.91	51.32	51.14	2,875.37	25,117		25,117	25	8b
9	POSTAGE DUE	299	<	0.20000	<	59.80	1.11	1.10	62.01	542		542	1	9
10	RETURN RECEIPTS	10	<	0.25000	<	2.50	0.05	0.05	2.60	23		23	0	10
11	LETTERS/FLATS COLLECTED	110,572	<	0.04000	<	4,422.88			4,422.88	38,634		38,634	39	11
12	PARCELS ACCEPTED	298	<	4.00000	<	1,192.00			1,192.00	10,412		10,412	10	12
13	ACCOUNTABLES ACCEPTED	53	<	2.00000	<	106.00			106.00	926		926	1	13
14	*MONEY ORDERS*	*38*	<	3.50000	<	133.00			133.00	1,162		1,162	1	14
15	VEHICLE LOADING	5,405	<	0.50000	<	2,702.50	(2,702.50)							15
16	MARKUPS	11,538	<	0.23340	<	2,692.97		(2,692.97)						16
17	TOTAL					157,279.06	0.00	0.00	157,279.06	1,373,846	0	1,373,846	1,374	17
18	FIXED													18
19	MILES	5,268	<	12.00000	<	63,216.00								19
20	REGULAR BOXES	23,179	<	2.00000	<	46,358.00								20
21	CENTRALIZED BOXES	*6,027*	<	*1.00000*	<	*6,027.00*								21
22	L BOXES	20,614	<	1.64000	<	33,806.96								22
23	NDCBU COMPARTMENTS	246	<	1.00000	<	246.00								23
24	PARCEL POST LOCKERS	290	<	2.00000	<	580.00								24
25	POUCHES	50	<	1.00000	<	50.00								25
26	WITHDRAWLS	2,396	<	1.00000	<	2,396.00								26
27	CHANGE OF ADDRESS	471	<	2.00000	<	942.00								27
28	FORM 3579	385	<	2.00000	<	*770.00*								28
29	OFFICE WORK	3,000	<	1.00000	<	3,000.00								29
30	PURCHASE STAMPS	1,905	<	1.00000	<	1,905.00								30
31	OTHER SUITABLE ALLOWANCE	2,132	<	1.00000	<	2,132.00								31
32	DISMOUNT	2,679	<	0.10000	<	267.90								32
33	DISMOUNT DISTANCE	246,218	<	0.00284	<	699.26								33
34	TOTAL													34
35	VOLUME VARIABLE [e]									*1,373,846*		1,373,846	1,374	35
36	OTHER									1,427,578		1,427,578	1,427	36
37	TOTAL	1,879,632				319,675.18				2,801,424		2,801,424	2,801	37

[a] - LR H-192, (LINES 15, 25, 26, 29, 30, 31 ARE FOR ALLOWANCE FOR AVERAGE ROUTE).
[b] - LR H-33, SEC VI (LINES 15, 25, 26, 29, 30, 31 = 1.0000 TO CONFORM WITH NOTE a, ABOVE).
[c] - C4L15 APPORTIONED ON C4L3..L10.
[d] - C4L16 APPORTIONED ON C4L3..L10.

[e] - L17 and L35, W/S 10.0.1 C4L6; L1..14, L15 APPORTIONED ON C7; L37, W/S 10.0.1 C4L4; L36, L37-L35.
[f] - C9L5 (C8L5 x BUNDLED LETTERS AND FLATS FACTOR) APPORTIONED ON *COMPOSITION OF [C8L3 + C8L4]*.
FACTOR = 0.004780 (SEE W/S 10.1.2, FN c).

BASE YEAR 1996
COST SEGMENT 10 – RURAL CARRIERS
WORKSHEET 10.1.3 – DISTRIBUTION OF EVALUATED ROUTES VOLUME VARIABLE COSTS
PAGE 1 OF 4

LINE NO.	CLASS, SUBCLASS, OR SPECIAL SERVICE	DISTRIBUTION KEY							COST DISTRIBUTION							LINE NO.
		LETTERS DEL	FLATS DEL	PARCELS DEL	BOX-HLDRS DEL	ACCTBLS DEL	DPS/SEC SEG		LETTERS DEL	FLATS DEL	PARCELS DEL	BOX-HLDRS DEL	ACCTBLS DEL	DPS/SEC SEG	TOTAL	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)		(8)	(9)	(10)	(11)	(12)	(13)	(14)=	
	COLUMN SOURCE >>	[a]	[a]	[a]	[a]	[a]			[b]	[b]	[b]	[b]	[b]		(8)..(13)	
	FIRST-CLASS MAIL:															
1	LETTERS & PARCELS	29,044	12,775	13,033	587	0	25,735	[j]	119,740	87,826	7,450	303	0	14,477	229,803	1
2	PRESORT LTR & PCL	29,629	11,083	290	341	0	45,208	[k]	121,316	76,195	166	187	0	25,433	223,297	2
3	POSTAL CARDS	228	0	0	0	0	210		926	0	0	0	0	116	1,043	3
4	PRIVATE POSTCARDS	3,378	0	0	219	0	3,049	[j]	13,422	0	0	113	0	1,715	15,250	4
5	PRESORT PRVT P CS	1,818	0	0	56	0	2,774	[k]	7,444	0	0	29	0	1,861	9,334	5
6	TOTAL FIRST	64,195	23,858	13,323	1,223	0	76,976		262,847	164,023	7,621	632	0	43,304	478,427	6
7	PRIORITY MAIL	15	276	15,214	3	0	0		61	1,897	8,704	2	0	0	10,664	7
8	EXPRESS MAIL	0	0	0	0	7,369	0		0	0	0	0	4,178	0	4,178	8
9	MAILGRAMS	2	0	0	0	0	0		8	0	0	0	0	0	8	9
	SECOND-CLASS MAIL:															
10	WITHIN COUNTY	1,781	19,683	1,986	2,437	0	0		7,292	135,319	1,136	1,263	0	0	145,010	10
	OUTSIDE COUNTY															
11	REG RATE PUB	*	*	*	*	*	*		*	*	*	*	*	*	*	11
12	NONPROFIT PUB	*	*	*	*	*	*		*	*	*	*	*	*	*	12
13	CLASSROOM PUB	*	*	*	*	*	*		*	*	*	*	*	*	*	13
14																14
15	TOTAL SECOND	1,781	19,683	1,986	2,437	0	0		7,292	135,319	1,136	1,263	0	0	145,010	15
	THIRD-CLASS MAIL:															
16	SINGLE PIECE RATE	19	39	498	0	0	0		78	268	285	0	0	0	631	16
	BULK RATE-REG															
17	CAR PRESORT	10,921	23,323	562	62,592	0	0		44,716	160,343	322	42,804	0	0	248,185	17
18	OTHER	15,930	26,075	33,086	9,233	0	15,934	[k]	65,184	179,263	18,928	6,785	0	8,964	277,124	18
19	TOTAL REGULAR(BR)	26,841	49,398	33,648	91,825	0	15,934		109,900	339,606	19,250	47,589	0	8,964	525,309	19
	BULK RATE-NONPROF															
20	CAR PRESORT	1,190	1,101	88	2,613	0	0		4,872	7,568	49	1,354	0	0	13,844	20
21	OTHER	5,380	5,814	1,341	1,365	0	7,050	[k]	22,036	34,471	767	668	0	3,969	61,921	21
22	TOTAL NONPROF(BR)	6,570	6,115	1,427	3,998	0	7,050		26,900	42,040	816	2,020	0	3,969	75,765	22
23	TOTAL THIRD	33,430	55,552	35,573	95,723	0	23,024		136,878	381,914	20,351	49,609	0	12,953	601,705	23
	FOURTH-CLASS MAIL:															
24	PARCELS ZONE RATE	18	85	12,843	7	0	0		78	594	7,347	4	0	0	8,013	24
25	BOUND PRNT MATTER	11	214	13,095	7	0	0		45	1,471	7,492	4	0	0	9,012	25
26	SPC 4TH-CL. RATE	2	64	5,899	0	0	0		8	448	3,376	0	0	0	3,823	26
27	LIBRARY RATE	18	25	688	3	0	0		66	172	294	2	0	0	534	27
28	TOTAL FOURTH	49	388	32,524	17	0	0		197	2,687	18,508	10	0	0	21,482	28

[a] - USPS FORM 2858R, AMOUNTS ARE PROPORTIONS.
[b] - C6L44 THRU C12L44 FROM WS 10.1.1 C10, AND DISTRIBUTED ON C2 THRU C6.
* - INCLUDED IN L10.

[c] - COLUMN 4 EXCLUDES BUNDLED LETTERS AND FLATS: 476
TOTAL BEFORE EXCLUSION: 100,000
BUNDLED LETTERS AND FLATS FACTOR: 0.004760

[j] - MC95-1 USPS-T-7 Exhibit E, p 4 of 6. DPS and sector segment are 23% of non-presorted letters and 24% of non-presorted postcards.
[k] - R97-1, LR H-129. DPS and sector segment are 34.1215% of first class presort volume
25.36% of third class bulk other volume, and 30.91% of third non-profit other volume.

BASE YEAR 1998
COST SEGMENT 10 – RURAL CARRIERS
WORKSHEET 10.1.3 – DISTRIBUTION OF EVALUATED ROUTES VOLUME VARIABLE COSTS
PAGE 2 OF 4

LINE NO	CLASS, SUBCLASS, OR SPECIAL SERVICE	DISTRIBUTION KEY: LETTERS DEL	FLATS DEL	PARCELS DEL	BOX-HLDRS DEL	ACCTBLS DEL	DPS/SEC SEG	COST DISTRIBUTION: LETTERS DEL	FLATS DEL	PARCELS DEL	BOX-HLDRS DEL	ACCTBLS DEL	DPS/SEC SEG	TOTAL	LINE NO.
	(1) COLUMN SOURCE >>	(2) [a]	(3) [a]	(4) [a]	(5) [a]	(6) [a]	(7) [a]	(8) [b]	(9) [b]	(10) [b]	(11) [b]	(12) [b]	(13)	(14)= (8)..(13)	
29	PENALTY-USPS	178	76	49	528	0	0	729	522	28	274	0	0	1,553	29
30	FREE MAIL - BLIND & HNDC & SERVICEMEN	29	38	455	0	0	0	119	261	260	0	0	0	640	30
31	INTERNATIONAL MAIL:	332	129	398	69	0	0	1,310	887	228	36	0	0	2,465	31
32	TOTAL ALL MAIL	100,000	100,000	99,522 [k]	100,000	7,369	100,000	409,445	687,490	96,936	51,826	4,178	86,257	1,296,136	32
	SPECIAL SERVICES:														
33	REGISTRY	0	0	0	0	3,636	0					2,073		2,073	33
34	CERTIFIED	0	0	0	0	84,343	0					47,824		47,824	34
35	INSURANCE	0	0	0	0	4,285	0					2,430		2,430	35
36	COD	0	0	0	0	0	0					0		0	36
37	SPECIAL DELIVERY	0	0	0	0	347	0					197		197	37
38	MONEY ORDERS	0	0	0	0	0	0					0		0	38
39	STAMPED ENVELOPES											0		0	39
40	SPECIAL HANDLING											0		0	40
41	POST OFFICE BOX											0		0	41
42	OTHER					92,631	0	0	0	0	0	82,824	0	82,824	42
43	TOTAL SPC SVCS	0	0	0	0										43
44	TOTAL VOLUME VARIABLE	100,000	100,000	99,522	100,000	100,000	100,000	409,445	687,490	96,936	51,826	86,702	86,257	1,318,660	44
								14,263,536	13,148,349						
45	OTHER							0.03160	0.05734						45
46	TOTAL COSTS							0.88609							46
	NOTES: SEE PAGE 1							0.87199							

BASE YEAR 1996
COST SEGMENT 10 – RURAL CARRIERS
WORKSHEET 10.1.2 – DISTRIBUTION OF EVALUATED ROUTES VOLUME VARIABLE COSTS
PAGE 3 OF 4

LINE NO.	CLASS, SUBCLASS, OR SPECIAL SERVICE	DISTRIBUTION KEY: POSTAGE DUE	DISTRIBUTION KEY: LTRS/FLATS COLLECTED	DISTRIBUTION KEY: PARCELS ACCEPTED	DISTRIBUTION KEY: ACCTBLS ACCEPTED	COST DISTRIBUTION: POSTAGE DUE	COST DISTRIBUTION: LTRS/FLATS COLLECTED	COST DISTRIBUTION: PARCELS ACCEPTED	COST DISTRIBUTION: ACCTBLS ACCEPTED	COST DISTRIBUTION: SPECIAL SERVICES	PAGE 1	SUBTOTAL	DIST KEY	COMP 10.1 CRA 069	LINE NO.
	(1)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)=(14)	(25)= (19)-(24)	(26)	(27)	
	GPWS 10.1.2 PG 4	[d]	[d]	[d]	[d]	[e]	[e]	[e]	[e]	[f]			[g]	[h]	
	FIRST-CLASS MAIL:														
1	LETTERS & PARCELS	70,672	95,665	56,199	0	384	36,963	6,059	0		229,903	273,209		273,209	1
2	PRESORT LTR & PCL	1,785	0	0	0	10	0	0	0		223,297	223,307		223,307	2
3	POSTAL CARDS	174	310	345	0	1	120	36	0		1,043	1,200		1,200	3
4	PRIVATE POSTCARDS	987	3,270	1,179	0	5	1,263	133	0		10,250	10,641		10,641	4
5	PRESORT PRVT P CS	44	0	0	0	0	0	0	0		9,034	9,034		9,034	5
6	TOTAL FIRST	73,662	99,245	59,733	0	400	38,346	6,310	0		478,427	823,391		823,391	6
7	PRIORITY MAIL	2,801	206	10,052	0	15	80	1,047	0		10,664	11,806		11,806	7
8	EXPRESS MAIL	0	0	0	1,624	0	0	0	75		4,178	4,253		4,253	8
9	MAILGRAMS	435	0	0	0	2	0	0	0		8	10		10	9
	SECOND-CLASS MAIL:														
10	WITHIN COUNTY	1,466	0	0	0	8	0	0	0		145,010	145,018	877,029 <	12,671	10
	OUTSIDE COUNTY														
11	REG RATE PUB	*				*	*	*	*		*	*	5,994,301 <	100,023	11
12	*NONPROFIT PUB*	*				*	*	*	*		*	*	3,205,102 <	31,381	12
13	CLASSROOM PUB	*				*	*	*	*		*	*	66,669 <	643	13
14											0	0			14
15	TOTAL SECOND	1,466	0	0	0	8	0	0	0		145,010	145,018	10,126,194	145,018	15
	THIRD-CLASS MAIL:														
16	SINGLE PIECE RATE	974	282	3,139	0	5	101	327	0		631	1,064		1,064	16
	BULK RATE-REG														
17	CAR PRESORT	668	0	0	0	4	0	0	0		248,185	248,189		248,189	17
18	OTHER	4,237	0	0	0	23	0	0	0		277,124	277,147		277,147	18
19	TOTAL REGULAR(BR)	4,905	0	0	0	27	0	0	0		525,309	525,336		525,336	19
	BULK RATE-NONPROF														
20	CAR PRESORT	174	0	0	0	1	0	0	0		13,844	13,845		13,845	20
21	OTHER	914	0	0	0	5	0	0	0		61,921	61,926		61,926	21
22	TOTAL NONPROF(BR)	1,088	0	0	0	6	0	0	0		75,765	75,771		75,771	22
23	TOTAL THIRD	6,967	282	3,139	0	38	101	327	0		601,705	602,171		602,171	23
	FOURTH-CLASS MAIL:														
24	PARCELS ZONE RATE	2,581	18	8,536	0	14	7	885	0		8,913	8,923		8,923	24
25	BOUND PRNT MATTER	4,426	11	3,974	0	24	4	403	0		9,012	9,443		9,443	25
26	SPC 4TH-CL RATE	9,572	13	8,337	0	30	6	860	0		3,823	4,726		4,726	26
27	LIBRARY RATE	435	8	4,859	0	2	3	807	0		834	1,146		1,146	27
28	TOTAL FOURTH	13,016	50	25,618	0	70	19	2,667	0		21,492	24,238		24,238	28

[d] - USPS FORM 2058R, AMOUNTS ARE PROPORTIONS.
[e] - C19,44 THRU C22,44 FROM W/S 10.1.1 C10, AND DISTRIBUTED ON C13 THRU C18.
* - INCLUDED IN L10.

[f] - W/S 10.1.1, C10.
[g] - RPW NATIONAL VOLUMES (PIECES). See W/S 1.1.1, current Pieces column.
[h] - C27(L10 THRU L13), C27(L15 DISTRIBUTED ON C26(L10 THRU L15).

[i] - COLUMN 27 EXCLUDES BUNDLED LETTERS AND FLATS:
TOTAL BEFORE EXCLUSION: 100,008
BUNDLED LETTERS AND FLATS FACTOR: 0.000448

USPS-RT-1A
8 of 14

17767

BASE YEAR 1998
COST SEGMENT 10 – RURAL CARRIERS
WORKSHEET 10.1.3 – DISTRIBUTION OF EVALUATED ROUTES VOLUME VARIABLE COSTS
PAGE 4 OF 4

LINE NO	CLASS, SUBCLASS, OR SPECIAL SERVICE	DISTRIBUTION KEY: POSTAGE DUE	LTRS/FLATS COLLECTED	PARCELS ACCEPTED	ACCTBLS ACCEPTED	COST DISTRIBUTION: POSTAGE DUE	LTRS/FLATS COLLECTED	PARCELS ACCEPTED	ACCTBLS ACCEPTED	SPECIAL SERVICES	PAGE 3	SUBTOTAL	DIST KEY	COMP 10.1 CRA DIST	LINE NO.
	(1) COLUMN SOURCE >>	(19) [d]	(18) [d]	(17) [d]	(16) [d]	(15) [e]	(20) [e]	(21) [e]	(22) [e]	(23) [f]	(24)*(14)	(25)= (19)..(24)	(26) [g]	(27) [h]	
29	PENALTY-USPS	1,400	36	100	0	0	14	10	0		1,560	1,585		1,585	29
30	FREE MAIL - BLIND & HNDC & SERVICEMEN	0	0	0	0	0	0	0	0		840	840		840	30
31	INTERNATIONAL MAIL	261	192	1,370	0	1	74	143	0		2,469	2,887		2,887	31
32	TOTAL ALL MAIL	99,956	99,991	100,000 [f]	1,624	542	39,634	10,412	75	0	1,266,139	1,315,795		1,315,795	32
	SPECIAL SERVICES:														
33	REGISTRY	0	0	0	586				27		2,073	2,100		2,100	33
34	CERTIFIED	0	0	0	17,019				791		47,926	48,618		48,618	34
35	INSURANCE	0	0	0	707				33		2,436	2,463		2,463	35
36	COD	0	0	0	0				0	3,487 L7	0	3,487		3,487	36
37	SPECIAL DELIVERY	0	0	0	0				0		197	197		197	37
38	MONEY ORDERS	0	0	0	0				0	1,162 L14	0	1,162		1,162	38
39	STAMPED ENVELOPES								0		0	0		0	39
40	SPECIAL HANDLING								0		0	0		0	40
41	POST OFFICE BOX								0		0	0		0	41
42	OTHER								0	23 L10	0	23		23	42
43	TOTAL SPC SVCS	0	0	0	18,311	0	0	0	851	4,672	52,534	58,047		58,047	43
44	TOTAL VOLUME VARIABLE	99,956	99,991	100,000	19,936	542	39,634	10,412	926	4,672	1,318,666	1,373,866		1,373,866	44
														9,427,879	45
45	OTHER													2,001,424	46
46	TOTAL COSTS														

NOTES: SEE PAGE 3

BASE YEAR 1996
COST SEGMENT 10 – RURAL CARRIERS
WORKSHEET 10.2.1 – DEVELOPMENT OF OTHER ROUTES VOLUME VARIABLE COSTS
PAGE 1 OF 1

LINE NO.	ROUTE EVALUATION ITEM	AVERAGE VALUE		EVALUATION FACTOR	EVALUATION ALLOWANCE UNADJUSTED	EVALUATION ALLOWANCE VEHICLE LOAD ADJUSTMENT	EVALUATION ALLOWANCE MARKUPS ADJUSTMENT	EVALUATION ALLOWANCE ADJUSTED	DELIVERED AND COLLECTED MAIL COSTS UNADJUSTED	DELIVERED AND COLLECTED MAIL COSTS BNDLD LTRS AND FLATS ADJUSTMENT	DELIVERED AND COLLECTED MAIL COSTS ADJUSTED	DELIVERED AND COLLECTED MAIL COSTS ADJUSTED (000,000)	LINE NO.
	(1)	(2)		(3)	(4)=	(5)	(6)	(7)=	(8)	(9)	(10)=	(11)=	
1	COLUMN SOURCE>>	[e]		[b]	(2)x(3)	[c]	[d]	(4)..(6)	[e]	[f]	(8)+(9)	(10)/1000	1
2	VOLUME VARIABLE												2
3	LETTERS DELIVERED	318,918	<	0.07910	25,226.41	604.71	553.33	26,384.45	41,238	11	41,249	41	3
4	FLATS DELIVERED	286,336	<	0.14160	40,545.18	971.95	889.35	42,406.48	66,278	17	66,295	67	4
5	PARCELS DELIVERED	10,678	<	0.33300	3,555.77	85.24	78.00	3,719.01	5,813	(28)	5,785	6	5
6	BOXHOLDERS DELIVERED	72,727	<	0.04000	2,909.08	69.74	63.81	3,042.63	4,755		4,755	5	6
7	COD DELIVERED	43	<	5.50000	236.50	5.67	5.19	247.36	387		387	0	7
8	ACCOUNTABLES DELIVERED	968	<	4.00000	3,872.00	92.82	84.93	4,049.75	6,329		6,329	6	8
8a	OPS	43,085	<	0.03330	1,434.73	34.39	31.47	1,500.59	2,345		2,345	2	8a
8b	SECTOR SEGMENT	53,147	<	0.04440	2,359.73	56.57	51.76	2,468.06	3,857		3,857	4	8b
9	POSTAGE DUE	179	<	0.20000	35.80	0.86	0.79	37.45	59		59	0	9
10	RETURN RECEIPTS	8	<	0.25000	2.00	0.05	0.04	2.09	3		3	0	10
11	LETTERS/FLATS COLLECTED	60,993	<	0.04000	2,439.72			2,439.72	3,813		3,813	4	11
12	PARCELS ACCEPTED	171	<	4.00000	684.00			684.00	1,069		1,069	1	12
13	ACCOUNTABLES ACCEPTED	39	<	2.00000	78.00			78.00	122		122	0	13
14	MONEY ORDERS	13	<	3.50000	45.50			45.50	71		71	0	14
15	VEHICLE LOADING	3,844	<	0.50000	1,922.00	(1,922.00)							15
16	MARKUPS	7,535	<	0.23340	1,758.67		(1,758.67)						16
17	TOTAL				87,105.09	0.00	(0.00)	87,105.09	136,139	0	136,139	136	17
18	FIXED												18
19	MILES	2,415	<	12.00000	28,980.00								19
20	REGULAR BOXES	10,062	<	2.00000	20,124.00								20
21	CENTRALIZED BOXES	6,207	<	1.00000	6,207.00								21
22	L BOXES	11,396	<	1.64000	18,689.44								22
23	NDCBU COMPARTMENTS	269	<	1.00000	269.00								23
24	PARCEL POST LOCKERS	285	<	2.00000	570.00								24
25	POUCHES	15	<	1.00000	15.00								25
26	WITHDRAWLS	2,364	<	1.00000	2,364.00								26
27	CHANGE OF ADDRESS	271	<	2.00000	542.00								27
28	FORM 3579	279	<	2.00000	558.00								28
29	OFFICE WORK	3,000	<	1.00000	3,000.00								29
30	PURCHASE STAMPS	1,594	<	1.00000	1,594.00								30
31	OTHER SUITABLE ALLOWANCE	1,901	<	1.00000	1,901.00								31
32	DISMOUNT	2,851	<	0.10000	285.10								32
33	DISMOUNT DISTANCE	273,799	<	0.00284	777.59								33
34	TOTAL												34
35	VOLUME VARIABLE [e]								136,139		136,139	136	35
36	OTHER								136,871		136,871	137	36
37	TOTAL	1,175,392			172,981.22				273,010		273,010	273	37

[a] - LR H-192, (LINES 7, 15, 26, 29, 30, 31 ARE FOR ALLOWANCE FOR AVERAGE ROUTE).
[b] - LR H-33, SEC VI (LINES 7, 15, 26, 29, 30, 31 = 1.0000 TO CONFORM WITH NOTE a, ABOVE).
[c] - C4L15 APPORTIONED ON C4L3..L10.
[d] - C4L16 APPORTIONED ON C4L3..L10.

[e] - L17 and L35, W/S 10.0.1 C5L6; L1..14, L15 APPORTIONED ON C7; L37, W/S 10.0.1 C5L4; L36, L37-L35.
[f] - C9L5 (C8L5 x BUNDLED LETTERS AND FLATS FACTOR) APPORTIONED ON COMPOSITION OF [C8L3 + C8L4].
FACTOR = 0.004780 (SEE W/S 10.2.2, FN c).

BASE YEAR 1996
COST SEGMENT 10 – RURAL CARRIERS
WORKSHEET 10.2.1 – DISTRIBUTION OF OTHER ROUTES VOLUME VARIABLE COSTS
PAGE 1 OF 4

LINE NO.	CLASS, SUBCLASS, OR SPECIAL SERVICE	DISTRIBUTION KEY: LETTERS DEL	FLATS DEL	PARCELS DEL	BOXHLDRS DEL	ACCTBLS DEL	DSP/SEC SEG	COST DISTRIBUTION: LETTERS DEL	FLATS DEL	PARCELS DEL	BOXHLDRS DEL	ACCTBLS DEL	DSP/SEC SEG	TOTAL	LINE NO.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)= (8)..(13)	
	COLUMN SOURCE >>	[a]	[a]	[a]	[a]	[a]		[b]	[b]	[b]	[b]	[b]			
	FIRST-CLASS MAIL:														
1	LETTERS & PARCELS	29,244	12,775	13,033	587		25,735 [j]	12,061	8,470	751	36	0	1,096	22,918	1
2	PRESORT LTR & PCL	29,629	11,063	290	361		49,206 [k]	12,222	7,347	17	17	0	2,804	22,407	2
3	POSTAL CARDS	226		0			210	93	0	0	0	0	13	106	3
4	PRIVATE POSTCARDS	3,370	0	0	219		3,049 [j]	1,382	0	0	10	0	199	1,851	4
5	PRESORT PRVT P CS	1,818			58		2,774 [k]	750	0	0	3	0	173	925	5
6	TOTAL FIRST	64,195	23,838	13,323	1,223	0	79,976	26,478	15,817	778	80	0	4,774	47,906	6
7	PRIORITY MAIL	15	276	15,214	3		0	8	185	864	0	0	0	1,873	7
8	EXPRESS MAIL	0		0	0	7,369	0	0	0	0	0	466	0	466	8
9	MAILGRAMS	2						1	0	0	0	0	0	1	9
	SECOND-CLASS MAIL:														
10	WITHIN COUNTY	1,781	19,683	1,986	2,437		0	735	13,049	115	116	0	0	14,016	10
	OUTSIDE COUNTY														11
11	REG RATE PUB														12
12	NONPROFIT PUB														13
13	CLASSROOM PUB														14
14															15
15	TOTAL SECOND	1,781	19,683	1,986	2,437	0	0	735	13,049	115	116	0	0	14,016	
	THIRD-CLASS MAIL:														
16	SINGLE PIECE RATE	19	39	498	0		0	8	26	29	0	0	0	63	16
	BULK RATE-REG														
17	CAR PRESORT	10,921	23,323	562	82,592		0	4,909	15,462	33	3,927	0	0	23,927	17
18	OTHER	15,930	25,075	33,086	9,233		15,934 [k]	6,867	17,386	1,923	439	0	966	27,203	18
19	TOTAL REGULAR(BR)	26,841	48,398	33,648	91,825	0	15,934	11,072	32,748	1,956	4,366	0	966	51,130	19
	BULK RATE-NONPROF														
20	CAR PRESORT	1,190	1,101	86	2,613		0	491	730	5	124	0	0	1,350	20
21	OTHER	5,380	5,014	1,341	1,285		7,090 [k]	2,218	3,324	78	61	0	440	6,122	21
22	TOTAL NONPROF(BR)	6,570	6,115	1,427	3,898	0	7,090	2,710	4,054	83	185	0	440	7,473	22
23	TOTAL THIRD	33,430	55,552	35,573	95,723	0	23,024	13,790	36,828	2,068	4,551	0	1,406	58,665	23
	FOURTH-CLASS MAIL:														
24	PARCELS ZONE RATE	19	85	12,842	7		0	8	56	748	0	0	0	810	24
25	BOUND PRINT MATTER	11	214	13,095	7		0	5	142	761	0	0	0	908	25
26	SPC 4TH-CL. RATE	2	64	5,899	0		0	1	42	343	0	0	0	386	26
27	LIBRARY RATE	16	25	698	3		0	7	17	40	0	0	0	64	27
28	TOTAL FOURTH	48	388	32,524	17	0	0	21	257	1,890	0	0	0	2,168	28

[a] - USPS FORM 2853R, AMOUNTS ARE PROPORTIONS.
[b] - C8L44 THRU C12L44 FROM WS 10.2.1 C10 AND DISTRIBUTED ON C2 THRU C6
* - INCLUDED IN L10.

[c] - COLUMN 4 EXCLUDES BUNDLED LETTERS AND FLATS: 478
TOTAL BEFORE EXCLUSION: 100,000
BUNDLED LETTERS AND FLATS FACTOR: 0.004780

[j] - MC95-1 USPS-T-7 Exhibit E, p 4 of 6. DPS and sector segment are 33% of non-presorted letters and 24% of non-presorted postcards.
[k] - R97-1, LR H-129. DPS and sector segment are 34.1215% of first class presort volume
25.36% of third class bulk other volume, and 30.91% of third non-profit other volume.

BASE YEAR 1996
COST SEGMENT 10 – RURAL CARRIERS
WORKSHEET 10 2 2 – DISTRIBUTION OF OTHER ROUTES VOLUME VARIABLE COSTS
PAGE 2 OF 4

LINE NO.	CLASS, SUBCLASS, OR SPECIAL SERVICE	DISTRIBUTION KEY						COST DISTRIBUTION							LINE NO.
		LETTERS DEL	FLATS DEL	PARCELS DEL	BOX-HLDRS DEL	ACCTBLS DEL	DSP/SEC SEG	LETTERS DEL	FLATS DEL	PARCELS DEL	BOX-HLDRS DEL	ACCTBLS DEL	DSP/SEC SEG	TOTAL	
	(1) COLUMN SOURCE >>	(2) [a]	(3) [a]	(4) [a]	(5) [a]	(6) [a]	(7)	(8) [b]	(9) [b]	(10) [b]	(11) [b]	(12) [b]	(13)	(14)= (8)..(13)	
29	PENALTY-USPS	178	76	48	526		0	73	50	3	26	0	0	181	29
30	FREE MAIL - BLIND & HNDC & SERVICEMEN	28	38	455	0		0	12	26	26	0	0	0	63	30
31	INTERNATIONAL MAIL	322	125	398	69		0	133	86	23	3	0	0	245	31
32	TOTAL ALL MAIL	100,000	100,000	99,522 [c]	100,000	7,369	100,000	41,249	68,295	6,785	4,766	486	6,202	134,752	32
	SPECIAL SERVICES:					3,656						231		231	
33	REGISTRY					84,343						8,339		8,339	33
34	CERTIFIED					4,295						271		271	34
35	INSURANCE											0		0	35
36	COD					347						22		22	36
37	SPECIAL DELIVERY											0		0	37
38	MONEY ORDERS											0		0	38
39	STAMPED ENVELOPES											0		0	39
40	SPECIAL HANDLING											0		0	40
41	POST OFFICE BOX											0		0	41
42	OTHER											0		0	42
43	TOTAL SPC SVCS	0	0	0	0	92,631	0	0	0	0	0	8,863	0	8,863	43
44	TOTAL VOLUME VARIABLE	100,000	100,000	99,522	100,000	100,000	100,000	41,249	68,295	6,785	4,766	8,329	6,202	130,615	44
45	OTHER														45
46	TOTAL COSTS														46

NOTES SEE PAGE 1

BASE YEAR 1996
COST SEGMENT 10 – RURAL CARRIERS
WORKSHEET 10.2.2 – DISTRIBUTION OF OTHER ROUTES VOLUME VARIABLE COSTS
PAGE 3 OF 4

LINE NO	CLASS, SUBCLASS, OR SPECIAL SERVICE	DISTRIBUTION KEY: POSTAGE DUE	LTRS/FLATS COLLECTED	PARCELS ACCEPTED	ACCTBLS ACCEPTED	COST DISTRIBUTION: POSTAGE DUE	LTRS/FLATS COLLECTED	PARCELS ACCEPTED	ACCTBLS ACCEPTED	SPECIAL SERVICES	PAGE 1	SUBTOTAL	DIST KEY	COMP 10.2 CRA 070	LINE NO.
	(1)	(15) [d]	(16) [d]	(17) [d]	(18) [d]	(19) [e]	(20) [e]	(21) [e]	(22) [e]	(23) [f]	(24)=(14)	(25)= (19)..(24)	(26) [g]	(27) [h]	
	FIRST-CLASS MAIL:														
1	LETTERS & PARCELS	70,672	95,685	56,199		40	3,648	632	0		22,918	27,237		27,237	1
2	PRESORT LTR & PCL	1,785				1	0	0	0		22,407	22,408		22,408	2
3	POSTAL CARDS	174	310	345		0	13	4	0		106	123		123	3
4	PRIVATE POSTCARDS	987	3,370	1,179		1	125	13	0		1,881	1,890		1,890	4
5	PRESORT PRVT P CS	44				0	0	0	0		926	926		926	5
6	TOTAL FIRST	73,662	99,243	58,723	0	42	3,786	639	0		47,908	52,372		52,372	6
7	PRIORITY MAIL	2,801	209	10,052		2	0	107	0		1,073	1,190		1,190	7
8	EXPRESS MAIL				1,624	0	0	0	10		466	476		476	8
9	MAILGRAMS	435				0	0	0	0		1	1		1	9
	SECOND-CLASS MAIL:														
10	WITHIN COUNTY	1,466				1	0	0	0		14,816	14,816	977,929	1,215	10
	OUTSIDE COUNTY														
11	REG RATE PUB	*				*	*	*	*		*	*	6,984,361	8,687	11
12	NONPROFIT PUB	*				*	*	*	*		*	*	2,206,180	3,052	12
13	CLASSROOM PUB	*				*	*	*	*		*	*	66,865	82	13
14											0	0			14
15	TOTAL SECOND	1,466	0	0	0	1	0	0	0		14,816	14,816	10,126,194	14,816	15
	THIRD-CLASS MAIL:														
16	SINGLE PIECE RATE	914	281	3,139		1	10	34	0		63	108		108	16
	BULK RATE-REG														
17	CAR PRESORT	688				0	0	0	0		23,927	23,927		23,927	17
18	OTHER	4,337				3	0	0	0		27,203	27,206		27,206	18
19	TOTAL REGULAR(BR)	4,905	0	0	0	3	0	0	0		51,130	51,133		51,133	19
	BULK RATE-NONPROF														
20	CAR PRESORT	174				0	0	0	0		1,350	1,350		1,350	20
21	OTHER	914				1	0	0	0		6,123	6,123		6,123	21
22	TOTAL NONPROF(BR)	1,088	0	0	0	1	0	0	0		7,473	7,473		7,473	22
23	TOTAL THIRD	6,907	281	3,139	0	5	10	34	0		58,668	58,714		58,714	23
	FOURTH-CLASS MAIL:														
24	PARCELS ZONE RATE	2,583	19	8,536		2	1	51	0		810	904		904	24
25	BOUND PRINT MATTER	4,426	11	3,674		3	0	41	0		908	952		952	25
26	SPC 4TH-CL. RATE	5,972	19	8,317		3	0	65	0		388	476		476	26
27	LIBRARY RATE	435	0	4,069		0	0	52	0		64	116		116	27
28	TOTAL FOURTH	13,016	50	25,616	0	9	1	273	0		2,166	2,468		2,468	28

[d] - USPS FORM 2050R, AMOUNTS ARE PROPORTIONS.
[e] - C19L44 THRU C27L44 FROM W/S 10.1.1 C10 AND DISTRIBUTED ON C15 THRU C18.
* - INCLUDED IN L10.

[f] - W/S 10.1.1, C10.
[g] - RPW NATIONAL VOLUMES (PIECES). See W/S 1.1.2, current volumes.
[h] - C37(L10 THRU L13), C37L15 DISTRIBUTED ON C26(L10 THRU L15).

1 - COLUMN 17 EXCLUDES BUNDLED LETTERS AND FLATS: 44
TOTAL BEFORE EXCLUSION: 100,000
BUNDLED LETTERS AND FLATS FACTOR: 0.000440

BASE YEAR 1998
COST SEGMENT 10 – RURAL CARRIERS
WORKSHEET 10 2 3 – DISTRIBUTION OF OTHER ROUTES VOLUME VARIABLE COSTS
PAGE 4 OF 4

LINE NO.	CLASS, SUBCLASS, OR SPECIAL SERVICE	DISTRIBUTION KEY: POSTAGE DUE	LTRS/FLATS COLLECTED	PARCELS ACCEPTED	ACCTBLS ACCEPTED	COST DISTRIBUTION: POSTAGE DUE	LTRS/FLATS COLLECTED	PARCELS ACCEPTED	ACCTBLS ACCEPTED	SPECIAL SERVICES	PAGE 2	SUBTOTAL	DIST KEY	COMP 10.2 CRA 979	LINE NO.
	(1) COLUMN SOURCE >>	(15) [d]	(16) [d]	(17) [d]	(18) [d]	(19) [e]	(20) [e]	(21) [e]	(22) [e]	(23) [f]	(24)=(14)	(25)= (17)+(24)	(26) [bf]	(27) [hf]	
29	PENALTY-USPS	1,406	36	100		1	1	1	0		181	184		184	29
30	FREE MAIL - BLIND & HNDC & SERVICEMEN	0				0	0	0	0		63	63		63	30
31	INTERNATIONAL MAIL:	261	192	1,370	0	0	7	15	0		245	267		267	31
32	TOTAL ALL MAIL	99,956	99,991	100,000 [f]	1,624	59	3,813	1,069	10	0	126,782	129,703		129,703	32
	SPECIAL SERVICES:														
33	REGISTRY				588				4		231	235		235	33
34	CERTIFIED				17,019				104		8,339	8,443		8,443	34
35	INSURANCE				707				4		271	276		276	35
36	COD								0	387 L7	0	387		387	36
37	SPECIAL DELIVERY				0				0		22	22		22	37
38	MONEY ORDERS								0	71 L14	0	71		71	38
39	STAMPED ENVELOPES								0		0	0		0	39
40	SPECIAL HANDLING								0		0	0		0	40
41	POST OFFICE BOX								0		0	0		0	41
42	OTHER								0	3 L19	0	3		3	42
43	TOTAL SPC SVCS	0	0	0	18,314	0	0	0	112	461	8,863	8,436		8,436	43
44	TOTAL VOLUME VARIABLE	99,956	99,991	100,000	19,938	59	3,813	1,069	122	461	135,646	138,139		138,139	44
45	OTHER													135,871	45
46	TOTAL COSTS													273,810	46

NOTES: SEE PAGE 3

Exhibit USPS-RT-1B Base Year 1996 and Test Year After Rates Rural Carrier Attributable Cost under Revised USPS Cost Methodology

			C/S 10 DIFFERENCE		
	C/S 10, USPS-T-5	Revised C/S 10	Base Year w/o Piggybacks	TYAR w/o Piggybacks	TYAR with Piggybacks
	(1)	(2)	(3)	(4)	(5)
First-Class Mail:					
Letters and sealed parcels	296,468	300,436	3,968	4,131	4,945
Presort letters and sealed parcels	263,567	245,715	(17,852)	(19,431)	(23,257)
Private post cards	19,248	19,653	405	421	504
Presort private post cards	11,053	9,959	(1,094)	(1,427)	(1,708)
Total First-Class Mail	590,336	575,763	(14,573)	(15,550)	(18,613)
Priority Mail	12,979	12,996	17	20	24
Express Mail	4,729	4,729	-	-	-
Mailgrams	11	11	-	-	-
Publishers:					
Within County	13,610	13,786	176	187	224
Outside County					
Regular rate publications	108,288	109,690	1,402	1,486	1,779
Nonprofit publications	34,191	34,633	442	449	537
Classroom publications	913	925	12	10	12
Total Publishers	157,002	159,034	2,032	2,133	2,553
Standard A:					
Single piece rate	1,149	1,172	23	26	32
Bulk rate - carrier presort	259,640	272,116	12,476	12,706	15,208
- other	304,392	304,353	(39)	(50)	(60)
- subtotal	564,032	576,469	12,437	14,509	17,365
Bulk rate - nonprofit carrier presort	13,834	15,195	1,361	1,246	1,492
- other	70,010	68,049	(1,961)	(2,305)	(2,759)
- subtotal	83,844	83,244	(600)	(680)	(813)
Total Standard A	649,025	660,885	11,860	13,783	16,497
Standard B:					
Parcels (zone rate)	9,804	9,827	23	26	31
Bound printed matter	10,381	10,395	14	16	19
Special fourth-class rate	5,199	5,204	5	5	7
Library rate	1,243	1,262	19	19	22
Total Standard B	26,627	26,688	61	68	81
Penalty - U.S. Postal Service	1,537	1,739	202	173	207
Free mail for blind, handicapped, and servicemen	671	703	32	37	45
International Mail	2,585	2,954	369	365	437
Total All Mail	1,445,502	1,445,502	-	-	-

(1) USPS-T-5, WP B-10, W/S 10.1.2 and 10.2.2
(2) Exhibit USPS-RT-?A WS 10.1.2 and 10.2.2
(3) = (2) - (1)
(4) = (3) * [Exhibit USPS-15H, p 33-34 / (1)]
(5) = (4) * LR H-177 p. 138

CHAIRMAN GLEIMAN: Two participants requested oral cross examination of the witness, ADVO, Inc., and Magazine Publishers of America.

Does any other participant wish to cross examine?

[No response.]

CHAIRMAN GLEIMAN: If not, Mr. McLaughlin, would you please begin?

CROSS EXAMINATION

BY MR. McLAUGHLIN:

Q Well, Mr. Baron, I was hoping to say good morning to you, but I guess I'll have to say good afternoon.

CHAIRMAN GLEIMAN: We could switch witnesses around and arrange that for you, the way the day is going.

MR. McLAUGHLIN: I'd better take my chances now.

BY MR. McLAUGHLIN:

Q Just as a preliminary matter, what is the form of the load time cost function that the Postal Service uses? What's the mathematical form? Is it linear?

A It's non-linear.

Q And what particular kind of mathematical description do you use for those, a logarithmic or quadratic?

A I'd say it's a generalized quadratic.

Q Can you tell us why a quadratic is used? What's sort of the basis for using a quadratic?

A It's to account for the fact that the marginal change in load time with respect to the volume in -- the various volume terms is not constant.

Q And for example, if you had declining marginal costs, you would use a -- either a logarithmic or a quadratic, as opposed to a linear equation?

A Right.

Q So the cost function then is a curve as opposed to a straight line?

A Generally. We have to keep in mind that in the load time regressions, you have five separate volume terms and it's possible that -- well, it is the case that for some of those volume terms, the marginal cost curve is actually increasing.

Q But in general, would it be fair to say that generally in the load time function, the common understanding is that it exhibits declining marginal costs?

A Right.

Q When you have declining marginal costs, what is the shape of the cost curve?

A Are you talking about the total cost curve?

Q Yes, the total cost curve.

A It will bend, it will have a declining slope. If you have say aggregate volume on the X axis and load time on the Y axis, you can envision the slope declining.

Q The slope declines. The curve goes up but at a declining rate?

A Right.

Q It's an arc?

A Right.

Q Starting up and then leveling off?

A Right.

Q As volume increases? Is that considered to be a concave or a convex?

A Concave.

Q On page 19 of your testimony, you critique witness Crowder's mathematical model of load time. You state at the beginning of about line 13 that her mathematical model uses the assumption that system-wide load time equals load time at a stop, ~~it~~ that gets the average volume, multiplied by total actual stops. Do you see that?

A Uh-huh.

Q Over on page 20, line five, you state that the true system load time is the average load time over all of the actual stops times actual stops; is that correct?

A Yes.

Q On line 13 of page 20, you state that mathematically, these two mathematical formulations are not equal; is that correct?

A Yes.

Q Specifically, you show an equation on line 13 showing an inequality. I take it one of those two terms is intended to represent the mathematical model that Crowder used, which is the stop having the average system-wide volume --

A Right.

Q -- and the other is intended to mean the average volume over all of the stops?

A Right.

Q Of those two terms, which of those, the left-hand side or the right-hand side, is the one that would represent Crowder's model?

A It would be -- you are talking about the inequality I show on line 13?

Q That's correct.

A It would be the term on the right that represents Witness Crowder's.

Q And that term is ~~G(EX)?~~ $g(E(x))$?

A Correct.

Q The term on the left, the ~~E(GX)~~ $E(g(x))$, is the other formulation measuring the average volume over all of the stops; is that correct?

A It represents the average load time over all the stops.

Q You state over on page 21 that this inequality

definitely does apply in a case of load time because it is highly non-linear; is that correct?

A Yes.

Q You then go on on page 22 and state that because of this inequality, all of Crowder's equations are "invalid" and must be "rejected." Do you see those statements over on page 22?

A Exactly which line?

Q Well, on line three you refer to her equations being invalid.

A Right. That's right. What I'm saying there is what I call equation one, which is the equation that states that load time at the stop receiving average value times total number of stops is not in fact a correct measure of total system-wide load time.

Q You say it's invalid.

A It is not -- I'm saying that load time at the stop that receives the average volume times total number of system-wide stops does not in fact equal total system-wide load time.

Q But you do use the statement that her mathematical model is invalid?

A Okay; sure, yes.

Q And that it therefore must be rejected?

A Yes.

Q Let's go back to page 20, to the inequality equation on line 13. I believe you indicated that the term on the right-hand side of that inequality is representative of Crowder's mathematical model. Of those two expressions -- let me ask you this.

Would you expect that load time costs estimated at the mean volume stop level would be reasonably close to what you would call the true load time cost that would be derived by taking the average load time over all the stops?

A No, I don't believe it would be because that would require that the non-linearity in the actual load time regressions be minimal. I think instead, the degree of non-linearity is significant.

Q Which of those two expressions, either the left-hand side of the inequality or the right-hand side of the inequality, would you expect would be greater?

A The right-hand side should be greater.

Q Crowder's model should produce a higher total cost.

A Right.

Q And is the reason for that because that's a concave cost function?

A Yes.

Q And at footnote 12 right after the inequality expressed there you cite the Davidson and MacKinnon book

"Estimation and Inference in Econometrics" at page 800 for that inequality. Is that correct?

A That's right.

Q Do you have a copy of that page with you?

A No, I don't believe I do.

MR. McLAUGHLIN: Mr. Chairman, I'd like to mark this document that I've handed to the witness ADVO-BEX-1 -- I guess B is for Baron.

[Cross-Examination Exhibit ADVO-BEX-1 was marked for identification.]

BY MR. McLAUGHLIN:

Q Now what I've handed you has both page 800 and 801 of a book. Can you confirm whether this is the source book that you cite in your footnote 12?

A Yes.

Q If you look about maybe a third of the way down that page, it talks about the inequality using the very mathematical terms that you have on line 13. Do you see that?

A Yes.

Q And it goes on to state that those two terms would be equal only if you had a linear cost function; is that correct?

A That's correct.

Q In the following paragraph it states on the other hand if the function g is concave or convex, one can show that the inequality between ~~E(GX)~~ E(g(x)) and ~~G(EX)~~ g(E(x)) has a particular sign. Do you see that?

A Yes.

Q It refers to that as Jensen's inequality.

In the following sentence it says that for concreteness suppose that g is a concave function like a logarithmic function.

A Um-hum.

Q Then the equality asserts that ~~E(GX)~~ E(g(x)) is less than or equal to ~~G(EX)~~ g(E(x))?

A Right.

Q And there again the term on the right-hand side of that inequality would correspond to Witness Crowder's model; is that correct?

A That's right. This confirms I think what we said before, that on line 13 of page 20 of my testimony the term on the right-hand side of the inequality would be greater.

Q And so to be precise with respect to the functions we're looking at, you could rewrite that equation to put in a "less than" sign. The term on the left is less than the term on the right. Is that correct?

A Yes.

Q So then from that standpoint the mathematical

model that Crowder has used would tend to overstate in relation to the expression on the left-hand side; is that correct?

A That's right. If the load-time regressions were used the way Witness Crowder suggests, this would indicate that, assuming that's valid, that they would produce a load time at the average stop, at the average volume stop that exceeds the average of the load times over all the stops.

Q That's all I have with respect to that aspect right now.

Let's turn now to pages 10 through 14 of your testimony -- just generally at first.

Throughout here you characterize aspects of Crowder's testimony and indicate that, you suggest that she is being inconsistent. I would like to explore that a little bit with you.

Let's start on page 10 with line 21. This section here relates to Crowder's point that the STS derived accrued costs are substantially greater than the LTV modeled load costs, and referring to the difference between those two, is that correct?

A Right.

Q You state on page 10, line 21, "Ms. Crowder proposes to add all of this amount to accrued access costs."

Is it your understanding that Crowder proposed to

add those amounts to accrued access costs?

A Well, my understanding of her Tables 1 through 3 in her direct testimony is that she refers to this amount of excess as fixed time at stop cost and in turn proposes to multiply those costs by the elasticity of actual stops with respect to volume.

Q Does she state that that is access or is that something akin to coverage related load costs?

Where does she say this is access cost?

A She may not have used the word "access cost" but she treats it exactly the way access cost has always been treated.

Q Is coverage related load cost also treated similarly to access costs?

A Yes, it is.

Q So she could be treating it as coverage related load cost as opposed to access cost?

A Well, in those tables I referred to, she explicitly refers to these amounts as fixed time at stop and then further down she has another similar amount of cost that she refers to as coverage related cost. Presumably if she intended to call this amount that I refer to on line 20 as coverage related cost, she would have used that label instead of fixed time at stop cost.

Q So in other words, you are -- it is your

interpretation of what Crowder said that this was access cost as opposed to what you actually see Crowder stating on Table 1?

A Well, I have to get Table -- let me get Table 1 from her -- do you have her direct testimony?

Q Yes, I do. I don't have a copy.

I can show you Table 1.

A Okay. What I am referring to on line 20, page 10, is the sum of the amounts across the three tables, Tables 1 through 3, that are on a row called fixed stop time.

Those are not -- I mean she uses the label fixed stop time, not coverage related load time there.

Q Do you recall whether Crowder ever explained what her use of the term fixed stop time meant?

Is it your understanding that when she used the term fixed stop time she was referring to access time?

A I didn't see anywhere where she contradicted the longstanding conventional understanding of the words fixed time and stop cost as being access.

That's such a -- in my view that's such a longstanding convention that had she not meant that, I would have expected to find her -- someplace where that was stated explicitly.

Q The Postal Service sent her an interrogatory -- the USPS/JP-NOI-1, where she explicitly explained what she

meant by fixed time -- fixed stop time.

Do you recall seeing that?

A Yes.

Q Do you recall whether she indicated that fixed stop time included load time?

A This is -- here we are talking about the excess of STS based load time over what she considers to be true load time --

Q Right, and then did she also explain -- this is on transcript page 16249 -- that the difference between the LTV model stop load time and the STS estimated accrued load time can also be considered fixed stop time?

A Yes, that's -- that is in line with the label that I have cited from the -- that is in line with the labels that she used in the rows of Tables 1 through 3 that I referred to before.

Q That's correct, but she does not refer to those as access costs, does she?

A Okay, well -- I have already stated my view on that.

Q I am just trying to clarify your characterization of what Crowder said.

A Okay. I think I have already answered that, that fixed stop time has always been in my view agreed to by all as access time. It makes perfect sense to the extent that

if a different opinion was being made I would expect to see it highlighted in the testimony.

Q Is coverage related to load time, fixed time, in terms of volume?

A Well, in the Crowder analysis that is certainly not at all clear.

Q Well, what is your understanding of whether coverage related to load time is considered fixed with respect to volume?

A The way that coverage-related load time has been traditionally defined and measured it is definitely not fixed time at stop because it is a function of volume at a stop.

Q Well, let's go on to page 11, line 4 through 6. There you say the calculations in Crowder's table interpret that excess of STS load time over LTV model load time as strictly accrued access costs. That's the same point you made on line 21 of page 10.

A Right.

Q Right? That we've just been over.

A Yes.

Q Okay. So that is -- is that Crowder's interpretation or is that your interpretation of what Crowder has done?

A That's certainly my interpretation. And as I

said, it's simply based on the fact that her -- she calls it fixed time at stop, which has always been I think an appropriate description of accrued access time. And she applies the elasticity of actual stops with respect to volume to that amount to get the volume variable portion. Again that's something that to my knowledge is only done to access time. Except for coverage related.

Q How is coverage related load time computed? Isn't it computed in the very same way?

A Right, but it's not fixed time at stop. So it's missing that important component.

Q Now, is it fair to say that your discussion -- let's try to shorten this. We can go through this sentence by sentence if we need to, but let me just try to shorten this.

On pages -- on page 11 we discussed your lines 4 through 6 --

A Um-hum.

Q Where you characterize what you think Crowder said. Lines 7 through 16, is it a fair statement there as well that you are here giving your interpretation of what Crowder has said as opposed to specifically stating what Crowder has said?

A Yeah, I think this point is being reiterated now several times, that I simply call it access time because it

meets all the criteria that my understanding of all past analyses on the record have defined for access time.

Now it's not absolutely critical to me that it be called access time, that it's just my understanding of what has traditionally -- of a label that has traditionally been applied to an amount of time that is fixed time at a stop and to which you multiply an elasticity of actual stops with respect to volume in order to determine the volume variable portion. That is what I call access time.

It's not critical to me that the word "access time" be used. If it's important that some other term be used, I would not necessarily be averse to that alternative term.

Q Now likewise on line 17 through 19 of page 11, there you state that Crowder backs off from a quote you've just given above.

A Um-hum.

Q She backs off from her interpretations in tables 1 through 3. Isn't this your interpretation and not what she has actually said?

A Well, in the table that you just showed me a little while ago, the label was very clear. The label was fixed time at stop, and then the quote that I'm citing at page 21 of line 11 on my testimony says likely fixed stop related. And it's in that sense that I'm saying she's

backing off.

Q But that's based on your interpretation that she isn't treating that, for example, as access related?

A No. All I'm saying is that in the table she uses the label fixed time at stop to describe this pool of dollars, and then in the citation that I quoted from she adds the words "likely fixed stop related," and my only point is that there's some ambiguity here.

Q Okay. Did she clarify that in a response to a Postal Service interrogatory?

A Well, she certainly attempted to. I'm not sure it clarified it in my own mind.

Q Okay.

A My only point through all of this is that I simply want to understand what Witness Crowder really means. Does she really believe it's fixed time at stop cost in the sense that it's cost that will only go up as the number of actual stops goes up or only go down as the number of actual stops goes down, or is she -- does she mean something different? That's the point that I'm really making throughout this section.

Q What I would suggest to you and your counsel is that Ms. Crowder will be on the witness stand tomorrow, and if you wish to, you can clarify that with her.

A Okay.

Q Over on page 12 of your testimony, lines 11 through 13, and in the interest of trying to speed through this, I'm not going to go through every line here where we may have some disagreement with your characterizations, but starting on line 11 through 13 on page 12, you state the terms that she used undermine confidence in Ms. Crowder's decision to add the excess to the access cost pool.

There again, that's based on your interpretation --

A Sure.

Q -- that she is intending to add that to the ~~excess~~ access cost pool; is that correct?

A Yes. I could have restated that by saying she intends -- she is clearly intending to add this amount to a pool of dollars that is analyzed exactly the way access costs are analyzed.

Q And exactly the way that coverage related load time is analyzed as well?

A Right, with the caveat that coverage related load time cannot in any way be called fixed time at stop.

Q Well, I presume your counsel can clarify what Crowder intended and in fact, what she said.

I'd like to refer you next to page 24 of your testimony. We are changing subjects now. We are now talking about your discussion of the deliveries coverage

effect. That is what you discuss in this section of your testimony; is that correct?

A Right.

Q On page 24 at line 11, you have an equation number five; do you see that?

A Yes.

Q Is this the ~~LTD~~ LTV load model?

A This is the model for a multiple delivery stop.

Q And the term on the left-hand side of the equation, the LT term, that is load time?

A Correct.

Q That's the dependent variable?

A Correct.

Q On the right-hand side of the equation, you have the independent variables; is that correct?

A Yes.

Q What are the independent variables here?

A There are two sets of dummy variables, dummy variables for different receptacle types, the second is different dummy variables for container types, and then we have the five volume variables, letters, flats, parcels, accountables and collections, and then finally a term for possible deliveries.

Q You have on the right-hand side as independent variables, you have both volume and possible deliveries?

A Right.

Q The MDR, meaning multiple delivery residential, and business and mixed, B&M models, were estimated with a PD variable, possible deliveries?

A Correct.

Q This is explaining load time as being a function of volume and possible deliveries; is that correct?

A Yes.

Q On line 20, you have the term D equals actual deliveries. D is distinct from PD which means possible deliveries?

A Yes. Line 20 is describing an equation posed by Witness Crowder.

Q The term "D" means actual deliveries?

A That's right.

Q As opposed to PD, which is possible deliveries?

A Correct.

Q I'd like to turn now to page 27, where you have an equation 5A. I take it this is a simplified version of equation five?

A Correct.

Q Now, in this equation, I see on the right-hand side, independent variables, volume, V, and actual deliveries, D?

A Right.

Q This equation differs from five in the sense that in place of possible deliveries, you have substituted actual deliveries?

A That's right.

Q Are actual deliveries and possible deliveries correlated?

A Yes, certainly very highly correlated.

Q Well, beyond being correlated, is there a functional relationship between them?

A Yes.

Q And what is that functional relationship?

A Well, that's a very -- it's a complex, exponential form.

Q Well, I didn't mean the somewhat totally blown out exponential form. Let me simplify it a little bit. Are actual deliveries a function of both volume and possible deliveries?

A Yes.

Q So that when you substitute the term D for the term PD in this equation, you are substituting a term that is a function of both PD and volume?

A That's right.

Q So it would be possible to rewrite your equation 5A -- let me just back off for a second here. You could say that D is equal to, in mathematical terms, F(V,PD)?

A You certainly could do that, yeah.

Q Deliveries as a function of volume -- actual deliveries as a function of volume and possible deliveries.

A Yes.

Q And so in 5A, in place of your D expressions, you could substitute the term I just gave F(V,PD)?

A Yes, that is an alternative approach, clearly, to doing this analysis.

Q And that would reflect the fact that volumes and possible deliveries explain actual deliveries?

A Yes.

Q I refer you now to page 26, line 7. You refer there to an equation from Crowder, the term BV minus CV squared. And you state that it defines actual deliveries as simply that term.

A Right.

Q You go on to say that actual deliveries are stop dependent not just on volume but on possible deliveries, is that correct?

A Right.

Q Is that your interpretation of what that term represents in Crowder's testimony?

A Yes. It's -- I lay it out more explicitly on line 20, page 24 of my testimony, but I didn't see actual deliveries -- I see Witness Crowder defining actual

deliveries as a function strictly of volume.

Q Is it your understanding from her testimony that that was her intent?

A That is just the way the equation reads. I don't know what she was intending.

Q But that's your understanding, your interpretation of what she was doing with that equation?

A Right.

Q And what that equation represented.

MR. COOPER: Just for clarification of the record, is the question how to interpret the capital D in the equation?

MR. McLAUGHLIN: The question -- he is basically stating -- the question, is this your understanding of what Crowder's term represents?

MR. COOPER: And the term is the capital D term?

MR. McLAUGHLIN: It is the BV minus CV squared.

MR. COOPER: Okay.

BY MR. McLAUGHLIN:

Q In particular, is it your assumption that that ignores the effect of possible deliveries with respect to actual deliveries?

A That was my interpretation of it.

Q I'd like to refer you to an entirely different subject, which is your discussion of rural carrier costs in

your testimony. To do the rural carrier cost analysis, there are several different databases that come into play; is that correct?

A Yes.

Q One is the national mail count data?

A Yes.

Q That's basically the data collection that is used for purposes of determining carrier pay; is that correct?

A Yes.

Q Another source of data is the rural carrier cost system?

A Yes.

Q Is it correct that the national mail count data does not contain information by sub-class because it's really used primarily for pay purposes as opposed to a costing type purpose?

A Yes.

Q On the other hand, is it correct that the rural carrier cost system does not separately identify delivered letters from delivery point sequence and sector segment letters?

A That's correct.

Q Basically, you have to, one way or the other, no matter who does this analysis, there has to be some way of adjusting for the fact that you have several different

databases, none of which by themselves give you all the information you need?

A That's right.

Q The question then is how to best go about coming up with the most reasonable result?

A Sure.

Q Using what may be imperfect data? It's a situation we often face in postal ratemaking?

A Sure.

Q Now I'd like to talk first about your distribution key. This is the distribution key that you used to actually distribute the costs, rural carrier costs, to the sub-classes.

Where is your distribution key workpaper? Would that be -- is that W/S 10.0.3?

A That's certainly the start of the workpapers.

Q Basically, here is where you try to make adjustments, various adjustments, but for example, one adjustment is an adjustment for delivery point sequence and sector segment mail that's within letter mail categories?

A Well, worksheet 10.0.3 is focusing exclusively on the letters/flats adjustment. This particular worksheet does not yet address the issue of what portion of total letters is letters only versus DPS sector segment letters.

Q On 10.3, there is a column labeled post adjusted

DPS/sector segment.

A Okay. I was just on the first page.

Q I'm sorry. I'm on page two.

A If you go to the next page, sure. Could you tell me again where you are?

Q Well, if you go to the third from the right column, it says post adjusted DPS/sector segment.

A Sure.

Q That is where you make adjustments to try to break out the cost effects of the sector segment and DPS mail volume in terms of their effects on the costs?

A That's right.

Q What is the source for these adjustments?

A The source is the rural CCS.

Q That's the source for the adjustments?

A Right. The issue here is we have done the adjustment to the letters. We now have a letters percentage, a total letters percentage for rural CCS that is roughly the same as the total letters percentage from the rural mail counts.

Q Looking on that worksheet, 10.0.3, one thing I was struck by, if you go down to bulk rate carrier route, it shows a zero adjustment for DPS/sector segment; do you see that? Is that correct?

A Uh-huh; that's right.

Q Why is there a zero adjustment there?

A According to the information I was given, no part of that is considered DPS or sector segment mail.

Q Is that your understanding, that there is no carrier route or ECR mail that is DPS or sector segment processed?

A Those are the numbers that I was given.

Q Those were the numbers that you were given but do you think that is -- does that comport with your understanding or do you have any understanding?

A Well, I think carrier route presorted mail generally does not go through DPS.

Q Is that your understanding?

A Well, I'm not an operations expert. These are simply the numbers that we were given.

Q Do you know if within ECR there's an automation letter category?

A Yes.

Q That is mail that is pre-bar coded?

A Yes.

Q Why would the Postal Service have a pre-bar coded ECR letter mail category if it wasn't intending to use DPS processing on that mail? This is for carrier route letters.

A I don't know.

Q Do you know whether in the IOCS data, there are a

significant amount of costs shown for remote bar coding, remote encoding of ECR mail?

A I'm not familiar with that.

Q Do you know what remote encoding is?

A Yes, the remote bar code system; sure.

Q Why would the Postal Service put bar codes on non-automated ECR mail?

A Again this is running far afield from my testimony.

Q Well, I think my problem is that -- well, let me just -- the data source that you have says in essence as far as you know that there is no ECR letter mail that is DPS processed?

A I am not sure. Where my analysis ended was simply in receiving these percentages from the operations people and I used those percentages to remove certain amounts of letter mail and put them into the DPS sector segment column.

I should point out that the alternative measure of the percentage of total letters plus DPS sector segment that it has been proposed by other witnesses -- at least one other witness -- has only a very slightly higher percentage going to DPS sector segment, an amount that has virtually no impact on any costs.

Q Well, let's follow this a little further though.

There is some -- are you aware that there is

testimony in this record concerning Postal Service's operational objectives to process ECR, both pre-barcoded and non-pre-barcoded, non-automated ECR letter mail in the DPS system, that that is one of their operational objectives?

A Again this is outside the scope of my testimony.

Q Well --

A At this point all I am doing is taking percentages that were given to me by operations people.

Q Okay. Let me just, rather than go through cross examination exhibits, let me just refer you to "Testimony of Ralph Moden," in this proceeding, USPS-T-4. This is page 8 of his testimony.

If you'd like I can at least show the witness and the counsel this. If the Commissioners would like to see it as well, I can do that. It's in the record obviously -- USPS-T-4, page 8.

I would like to refer you to lines 15 through 19.

Witness Moden states, "Our delivery units have worked closely with the plants to increase the amount of DPS mail. They have worked together to identify and capture bundles of non-barcoded, enhanced carrier route (ECR) basic letters in order to barcode them at the plant. By so doing, they have been able to incorporate these pieces into the carrier's DPS mail, thus eliminating the need for manual casing." Do you see that?

A Yes.

Q You certainly don't have any reason to doubt that statement, do you?

A I have no reason to make any judgment on the statement.

Q Do you know whether this is also addressed, this objective is also addressed in MC-95 but Witness Pajunas? -- specifically the program to have carrier route and even walk sequenced presorted letter mail -- processed through DPS whenever possible?

A No. I'm not familiar with this testimony.

Q If he did say that, you wouldn't have any reason again to doubt or disbelieve what he had said?

A Well, what I'm hearing is significant evidence that some portion of the bulk rate regular carrier route letter, post adjusted letter, should have been moved over into the DPS sector segment column. And I were going to say that I've seen testimony that actually does that, and it has just a minimal impact on any of these costing -- any of the cost allocations or the cost per piece or the end results.

Q What analyses are you referring to?

A Well, Witness Glick for example recommends using the DPS sector segment percentage produced by the rural mail counts as a means of determining how much of this post adjusted letter should be moved into the DPS sector segment

column, and it's slightly different than what is shown on page 2 of worksheet 10.0.3. I mean, he --

Q Did you in any use Library Reference H-129?

A I don't recall -- which is that?

Q This is library reference -- the title to it is DPS Volumes and Savings by Subclass and Category.

A Let's see what I referred to in my testimony.

Q Let me hand you a copy of two pages from that library reference.

MR. McLAUGHLIN: Mr. Chairman, I'm not sure I know the evidentiary status of LR H-129 and whether it is in the record or not. I suspect it is in the record, because it's surely used by other Postal Service witnesses in the costing. If it's not in the record, we obviously don't have a sponsoring witness, but I would at least intend to mark this as a cross-examination exhibit. And we'll call this Advo-BXE-2.

[Cross-Examination Exhibit ADVO-BXE-2 was marked for identification.]

THE WITNESS: What I'm relying on is Witness Joe Alexandrovich's testimony.

BY MR. McLAUGHLIN:

Q Well, what I'm trying --

A USPS-T-5. I'm not an expert to the extent there's

any conflict. All I can say is that Witness Alexandrovich is the official base year testimony.

Q Well, what I'm trying to get at is the -- I'm not sure whether it's the word "reliability," but the correctness of the analysis that you've done. And I understand that you must sometimes rely on data from other sources, but you do in fact use those data, and I'm just simply trying to test them.

Let -- are you at all familiar with Library Reference H-129?

A No.

Q Let me just represent to you that this represents test year percentages DPS mail for Standard A Regular and Standard A Nonprofit and Periodicals. Do you see those captions on the documents?

A Which one are you referring to?

Q Well, there's a -- the first one is page I believe it's either 1-8 or I-8. At the very bottom it has a handwritten number 11. And the next page is --

A Oh, okay. Sure.

Q Either 1-8 or -- 1-9 or I-9 and at the bottom it has a page 12 handwritten.

A Yes.

Q The first of those pages is Standard A Regular average DPS percentage, and the second is Standard A

Nonprofit and Periodicals average DPS percentage.

A Which page are you on?

Q Well, let's just stick with the first page, the one that has the handwritten number 11 at the bottom.

A Okay.

Q Do you see the figure 48 percent?

A Uh-huh.

Q Do you see that?

A Yes.

Q Do you see on here anywhere a figure for non-pre-bar-coded enhanced carrier route mail?

A Not on page 11.

Q But to the extent that other witnesses have testified that the Postal Service does, indeed, have a program of DPS sequencing, non-automated carrier route letter mail whenever they can, there would normally be some positive number for that, as well. Would that be correct? We don't know what that percentage is, but there must be a positive number if, in fact, the Postal Service is DPS-sequencing and has been DPS-sequencing non-automated carrier route letters.

A Okay. But you said these are test year?

Q This is test year, yes.

A Okay.

Q I thought I had a question pending, or were you

still thinking?

A Yes. Why don't you rephrase the question?

Q The library reference I showed you does not show a number -- in fact, doesn't even mention non-pre-bar-coded, non-automated ECR letter mail. I should say -- excuse me. Let me rephrase that. It does not include non-pre-bar-coded ECR mail -- is that correct? -- letter mail.

A I don't see it here.

Q Yes. To the extent that there is, in fact, pursuant to the Postal Service's objectives, DPS bar-coding and sequencing and processing of non-automated ECR letter mail, there would be a positive number there, as well. It wouldn't be --

A Sure.

Q -- not shown or zero.

A Sure.

Q You mentioned earlier some other analyses by other parties that the percentage of DPS was small. Do you recall the period from which those estimates were derived?

A These estimates are derived from the FY 1996 rural mail counts that were conducted in pay periods 20 and 21 of FY '96.

Q Are you talking about -- which counts are you talking about now?

A The rural mail counts that were conducted in --

Q The national mail count.

A Yes, the national mail counts.

Q The national mail count does not breakout volumes by class, does it?

A No. I thought you were getting at DPS versus regular letters.

Q Yes, but that doesn't break it out by class.

A No, that's correct.

Q Where do your percentages of DPS mail by class come from? What time period?

A I have to check my testimony. From the MC95-1 USPS-T-7.

Q And what period of time was that, in turn, based on?

A I don't know.

Q It would have necessarily have pre-dated 1995, wouldn't it?

A Yes.

Q Would the record reflect what period that was from?

A Presumably the record -- this particular Library Reference would. I mean this particular citation, which is to USPS-T-7.

Q That is from MC-95-1?

A Right.

Q Now to the extent that in your distribution keys -- let's see, your distribution keys are actually on your worksheet 10.1.1, is that correct?

Well, excuse me. That is not -- let's take a look at 10.0.3 -- your worksheet 10.0.3.

A Okay.

Q To the extent that there is an understatement of DPS'd volume in enhanced carrier route, there would therefore be an overstatement of the volume of delivered letters, is that correct?

A I'm sorry. Say that again, please?

Q To the extent that there is an understatement of the percentage of DPS'd volume, which in this case is zero, in your analysis --

A Right.

Q -- there would be an overstatement of the percentage of delivered letters.

A Correct.

Q I would just like to understand exactly how your mechanism works in your exhibits I refer you to page 5 of USPS-RT-1A, which is listed as Worksheet 10.1.1.

A Okay.

Q Now this is -- the data here is based on route evaluation data from the National Mail Count, is that correct?

A In part, yes.

Q Okay. There is a column called average value. It is the first column after all of the descriptions of the different kinds of deliveries.

Does that represent National Mail Count volumes?

A Yes, those are derived from the pay period 20 and 21 National Mail Counts.

Q Okay. The column after that, evaluation factor, that is the basis upon which carriers are actually paid, is it not?

A It factors into the pay, yes.

Q Yes. It is -- yes I should say it is a factor in the pay.

A Yes, it is.

Q And that evaluation factor is expressed in terms of minutes per piece?

A Correct.

Q So if there is a category that says 4.00, that means four minutes per piece or whatever --

A Right. Right.

Q -- so then what you have done there is you multiply the total volumes in the first column times the minutes per piece and you get a column called Unadjusted. That represents in terms of units total minutes, is that correct?

A Right. You are multiplying minutes per piece by average pieces per route per week, so what you said is correct, yes.

Q And then after you do various adjustments, that develops a distribution key for you over on the right-hand side, is that correct?

A Correct.

Q Now I'd like to refer you to the next page of your USPS-RT-1A, page 6.

This is where you do your distributions to classes of mail, is that correct?

A Correct.

Q And there again on line 17 of that exhibit is the listing for bulk rate regular carrier route presort and if you go down to the column DPS/Sector Segment -- I believe it is column 7 -- the number shown there is zero?

A Correct. That's right.

Q And that is a function of the zero that we discussed previously over on Worksheet 10.0.3?

A Right.

Q Which is page 3 of your Exhibit RT-1A -- is that correct?

A Yes, that's correct.

Q I'd like to now refer you to page 40 of your testimony. There you have a Table 1, which compares costs

distributed per piece and the evaluation allowance cost per piece.

A Right.

Q After removing DPS and sector segment volumes from letters delivered?

A Uh-huh.

Q Now, I'm not going to at this point go back to the issue raised earlier about whether or not DPS volumes are correctly estimated for carrier route mail, enhanced carrier route mail, and for this purpose, just take the analysis that you have done at its face value.

A Uh-huh.

Q The column labeled -- this is on your Table 1 -- the column labeled costs distributed per piece, that represents the actual allocation and distribution of rural carrier costs through your methodology?

A Correct.

Q The column just to the right of that called the evaluation allowance cost per piece, does this represent the cost per piece based on the evaluation allowance upon which carriers' pay is based?

A It's the evaluation factor.

Q Expressed in cents though? The evaluation factor itself as expressed in terms of minutes per piece; is that right?

A Right.

Q So the minutes per piece is converted through the average wage into a cents per piece?

A That's correct.

Q The 2.78 cents for letters delivered is in a sense what the carriers actually -- it could be viewed in a sense as what the carriers actually get paid for that portion of their activity?

A It's a component.

Q I understand that carrier pay includes other factors, but this is in fact an input factor into the pay they get?

A Yes, it is.

Q Their pay is based on these numbers plus some other separate numbers that go into their total pay?

A Yes.

Q For letters delivered, you show that the cost that you distribute are 13.8 percent greater than the evaluation allowance?

A That's right.

Q Or what the carriers' pay is based on for that activity?

A That's right.

Q And the same for flats, it's 15.3 percent?

A Correct.

Q Now, we notice that this chart -- this table just showed letters delivered and flats delivered and it does not show DPS/sector segment.

A That's correct.

Q Is it possible to construct similar numbers for DPS/sector segment?

A Yes, in fact, I received an exhibit that did just that.

Q Did you receive that from me through your counsel?

A Yes, I did. I was just telling you that you gave it to me before.

Q What I've handed you is actually six pages marked Advo-RXE-1 through RXE-6. Let's take a look at the first page of that, which shows calculations that are intended to derive an evaluation unit cost for DPS/sector segment mail. That would be comparable to the evaluation allowance cost that you show in your Table 1?

A Uh-huh.

Q It shows -- the calculations show a cost of 1.34 cents. Do you see that?

A That would be the cost per piece based on the evaluation factor; correct.

Q Down below that, based, I believe, on the approach that you have used for the other items, there is a calculation of DPS allocated/distributed cost per piece.

A Right.

Q Which is comparable in its concept to your column, costs distributed per piece in your Table 1; is that correct?

A You are just saying the 1.29 cents for DPS/sector segment is comparable to my costs distributed per piece in Table 1?

Q In other words, if you had added a third category in your Table 1 --

A Third row, yes.

Q In your DPS/sector segment, would the 1.29 cents be an appropriate figure for that?

A Yes, it would appear right under the 5.73 in that table.

Q In terms of -- if you turn to the second page, Advo-RXE-2, this in terms of its first two columns is just a reproduction of your Table 1, the letters delivered and flats delivered; is that correct?

A Now you are at part two of Advo?

Q That's right, Advo-RXE-2.

A Okay. And what are you saying again?

Q The first two categories or rows --

A Yes.

Q -- are exactly the same as in your Table 1.

A Sure. Sure.

Q And the third row is just reflecting the numbers that we just dealt with on the previous first page?

A Correct.

Q And it shows that, in contrast to the letters delivered and flats delivered figures, where there is a significant mark-up over evaluated allowance cost per piece, that for DPS letters, there is a markdown. In other words, the allocated distributed cost per piece is less than the evaluation allowance.

A That's right.

Q Do you believe that to be an outcome that you would hope to find in terms of establishing costs or is that something that you would prefer not to have a cost developed that is less than the cost upon which the carriers are actually paid?

A I certainly think that it would be preferable if we found that the distributed cost per piece generally exceeded the evaluation cost per piece, as is the case for letters delivered and flats delivered. I think that is certainly a cause for concern.

Q And wouldn't you prefer to have, I guess in the ideal world, prefer to have mark-ups above evaluated cost that were roughly comparable, not necessarily identical, --

A Sure.

Q -- but roughly comparable for all three categories

of mail?

A Not only these three, but the other ten --

Q Right.

A -- variable evaluation categories. It certainly would be preferable.

Q Now, in the remaining tables, remaining exhibits, pages, ADVO-RXE-3 through 6, do you have these? I guess we gave those to you a couple of days ago.

A Yesterday, I got them.

Q Oh, well, I think at least 24 hours have passed. Is it your understanding that these develop an alternative manner of distributing volumes based on national mail count volume proportions, as opposed to the specific approach you adopted?

A Yes.

Q Were you able to follow through in concept with what is shown in those exhibits in terms of -- for example, over on page 4, the adjustment there of DPS costs with worksheet 10.0.3 volumes added, --

A Oh, okay.

Q -- and other volumes redistributed on the basis of national mail count volume proportions?

A Okay. Are you on part 3?

Q I'm on part 4 at the moment.

A Okay. Sorry. Okay.

Okay. My understanding of what you are doing in part 4 is you are splitting out total letters. You are splitting out the total of letters plus DPS sector segment differently than we split it out, that's my understanding. Your total -- in this particular part, your total letters delivered plus DPS sector segment is the same as what we are getting.

Q That's correct.

A But the only different then is that you are splitting out the total letters plus -- the total regular letters plus DPS sector segment into the two components, letters only and DPS sector segment only, differently than we split it out.

Q Yeah.

A Okay.

Q And, in fact, the objective in any kind of a costing exercise should be to try to get reasonable results and we are faced in this situation with what we talked about the outset, different data bases, neither one of which gets you all the way there, which have some inconsistencies between them, and trying to figure out a distribution means using those available data to produce a result that seems reasonable. Is that -- would that seem to be a good objective in that sense?

A Sure.

Q Okay.

A Sure. I also note that what you show for fast flats delivered is again equal to what we are showing.

Q Yeah. Now, then if you follow on through all the way to ADVO-RXE-6, this basically is extending that analysis using the -- having the rural carrier cost system letter and flat volumes redistributed on the basis of the national mail count volume proportions. Do you see that?

A Correct.

Q Now, on that part 6, if you look at the -- first of all, do you have any questions concerning the math that was done there or -- I know you didn't have a whole lot of time to look over it.

A Well, part 6 is derived from part 5, and I do have concerns about part 5. I don't know if you were going to get back to that anyway.

Q Well, if you have a question, let's go ahead and address it.

A If you go back to part 5A, this is where -- it is my understanding that you are coming up with different, not only different splits between DPS sector segment and regular letters for the letters category, but you are also coming up with different splits between total letters and total flats compared to what we did. Okay.

Q And that is based on using the national mail count

volume proportions?

A Right. So, my understanding of the purpose of Part 5, Table A, is that you want to use the national mail count percent letters and the national mail count percent flats to do the adjustment to the RCCS amount.

Q Yes. And in fact, if you look at the national mail count volume percentages shown in Part A of that ADVO-RXE-5 --

A Uh-huh.

Q -- they do differ from the Part B right below it, which is the RCCS --

A Right. Yes.

Q -- but on the other hand, they are reasonably close.

A That's right.

Q It isn't like these numbers are dramatically different from one another, are they?

A That's right. We both start with about 69 percent of the total letters plus flats volume in RCCS, rural carrier cost system, to be letters, and we're both adjusting that 69 percent downward.

In our case, we go down 59 percent, and in your case, you're going down 58 percent. So, there's only less than 1 -- about a 1-percent difference after the adjustment.

Q Now, let's turn, then, to the last page,

ADVO-RXE-6.

A Well, let me just point out my concern with Table 5-A. I think a mistake has been made in this table. I think I understand what you're trying to do, but I think you did it incorrectly.

You will notice that your percentages -- your percentage for letters delivered, 45.09, and your percentage for total DPS sector segment letters, 13.27 -- those sum to 58.36 percent?

In fact, the national mail count percentage is 58.01 percent, and the reason that mistake was made was that this particular Table 5-A failed to account for the fact that there are about five times more evaluated routes than there are other routes.

In other words, you failed to weight the numbers that you're showing in Table 5-A to account for the much greater number of evaluated routes compared to other routes.

I think that can be corrected, and I've actually attempted to make that correction, and you can still make the point you're making.

Q Okay.

A But --

Q Well, in other words, that is something that is -- in terms of the methodology, would you consider that to be a relatively minor refinement as opposed to a major --

A Well, that's my initial -- very preliminary. I think that that might be the case, but it requires some amount of further study to see just how critical this mistake was.

Q Well, let's go on, then, to Part 6, ADVO-RXE-6, which does use those numbers from page 5 and the redistributions that were described therein.

In terms of the -- what I will here call the mark-up --

A Uh-huh.

Q -- of the actual allocated cost compared to the evaluated allowance that the carriers' pay is based on, it comes up with what I'll call cost coverages or margins of 11.5 percent for letters delivered, 12.9 percent for flats delivered, and 9 percent for DPS.

A Okay. You're in the column furthest to the right on Table 6?

Q That's right.

A 11.1, 12.9, 8.9? Are those the numbers you just cited? I was catching up with you.

Q There was a change in one of those numbers here.

A It should be 11.5. I'm looking at the wrong one.

Q Oh, I think you may be looking at the one that --

A Yes.

Q -- before the one I gave you this morning.

A Looking at your corrected one, I'm seeing 11.5, 12.9, and 9?

Q That's correct.

A Okay. I'm with you.

Q Now, putting aside the math and just looking at the end result in terms of where you would like to come in terms of a margin over evaluated costs, would you find that this relationship of margins here is certainly a better outcome from that standpoint than the one that we talked about on page 2 of this exhibit based on your actual results which showed a negative margin for DPS?

I'm not talking about the actual numbers, just in terms of the kind of outcome you would like to see in looking for a reasonable cost relationship.

A I think, as a general goal, we would prefer to see the ratios of distributed cost per piece to evaluation factor cost per piece to be roughly comparable across all the evaluation categories, and this certainly accomplishes that, but I am very concerned about how that was achieved in this case.

Q Is that because of that one aspect that you just mentioned on --

A That's one concern, the mistake in Table 5 -- I mean Part 5, Table A. I haven't worked that out, given the lack of time, and I'm still concerned about that mistake.

But there's a second problem that is of even greater concern to me, which is that what you have, in effect, done here is extended the traditional flats adjustment process to include DPS sector segment, and I don't know that that's justified given the purpose of that entire flats adjustment procedure.

Q Well, let's go back to the Exhibit 2, ADVO-RXE-2.

A Okay.

Q If your methodology comes up with that negative coverage, negative margin, for DPS letters, you I believe have indicated that that is not the kind of an outcome that you as a costing person would like to see and you would like to see margins over allocated costs that are roughly comparable for all three of those categories and all positive?

A Right, but it's one thing to say that that is nice to have as a general goal. It is another thing to say that achieving it the way you have achieved it is not causing more problems than it solves.

Q Well, in terms of causing problems, is -- we have several problems ourselves in the sense that there appears to be a problem with the proportions of DPS Enhanced Carrier Route mail that have been used.

In addition, if you use an allocated cost that is too low for DPS mail, you may produce costs that are too

high, unit costs that are too high for non-DPS mail, and that that can have significant cost implications for subclasses, can it not?

A That's true, but there's a big contradiction in what you have been arguing the last half-hour here. In your suggestion that some of the carrier route letters should be moving over into DPS Sector Segment, if that is done that is going to further reduce the distributed cost per piece for DPS Sector Segment and bring it back below the evaluation factor cost per piece, defeating the whole purpose of this exhibit.

Q Well, isn't there a further problem here, that in terms of the overall -- let me just ask you from the standpoint of the overall DPS figures that you have used, do those figures relate exclusively to mail that is delivered on rural routes?

A I really don't know. I don't know.

Q Isn't it the case that the figures that you have used are systemwide figures --

A I believe so.

Q -- that represent average or the totality of rural plus city delivery combined?

A I think so. I would have to verify that.

Q If that is not correct -- will you in fact verify that?

A Sure. But the point is that if we move some of this carrier route letter mail into the DPS Sector Segment column it's just going to offset what you are trying to achieve in this exhibit, and we are going to end up back where we started from.

I mean one is just going to offset the other and you are going to end up pretty much back where the U.S. Postal Service position is.

That is verified by the fact that Witness Glick in his testimony is recommending you go in the same direction that this exhibit is going in that he is showing a smaller percentage DPS Sector Segment based on the rural mail counts than we are showing based on the rural CCS, so again whatever you move out using all these figures that you cited from testimonies I am not familiar with, whatever you move from letters delivered into DPS Sector Segment both Witness Glick and your own -- assuming this is your exhibit -- are moving back out.

Q Well, in terms of the ECR volume, even at those, even at higher percentages, wouldn't there be a more significant effect on the volume distribution as opposed to the effect on the evaluated cost?

A I am not sure I follow. Could you restate that?

Q Let me try that.

You are assuming that those two effects would

cancel out, is that correct?

A Well, I am just saying the simple logic that if you in an attempt to correct one perceived error move more letters, more pieces from letters delivered into DPS Sector Segment and then a little while later, as you are doing in this exhibit, move letters back out of DPS Sector Segment into letters, I think that speaks for itself.

Q Does it make sense to have a -- under any circumstance, to have a DPS allocated -- a cost allocated to DPS mail that is less than the evaluation allowance for that mail that represents the basis upon which carriers are actually getting paid for handling that mail?

A Well, that's a tougher question. You mean -- this situation has existed for a long, long time, and this isn't the only variable evaluation fact category in which you find that happening. I mean, this is something we've been living with going back at least to R90 is not before.

As I said earlier, it certainly would be preferable as a general broad objective that in all ten variable evaluation factors or categories the ratio of distributed cost per piece to the allowance factor cost per piece would be the same, and the first would be higher than the second. But to achieve that objective I think would require a quite radical change to this whole distribution methodology that frankly no one has really considered

including for example Witness Glick. He opened the door to this, but he didn't pursue it.

Q Well, you do agree that there is a problem with the distribution of rural carrier costs and that there may not be a -- what you call a perfect solution. Is that correct?

A Well, I think that's a good point, that what we have now might well be the best system given all of these conflicting concerns, that if we were to try to move to a system in which the distributed costs per piece exceeded the evaluation factor costs per piece in all of the evaluation categories, number 1, and by the same percentage markup, we may not like the end result of that. I mean, this is something that at the very least deserves a lot more thought and study to see if it's even doable and then to see if what we end up with is actually better than what we have now.

Q Well, what I'm focusing on, though, is what you've done in your rebuttal testimony. When you say what we're doing now might be the best you can do, are you referring to what the Postal Service had in its direct case or what you have in your rebuttal case?

A I'm talking about the rebuttal, because the purpose of the rebuttal was strictly to correct the mistake that was -- and it wasn't in my direct testimony. I believe it was in the Alexandrovich testimony. It was the mistake

of failing to remove any DPS sector segment pieces from the letters delivered category. I think that was the very limited concern we had. There was no problem with the flats adjustment. And that once that -- once that correction was made and we moved what we believed the right amount of pieces from letters delivered to DPS sector segment that that mistake was corrected and we now have a good cost distribution.

Whether there can be something done better in the future moving along the directions that you're suggesting, that's possible, but it's equally possible that we'll find out that the cure is worse than the problem. The problem isn't that serious.

MR. McLAUGHLIN: I have no further questions.

CHAIRMAN GLEIMAN: Mr. Gold, can you give me an idea of how much you've got?

MR. GOLD: Stephen Gold for MPA.

CHAIRMAN GLEIMAN: Can you give me an idea of how much --

MR. GOLD: Yes, Mr. Chairman, I'm both delighted and disappointed to announce that because Mr. McLaughlin did such a wonderful job, I only have a few followup questions. But I'm also disappointed that I had to wait here all day to do this.

CHAIRMAN GLEIMAN: My heart goes out to you, sir.

[Laughter.]

CHAIRMAN GLEIMAN: I just, you know, I can't begin to tell you how badly I feel that you had to wait all day.

Well, if you only have a very few followup questions, then let's move on with this witness.

CROSS EXAMINATION

BY MR. GOLD:

Q Good evening, Mr. Baron.

A Good evening.

Q Earlier, Mr. McLaughlin showed you Library Reference H-129.

A Uh-huh.

Q Is that correct?

A Yes, I still have that.

Q And do you have page 19 from that document?

A Yes.

Q And where it says periodicals, 57.33 percent -- do you see that?

A Uh-huh.

Q And isn't it true that, in your exhibits, you show no periodicals that are DPS'd? If you look at your work-sheet, 10.0.3, I believe.

A Hold on.

Q Well, actually, 10.1.2, page 1 of 4 -- Mr. McLaughlin discussed the carrier route column.

A Uh-huh.

Q You showed zero. And for periodicals, second-class mail, you also show zero. Is that correct? For DPS --

A Right.

Q -- segment?

A Again, that's just following the Alexander Vitch work-papers.

Q And just to sum up, would you turn to Table 1 of your testimony on page 40?

A Okay.

Q And you had an extensive discussion with Mr. McLaughlin about the DPS and the segment volumes, did you not?

A Yes.

Q Would you agree that, if your DPS and segment volumes are wrong, then the letters delivered volume would be wrong?

A Right.

Q And if that were wrong, then the 13.8-percent difference would also be wrong, would it not?

A Right.

MR. GOLD: No further questions.

CHAIRMAN GLEIMAN: Follow-up?

[No response.]

CHAIRMAN GLEIMAN: Questions from the bench?

[No response.]

CHAIRMAN GLEIMAN: Would you like some time with your witness to prepare for redirect?

MR. COOPER: Yes, sir.

CHAIRMAN GLEIMAN: Well, you can have 15 minutes.

MR. COOPER: Thank you.

CHAIRMAN GLEIMAN: And just don't tell Mr. Tidwell that I gave you that much time.

I just want to mention, it's obvious that, unless cross examination for the other witnesses yet to come this evening is very short, that we're going to be here for quite a while.

We have a new garage management company. I don't know what the new rules are and have been unable to ascertain them. The old rules were that, if you had a car in the garage, you ought to pay by seven o'clock or else you were going to have a hard time getting it out.

We will take another break before then, I'm sure, but I just wanted to mention to everybody that, if you do have a car downstairs that you haven't paid for, that you might want to make arrangements, either during this break or the next break.

Thank you.

[Recess.]

CHAIRMAN GLEIMAN: Well, while we're waiting for Postal Service counsel and witness to get back, just let me say that I have tracked down the updated information on the garage and we can go into our slowdown mode now we have until 10:00 o'clock to pick up our car keys tonight. So there is no need for anybody to rush.

Mr. Cooper.

MR. COOPER: I just have a couple of questions.

REDIRECT EXAMINATION

BY MR. COOPER:

Q Mr. Baron, in discussing the Cross-Examination Exhibits presented to you by counsel for Advo, you expressed a concern about the page 6 or part 6 adjustment. You alluded to a mistake in part 5, and you also said there was an inconsistency with the existing flat adjustment procedure. Can you tell me what the purpose of the existing flat adjustment is?

A My understanding is that it is addressing a problem that is unique to letters delivered and flats delivered. And the problem is as follows, in the rural CCS system, there is a particular definition of letters and a particular definition of flats, and there is a different definition of letters and flats in the rural mail count system.

The result of that is there are a certain

percentage of the rural CCS pieces, that rural CCS calls letters, that have a dimension that qualified those same pieces as flats under the rural mail count system. So we have a basic difference in definition of dimensionality, and that is the reason we do this flats adjustment in the sense of, where you start out with about 69 percent of the rural CCS pieces being letters, we reduce that down to around to 58 to 59 percent, which is in line with the percentage of letters according to the rural mail counts, and that is strictly to account for this difference in the dimensionality concept.

What the part 5, Table A, in the Advo Exhibit suggests is to do a comparable type of adjustment for regular letters versus DPS sector segment letters within the entire letters group.

The problem I have with extending this adjustment process to the regular letters versus DPS sector segment issue is that we don't, to my knowledge, have the same issue of difference in definition between the two systems. So far as I know, the rural mail count system does not define letters and DPS sector segment, either one, differently than does the rural CCS system. So you don't have this basic definition discrepancy between the rural mail count system and the rural CCS system with respect to regular letters and DPS sector segment letters as you do between the

corresponding issue of total letters versus total flats.

So the whole basis for this flats adjustment or mail shape adjustment that warrants conducting that adjustment for total letters versus total flats doesn't seem to apply to the question of regular letters versus DPS sector segment letters within the letters group, and that seems to undermine the whole approach being applied in part 5 -- and, for that matter, part 6, of the Advo Exhibit.

Because what that exhibit is doing is saying, well, we have got to make the RCCS percentage in line with the RMC percentage as far as regular letters versus DPS sector segment letters is concerned. And so the whole basis for doing that seems somewhat -- somewhat dubious.

MR. COOPER: I have no further questions.

CHAIRMAN GLEIMAN: Recross?

RECROSS-EXAMINATION

BY MR. McLAUGHLIN:

Q In terms of the regular letters versus -- delivered letters versus sector segment and DPS letters, you are using the national mail count data. That is just proportionalizing those numbers, is that correct?

A I am not sure what you mean.

Q You wouldn't necessarily be actually shifting volumes out of DPS into delivery, would you?

MR. COOPER: I fail to see the relation of this to

my redirect, so I object, that it is beyond the scope of my redirect.

MR. McLAUGHLIN: Well, I believe he was just talking about the fact that the adjustment on page 5 is -- I am not quite sure how he described it. That it was not needed and not necessary.

THE WITNESS: The justification for it doesn't seem to be there. What you are doing in the part 5, Table A, is you are saying, within the letters group, according to RCCS, 25 percent of the total letters are DPS sector segment. That's according to RCCS. According to the rural mail counts, about 23 percent of total letters is DPS sector segment and, therefore, you are going to adjust the RCCS percentage down from 25 percent to 23 percent, similarly to the way that we adjust the total letters percentage relative to flats down from 69 to about 58 percent.

BY MR. McLAUGHLIN:

Q Are you saying that the RCCS gives you the breakout of sector segment and DPS letters?

A Yeah, it is giving us about 25 percent.

Q The RCCS is doing that?

A Well, not the RCCS, but the RCCS supplemented with the percentages that we have been given from --

Q But that is unrelated, those percentages are unrelated to the RCCS --

A No, they're not, because they are based on individual mail subclasses. Whereas, the 23 percent that applies to the rural mail counts has no relationship to individual mail subclasses.

Q Well, doesn't that figure that you were just talking about, the 25 percent, produce too much volume in relation to the -- of DPS mail in relation to what shows up in the rural mail count?

A Sure. But -- it seems strange that you are asking that since earlier you were concerned that not enough -- that there was no carrier route presort in DPS. Now, you are suggesting there's too much in DPS.

Q No, now -- right now, I am talking about the overall figure that comes from the -- in MC. And to the extent that there is too much there, that means that overall, not just carrier route, but for First Class and all the classes, that you may have overestimated, in total, not between subclasses, but in total, the DPS volume and, therefore, when you divide it into the cost, you are getting a lower than should be cost. Is that possible?

A Well, again, you are presuming that the rural mail count measure of total percent DPS is somehow more accurate, and there is no basis for that.

Q The rural mail count is a count of what is actually found on rural routes at least for a period when it

is sampled; is that correct? It's a live mail count of rural delivered mail?

A For only two pay periods.

Q That's right. The information that the DPS data that you used comes from is system-wide and not rural routes; is that correct?

A Right. There's nothing in that that says one is more accurate than the other. My main point is this is not an issue any more about differences in definitions of shape and dimensionality. This is just a question of given all these concerns, which number is more reliable, and it is not at all obvious that the rural mail count percentage of 23 percent is more reliable. You would tend to want to agree with that, given that you think some of that carrier route mail should have been put into DPS.

Q Don't read too much into my question. Let me follow through here. You are implicitly assuming that the percentage of DPS on rural routes is the same as the system average including all of city routes?

A All I'm saying is we have two alternative measures of the DPS percentage. The one that we have been applying to the rural CCS that I've been told is in line with and consistent with the rural CCS is 25 percent. The one that comes from the rural mail counts is 23 percent, which is lower, which would seem to be contradictory to your point

that more mail should be going from letters to DPS.

Q Let me just follow this --

A It seems like you would want to adopt the 25 percent.

Q Don't make those assumptions.

A No, I gave you the basis for what I just said.

Q If it is the case that rural routes in general have less DPS/sector segment proportionally than city routes, for example, it could be possible that the overall figure for rural route volumes could be overstated if you use the figures that you used that are based on system-wide average and that are in fact higher than the DPS percentages that show up in the actual national rural mail count; is that correct?

A That's a possibility with nothing to back it up, whereas the alternative does have something to back it up.

Q And likewise, in terms of those percentages we read, in terms of the proportions between classes, is it possible that the percentages that you used proportionally allocate more DPS to first class than ECR than is in fact the case?

That is the proportions between classes that are being skewed?

A Anything's possible here. We have two alternative data sources. There is uncertainty in both of them. There

is certainly no compelling evidence or anything that I see that establishes the rural mail counts percent DPS/sector segment as more reliable than the percentage that we are using, the 25 percent.

Q Do you know anything about the testimony of other Postal Service operations type witnesses concerning DPS implementation policies and where they would concentrate their efforts on implementing DPS first?

MR. COOPER: I again object on the grounds that this seems to be going beyond the scope of my redirect.

MR. McLAUGHLIN: Mr. Chairman, this is my last question. I don't in fact think --

CHAIRMAN GLEIMAN: How many parts are there to this last question?

MR. McLAUGHLIN: No, this is the last question. I don't in fact think that it is at all beyond the scope of his redirect.

CHAIRMAN GLEIMAN: If this is the last question, proceed.

MR. COOPER: Mr. McLaughlin, if you could restate that last question for the witness.

MR. McLAUGHLIN: Is it possible to read it back? I've lost my train of thought because of Mr. Cooper's interruption.

CHAIRMAN GLEIMAN: Mr. Reporter, can you read that

last question back?

[The reporter read the record as requested.]

THE WITNESS: No.

MR. McLAUGHLIN: No further questions.

CHAIRMAN GLEIMAN: Does anyone have any further recross?

If there is nothing further, Mr. Baron, we want to thank you. We appreciate your appearance here today and your contributions to our record, and if there is nothing further you are excused.

[Witness excused.]

CHAIRMAN GLEIMAN: By agreement of the parties involved, we are going to change the schedule slightly and instead of calling Dr. Bradley as our next witness, we are going to have Jon Steele as our next witness, so Ms. Duchek.

MS. DUCHEK: Thank you, Mr. Chairman. The Postal Service calls Jon Steele to the stand.

Whereupon,

JON M. STEELE,

a rebuttal witness, was called for examination by counsel for the United States Postal Service and, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MS. DUCHEK:

Q Mr. Steele, I am handing you two copies of a

document entitled Rebuttal Testimony of Jon M. Steele on behalf of the United States Postal Service, designated as USPS-RT-8.

Are you familiar with that document?

A I am.

Q Was it prepared by you or under your supervision?

A It was.

Q And does it contain your revisions dated March 10th, 1998?

A It does.

MS. DUCHEK: Thank you. Mr. Chairman, I would ask that the rebuttal testimony of Mr. Steele on behalf of the Postal Service, USPS-RT-8, be entered into evidence, and I will hand two copies to the reporter.

CHAIRMAN GLEIMAN: Are there any objections?

Hearing none, Mr. Steele's testimony and exhibits are received into evidence, and I direct that they be transcribed into the record at this point.

[Rebuttal Testimony and Exhibits of Jon M. Steele, USPS-RT-8, was received into evidence and transcribed into the record.]

USPS-RT-8

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

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

REBUTTAL TESTIMONY OF
JON M. STEELE
ON BEHALF OF
UNITED STATES POSTAL SERVICE

Revised 3/10/98

TABLE OF CONTENTS

I. AUTOBIGRAPHICAL SKETCH

My name is Jon M. Steele, Vice President, Area Operations for the Northeast Area of the United States Postal Service. My duties include the direct management of nine performance clusters located in the Northeast. They range from Buffalo and Albany, NY to seven performance clusters in New England. In total this includes the Springfield Bulk Mail Center, the major Airport Mail Center in Boston, fifteen major processing plants and 2,632 Post Offices. Our annual operating budget is $4.08 Billion, and our annual revenues are $4.5 Billion. I manage through an executive staff of district managers, lead plant managers, and area office executives. They in turn oversee some 75,456 employees, both career and non-career.

Immediately prior to my assignment to the Northeast Area in August, 1996, I served as Vice President, Area Operations, for the Allegheny Area. This area includes several major metropolitan areas with numerous Post Offices and over thirty Processing and Distribution facilities, Bulk Mail Centers, and Airport Mail facilities covering Ohio, Pennsylvania, Delaware, and parts of New Jersey and West Virginia.

I joined the Postal Service in 1962 as a craft employee while supporting myself in college. I interrupted my career for service in the United States Navy, and joined the Post Office Department, Boston Regional Office in 1970. I have

spent my entire postal career in field operations, having served approximately 17 years of that time as a Postmaster, MSC Manager and Division Manager.

For twelve years I served in Springfield, MA as the Division Manager and manager of the Management Sectional Center. My duties included all operations for western Massachusetts and Vermont with over 400 associate offices, plants in both states and the Bulk Mail Center at Springfield. I directly managed the combined Bulk Mail Center and plant in Springfield.

I served as the General Manager in the New Jersey Bulk and International Mail Facility for nearly a year in the 1980's. I've held a variety of positions in District and Area Offices, and have worked extensively on detail in a variety of locations across the nation. I hold a bachelors degree from the University of Massachusetts. In addition, I graduated from the Harvard Advance Management Program and have done graduate work in Business Administration.

II. PURPOSE OF TESTIMONY

My testimony responds to testimony of witness Stralberg and others concerning "automation refugees". Specifically, witness Stralberg alleges "the existence of considerable additional 'not-handling' time in the form of 'automation refugees,' i.e. employees no longer needed in manual letter sorting but still in the system, having been reassigned to the manual operations, particularly opening units, where productivity is least monitored in postal facilities." Tr. 26/13841.

In part III, I describe how this concept is entirely foreign to postal operations. Automation implementation did not create refugees. Postal Management recognized from the beginning that automation would reduce staffing requirements in manual distribution operations and our automation planning ensured that we would avoid having excess career employees.

In part IV, I describe the incentive structure in operations management. In particular, I describe how I manage operations in the Northeast Area so that operations management, from the plant manager to the most junior line supervisor, has every incentive to avoid excess staffing. The system of accountability and incentives is such that there is nowhere to hide hours.

III. AUTOMATION IMPLEMENTATION DID NOT CREATE REFUGEES

A. "Automation Refugee" is not a Familiar Concept in Postal Operations

My managers and I are well aware of the mailing community's concern with postal costs, and the special concern of periodical mailers that their costs appear to be increasing more rapidly than they should be. Until asked to testify in this proceeding, however, I had never heard the expression "automation refugee". Indeed, when my managers and I are listening to our customers and struggling so hard to maintain service while reducing costs, it strikes me as absurd to suggest that there is a pool of excess employees that are not needed to process the mail. Certainly, veteran managers can tell stories of the early days of automation in the 1980s when we weren't sure exactly how to manage this new technology and the complex mail flows it engendered, but I am not aware of anything resembling a systemic problem of "automation refugees" even then. In any case, by 1990 at the latest, operations management had a clear picture of what needed to be done.

B. Postal Planning Accommodated Staff Reductions due to Automation

In the early 1990s, the Postal Service negotiated a series of agreements with the Postal Unions governing Transitional Employees. As Article 7 of the

agreement with the American Postal Workers Union states (see USPS LR-H-88):

> "Transitional employees may be used to cover duty assignments which are due to be eliminated by automation.....The use of transitional employees will be phased out as the deployed automation equipment becomes operationally proficient."

That was our plan.

C. Automation Implementation Avoided Creating Excess Career Employees

The history of the Transitional Employee program demonstrates that we in fact accomplished our plan. I am told that the use of Transitional Employees for clerk and maintenance work in the plants peaked between December, 1993 and June, 1995, with approximately 22,000 on the rolls. The current national total is about 500 in the plants.[1]

IV INCENTIVES AND ACCOUNTABILITY ENCOURAGE ECONOMY

A. Incentives Encourage Staffing Economy

As shown in Exhibit USPS-RT-8A, "FY 98 EVA Variable Pay Program Recommendations", employees exempt from the wage and hour laws receive incentive payments based in equal parts on service performance, personnel

incentive payments based in equal parts on service performance, personnel metrics, and financial performance. In addition, national financial performance determines the size of the overall incentive payment pool.

The Postal Service is divided into geographic areas called Performance Clusters so that the performance of the Post Offices and mail processing plants within each area can be measured collectively. For Performance Cluster employees, the financial performance portion of their score is based 50% on national performance, 25% on their Area performance, and 25% on the achievement of their Performance Cluster. The 257 Processing and Distribution facilities where most mail processing occurs are distributed among the 85 Performance Clusters so that a manager or supervisor at a facility perceives a direct relation between the financial performance of their facility and their personal financial interests.

B. Accountability Encourages Staffing Economy

The idea that one of my plant mangers might be hiding a pool of "automation refugees" is not realistic. Let me explain the pressure they are under to maintain good service and still operate economically. Daily, we review any delayed mail from the previous night and pay special attention to any delayed periodicals. If a plant manager had excess employees, she

[1] These numbers exclude Remote Encoding Centers.

would certainly use them to distribute periodicals and avoid the discussion the next day.

Every Monday afternoon, I have a telephone conference with my District and plant managers to review the raw performance data from the previous week. Each Accounting Period we meet physically and once a Quarter there is a full scale Business Review. The common element in all of these reviews is management of resources with emphasis on reducing the career complement, maximizing effective use of the least costly labor categories, and maintaining service.

It may be useful to describe these meetings in greater detail. Each Monday afternoon the staff, the performance clusters and myself hold a telephone conference to discuss the past week's performance. Key concerns center on total operating expenses, especially salaries and benefits, employee mix, overtime, and revenue. Additionally we discuss the other voices, that is the voice of the customer - service, and the voice of employee - training, safety, complement management etc. The focus of these telephone conferences is on how we did in the past seven days, what we need to do to improve in the coming weeks, and what the outlook is for the rest of the year.

Each accounting period, that is every four weeks, the lead Plant Managers, District Managers, the Area Staff and myself meet for two days, typically here at the Area Office in Windsor. We again focus on how well we

did, but now over the past 4 weeks and year to date, emphasizing any gaps in performance and areas where there is room for improvement. We have hard data available for these meetings and focus on our net income, salaries and benefits, total operating expense, total facility productivity, etc. We also have an opportunity to look at economic value added (EVA) with an eye to as how best to improve performance in all categories. Additionally we spend significant time on the voice of the customer, particularly service, and the voice of the employee, especially safety, training and complement management.

At our quarterly Business Review meetings we meet with the Lead Plant Managers, the District Managers and their direct reports in each Performance Cluster. The meetings with each Performance Cluster typically last about half of a day and we discuss all the above in detail , especially total facility productivities, complement trends, what we need to do to position ourselves to be successful for the rest of the year and how best to service our customers. These are intense and detailed discussions geared to mid-course adjustments to plans and assumptions. Complement trends are most apparent in quarterly data, so complement is always a major element of these discussions. My managers are all sensitive to the significant cost differences between career and non-career employees.

At the conclusion of the year, we wrap up the fifty-two weeks with a focus on how well we did, and what we need to improve on for the coming year.

The point of this narrative is the common thread of discussion – from week, to accounting period, to quarter, to end-of-year – focusing on skillful utilization of resources and the ability to make our budget while providing outstanding service. The key to our success in the United States Postal Service has been focus, attention to detail and planning.

C. The Incentives Extend onto the Plant Floor

In addition to the competitive aspects, incentive awards can be financially significant to the recipients. I am told that in FY 1997 every Performance Cluster made their financial goals and that last December the average supervisor had 9.89% of annual salary credited to her incentive payment account, and 6.67% paid out in cash. Their supervisor, the Plant Manager, has a larger incentive payment opportunity and, as I explained above, substantial encouragement to help his supervisors manage economically.

D. Line Supervisors get the Mail Out, but do it Economically

The Plant Manager and her supervisors work to fulfill the Operating Plan as productively as possible. Productivity in distribution operations is carefully

monitored, but everyone is aware that excess workhours in allied operations such as Opening Units, where there are no effective workload productivity measures, would wipe out hard-won gains in distribution productivity. Witness Stralberg describes Opening Units as the "least monitored". This is the opposite of the truth. Opening Units are usually in a very visible location where they are easily monitored. The Plant Manager and supervisors pass by Opening Units frequently. Any experienced manager can evaluate the workload based on visual inspection and recognize whether it is operating efficiently. If employees wanted to "hang-out", they certainly wouldn't choose Opening Units as the place to do it.

No Plant Manager knows in advance exactly how much mail his facility must process on a given night, exactly when it will arrive, or precisely how many of his employees will show up for work. But, supervisors have a number of tools to get the mail out and still operate economically. For example, they can:

- send employees to lunch early
- call employees in early or send part-time employees home.
- call for voluntary or mandatory overtime
- offer annual leave to regular employees
- shift employees between operations as workload requires and as skills and labor agreements permit.

All of these decisions must be made quickly on-the-spot with fragmentary information, but this is what we expect of our supervisors. Record service levels and a strong financial performance over the last three years testify to the good job they are doing.

FY 98 EVA VARIABLE PAY PROGRAM RECOMMENDATIONS

1. Compensable Indicators, Measures, Targets and Weights *(see footnotes below)*

Voice (Bonus Share)	Indicator *(footnotes)*	National Target	Weight	Headquarters Employees	Area Office Employees	Perf. Cluster Employees
VOC (1/3)	EXFC - Overnight (a)(f)	92	Threshold for VOC	100% National	100% Area	100% PC
	EXFC - 2/3 Day (b,e,f)	85	45%	100% National	100% Area	100% PC
	Priority (c,e,f)	85	45%	100% National	100% Area	100% PC
	Ease of Use -Composite (d,e,f)	630	10%	100% National	100% Area	100% Area
VOE (1/3)	Training (g,j)	E15+ 97 E14- 97 Craft 100	33%	50% National 50% HQ	100% Area	100% PC
	Goal Knowledge Survey (h,j)	90	33%	100% National	100% Area	100% PC
	Lost Workday Injury (e,i,j)	2.13	34%	100% National	100% Area	100% PC
VOB (1/3)	Financial Performance - EVA (e,k,l,m)	TBD	100%	50% National 50% Areas	50% Nat 50% Area	50% Nat 25% Area 25% PC

CHAIRMAN GLEIMAN: Two participants originally requested oral cross examination of this witness: The Alliance of Nonprofit Mailers and Dow Jones & Company.

I understand that the Alliance of Nonprofit Mailers does not indeed have any oral cross examination -- thanks for small things -- so we will proceed at this point with Dow Jones & Company. Mr. McBride?

MR. McBRIDE: Thank you, Mr. Chairman.

CROSS EXAMINATION

BY MR. McBRIDE:

Q Mr. Steele, my name is Michael McBride, and I represent Dow Jones & Company, Inc. I will be asking you questions on behalf of our Coalition of Periodicals Mailers here, and we will try to move this along. I understand you have an airplane.

Have you ever testified before the Postal Rate Commission before, sir?

A No, I haven't.

Q Have you testified at all in any legal proceeding before?

A No.

Q Well, if you don't understand my questions, feel free to ask me for clarification.

A Okay.

Q You discuss the phrase "automation refugees" in

your testimony and indicate that you were not familiar with the phrase.

Is it your testimony that the phrase had never been used before this proceeding in Postal Rate Commission proceedings or simply that you were not familiar with the term?

A Simply that I am not familiar with it.

Q Are you aware of the fact that Time Witness Stralberg has used the phrase repeatedly in prior PRC proceedings?

A I have read parts of his testimony for this, yes.

Q And you understand, do you, that it is his term and he did not purport to claim that it was a term that the Postal Service operations people use?

A Yes.

Q Is it a fact, sir, that automation resulted in employees who were no longer needed on the manual operations that had become automated?

A Yes.

Q So when you say at page 4 of your testimony that it was absurd to suggest that there is a pool of excess employees that are not needed to process the mail, I take it you are not quarreling with the notion that automation did alleviate the necessity for certain people to do things that were previously done manually?

A That's right.

Q Now, directing your attention to page 3 of your testimony, Mr. Steele, I don't have an exact quote here. I am just trying to draw from this page, which you say is the purpose of your testimony, the following. Is it your claim that there are fewer employees working for the Postal Service today than in 1987, for example, or do you not address that?

A I don't address that.

Q If you know, sir, was automation intended to reduce the Postal Service's costs?

A Yes, it was.

Q Do you have access to the information needed to determine whether it in fact reduced the Postal Service's costs?

A I don't personally have it.

Q Do you know whether mail processing costs for periodicals have increased substantially since 1987?

A No, I don't.

Q You refer to -- again on page 3 -- incentives to avoid excess staffing.

Do you see that, sir?

A Yes.

Q Is it your testimony that collective bargaining agreements create such incentives?

A No, it's not. The incentive rests with the way we recognize and reward performance and the budgets we give to our managers and supervisors.

Q Are you familiar with Merit System protections that are applicable to some Postal Service employees?

A In general.

Q Do you recall that the current Postmaster General tried but failed to reduce about 47,000 positions that were subject to Merit System Protection Board rules?

A What are you referring to, sir?

Q Do you remember back shortly after the current Postmaster General took office that he tried to reduce a substantial number of positions?

A We did reduce a substantial number, yes.

Q But do you recall that a lot of those positions were reinstated?

A I don't have any specifics on it. I know that a RIF was followed later.

Q Generally speaking, when employees are at a postal facility, are they clocked in other than when they are on their lunch breaks?

A Right, yes.

Q And are you familiar with the term "swing room"?

A Yes, I am.

Q What is a swing room?

A It's a term for a lunchroom or break area.

Q If employees are in the swing room other than on their lunch break, what MODS operation would they be clocked into, if you know?

A I don't have any knowledge of that.

Q Are you familiar with testimony that's been taken before this Commission since the R90-1 case that demonstrated that there was increasing nonproductive time in mail processing?

A I've read parts of it, I think. Yes.

Q Is that consistent with your testimony on page 3 at line 19 that there is "nowhere to hide hours"?

A My opinion is there's nowhere to hide hours.

Q Well, if there is increasing nonproductive time, where is that time being clocked into, if you know?

MS. DUCHEK: I'm sorry, I would ask that Mr. McBride define what he means by nonproductive time.

BY MR. McBRIDE:

Q Are you familiar with the term "not handling"?

A Yes, I am.

Q What MODS operation would people generally be clocked into if the time is associated with the concept of not handling?

A Well, I think the term "not handling" generally refers to the in-office cost system and the way the tally

sheets are run at the time. They're observed not handling mail, waiting for mail at the platform, waiting for it at an opening unit. It doesn't necessarily conform to a MODS operation.

Q Now till 1996 do I have it correct that you were assigned to the Allegheny area?

A Yes, I was vice-president of the Allegheny.

Q Have you had the opportunity to see the December 1996 inspection service report done for the Postal Service on allied work hours?

A No, I haven't.

Q It's Library Reference 236 of the Postal Service in this proceeding. And according to the inspection service, in the Allegheny area where you were assigned there were a significant number of people who were working in opening unit operations but clocked into another operation. Is it your testimony that that's true or not true?

A I don't know.

Q At page 10 of your testimony, sir, you refer on line 8 to employees who might want to hang out, and you say they wouldn't choose opening units as the place to do it. If somebody were hanging out, where would they do it?

A That's a good question. I don't know, but the point of that sentence is that we're acutely aware of our indirect labor costs and have become increasingly so since

in the last four or five years we have given it a lot of visibility, and really it's the last place in the world that you'd if you were a malingerer and if we had one that you'd want to hang out, because of the increased attention given to these units.

Q Is it your testimony that Mr. Stralberg said that employees were hanging out in opening units in his testimony?

A No, I don't refer to that from Stralberg's testimony. I don't recall that anyway.

Q Whose testimony were you referring to here then if not to Mr. Stralberg?

A In the term "hang out"?

Q Yes.

A I think it's my own.

Q I see.

In the same inspection report that I referred to earlier, Mr. Steele, the Inspection Service said that allied work hours in processing and distribution centers were loosely managed and inadequately controlled. Are you here testifying that that is not so?

A I don't have a dispute with the specific of their review. I'm not commenting on that. What I am saying is that it's our intent to manage them very closely and very carefully.

Q Well, then I take it it's not your testimony that every single Postal Service employee is fully occupied at all times.

A Well, naturally, they can be on break. They can be, if they work on a platform, waiting for a truck to back in. I guess it would depend on what you mean by fully occupied.

If you walked through and took a snapshot of a bulk mail center platform, you might see an open door as we're waiting for a trailer to back in and see two mail handlers waiting for that truck to be backed in.

A snapshot at that point in time might look like they were not fully occupied, but they're assigned to those doors and waiting for the cycle of trucks in and out.

Q Let's exclude breaks from my question --

A Sure.

Q -- and let me ask it again. Are you testifying that, other than when they're on breaks, Postal Service employees are always, under your watch, at least, fully occupied or not?

A Well, as defined. I think there are times that -- I guess it depends on how you define fully occupied. We endeavor to be sure there is productive work for people to do at all times.

If you take a snapshot of a unit, people can be

waiting for mail to come down a shoot, people can be moving mail from one location to another, so it could appear that they're not fully occupied, to use the term.

Q All right, sir.

In the same inspection report again, the inspection service found that, of the employees that get checked, 31 percent were clocked in to mods operations other than the ones in which they were working. Are you aware of the problem of people clocking into one operation and working into another?

A Not to that extent, I'm not.

Q But you are aware that it occurs?

A It can occur but usually to a very minor extent.

MR. McBRIDE: Thank you, Mr. Chairman. I have nothing further.

CHAIRMAN GLEIMAN: Are there any follow-up questions?

[No response.]

CHAIRMAN GLEIMAN: Questions from the bench?

[No response.]

CHAIRMAN GLEIMAN: I have a few questions, Mr. Steele. I'll try to move on quickly.

The first one, of course, is, knowing of your background, can we sign you up for the silent service commemorative stamp?

THE WITNESS: I was a surface sailor with a lot of respect for submariners.

CHAIRMAN GLEIMAN: I gathered as much.

THE WITNESS: Smart answer, right?

CHAIRMAN GLEIMAN: I've been keeping an eye out for brown shoes, also.

You have an interesting management structure. I suspect it's not unique in the sense of how frequently you contact your supervisors up and down the line and meet with them, and you do have an annual meeting for the region where you talk about workload and what has happened over the past few years and you consider strategies for coping with these workloads, as I understand your testimony.

THE WITNESS: Yes, sir.

CHAIRMAN GLEIMAN: Specifically, I was wondering, in addition to hiring more regular workers, you've considered any of the following: installing or seeking more automated equipment to be installed in your region?

THE WITNESS: Yes, we have. The last thing we do is hire. You try to do almost anything other than hire additional career workforce, including maximizing non-career workforce, utilize overtime to the appropriate extent, and that's always an argument, as to what is the appropriate extent, how much overtime is too much, automate the workforce and compete for automation equipment, and we have

to compete nationally; that is to say if Springfield, Massachusetts has a higher return than Pittsburgh, Pennsylvania, then we can save more money, then the Springfield office would get the automation.

CHAIRMAN GLEIMAN: So one of the things you would consider in addition to hiring regular workers, as you just pointed out, is adjusting overtime --

THE WITNESS: Absolutely.

CHAIRMAN GLEIMAN: -- schedules, adjusting ratios of part-time to casual to regular labor force?

THE WITNESS: Yes, sir.

CHAIRMAN GLEIMAN: Okay. Reducing the proportion of total labor devoted to supervisory or allied operations to the extent practicable?

THE WITNESS: Yes, and we've done a lot of that lately, but it's something that requires constant review.

CHAIRMAN GLEIMAN: Building or leasing additional space for processing?

THE WITNESS: Building space is something that we seldom do. We have leased additional annexes, particularly for standard A and trays, but building space is something we seldom do.

CHAIRMAN GLEIMAN: Any other strategies for coping with higher workloads?

THE WITNESS: Benchmarking the best productive

facilities around the country, finding out what they're doing better than we are, learning from their techniques, sending people there, meeting with them, looking at the utilization of our machinery to be sure we're getting maximum utilization out of it. It's not enough just to be running it 20 hours a day; you have to be sure you're getting the throughput on it.

CHAIRMAN GLEIMAN: Thank you. I have no further questions. Any follow-up as a consequence? Questions from the bench?

MR. McBRIDE: Just one, Mr. Chairman.

FURTHER CROSS EXAMINATION

BY MR. McBRIDE:

Q Mr. Steele, when you were answering the chairman's question about building space and you said you tend not to do that, is that because you believe that the existing space with which you're familiar could accommodate some increased mail volume?

A No, it's not. It's more the difficulty and the expense, the long-term expense of buying new capital space, going out and building new space. We would look first at a lower cost alternative, and very often, that's to go out and lease temporary annexes than it is to build new.

CHAIRMAN GLEIMAN: Mr. McKeever?

CROSS EXAMINATION

BY MR. McKEEVER:

Q Mr. Steele, John McKeever for United Parcel Service. I just have a question or two.

The chairman asked you about staffing policies or practices, and you said rather than hire new permanent workers, you'll incur overtime where reasonable and take some other steps -- utilize non-permanent employees, something like that. I take it that there are periods of the year other than seasonal peaks where overtime is incurred in the Postal Service?

A Yes.

MR. McKEEVER: That's all I have, Mr. Chairman.

CHAIRMAN GLEIMAN: Anyone else?

[No response.]

CHAIRMAN GLEIMAN: Ms. Duchek, would you like some time with your witness?

MS. DUCHEK: Just about five minutes, Mr. Chairman.

CHAIRMAN GLEIMAN: Certainly.

[Recess.]

CHAIRMAN GLEIMAN: Ms. Duchek.

MS. DUCHEK: I just have a few questions, Mr. Chairman.

CHAIRMAN GLEIMAN: Proceed when you're ready.

MS. DUCHEK: Thank you.

REDIRECT EXAMINATION

BY MS. DUCHEK:

Q Mr. Steele, you talked with counsel for UPS a little bit about your use of overtime. Is overtime used to deal with various volume influxes?

A Yes.

Q And would it be used to deal with volume influxes for different types of periods? For example, weekly AP, seasonal?

A Right. Strikes.

CHAIRMAN GLEIMAN: Not your strikes; somebody else's.

THE WITNESS: Generically strikes.

BY MS. DUCHEK:

Q Over the long-term, however, what is your objective with regard to the use of overtime?

A It's to find the right magic balance, I think. A steady diet of excessive overtime, whatever that means, tires people out, causes accidents, causes angst in the workplace. Too little overtime probably tells you you're understaffed. The tension becomes one of what is the magic right number. Thirty years ago, we looked at 3 percent as being the right overtime level. That was in the days when the cost of labor was relatively cheap and the cost of fringe benefits was relatively low. Today, we're much

higher than that.

But we don't want sustained, steady use of overtime in any work unit or any place. It's not a healthy way for us to manage.

COMMISSIONER LeBLANC: Ms. Duchek, excuse me one second.

You said 3 percent. Is that 3 percent of the total workforce or --

THE WITNESS: Yes. That was 30 years ago.

COMMISSIONER LeBLANC: I understand that, but I'm just trying to see what it is today, out of curiosity?

THE WITNESS: Oh, it's probably closer to 8 percent.

COMMISSIONER LeBLANC: But that again is of your total workforce, though?

THE WITNESS: Yes, total work hours. We want a percent of overtime hours versus total work hours. Same thing.

COMMISSIONER LeBLANC: Okay. Thank you.

Thank you, Ms. Duchek.

MS. DUCHEK: I have no further questions.

MR. McKEEVER: Mr. Chairman, I have one clarification. Oh, I'm sorry, I apologize.

CHAIRMAN GLEIMAN: Well, no, go ahead. You might be trying to clarify the same point I was going to clarify.

MR. McKEEVER: Okay.

RECROSS EXAMINATION

BY MR. McKEEVER:

Q Mr. Steele, I thought I heard you say that too little overtime means you're understaffed. Did you mean that or did you mean too little overtime means you're overstaffed?

A If I said that, I spoke wrong. It would mean I was overstaffed.

MR. McKEEVER: Thank you.

CHAIRMAN GLEIMAN: That takes care of my question. Anyone else?

RECROSS EXAMINATION

BY MR. McBRIDE:

Q At what rate do people get paid for overtime?

A Roughly time and a half.

MR. McBRIDE: Thank you.

CHAIRMAN GLEIMAN: But you don't -- am I correct that you don't get benefits for overtime pay --

THE WITNESS: That's right.

CHAIRMAN GLEIMAN: -- you just get your regular salary?

THE WITNESS: It doesn't accelerate the benefits and not everybody gets calculated at exactly the same rate, but it's roughly time and a half your straight-time pay.

CHAIRMAN GLEIMAN: Anything further?

[No response.]

CHAIRMAN GLEIMAN: If not, Mr. Steele, we want to thank you for your appearance here today and your contributions to our record, and we hope you make your plane.

THE WITNESS: I will, Chairman. Thank you.

[Witness excused.]

CHAIRMAN GLEIMAN: Trying to move back to the regular order here, I think our next witness is Dr. Bradley. Am I right?

Dr. Bradley is already under oath in these proceedings, and if I have my calculator working, I think you're the second most frequent appearer, but I'm not sure, following far behind Dr. Haldi.

Counsel, whenever you're ready to introduce his testimony.

Whereupon,

MICHAEL D. BRADLEY,

a rebuttal witness, was called for examination by counsel for the United States Postal Service and, having been previously duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MS. DUCHEK:

Q Dr. Bradley, I'm going to hand you two copies of a document entitled Rebuttal Testimony of Michael D. Bradley on Behalf of United States Postal Service marked as USPS-RT-5. Are you familiar with this document?

A Yes, I am.

Q Was it prepared by you or under your supervision?

A It was.

Q Do you have any changes that you would like to make?

A I would like to correct one typographical error. If we could turn to page 18, line 13. In the second column, Bradley USPS-T-14, the row labelled LSM, there currently is a number, 23919. That number should be 19734. A simple typographical error.

Q And has that correction been made on the two copies that I handed you, Dr. Bradley?

A It has.

MS. DUCHEK: Mr. Chairman, I ask that Dr. Bradley's rebuttal testimony designated as USPS-RT-5, be entered into evidence in this proceeding, and I will hand two copies to the reporter.

CHAIRMAN GLEIMAN: Are there objections?

[No response.]

CHAIRMAN GLEIMAN: Hearing none, Dr. Bradley's testimony and exhibits are received into evidence and I

direct that they be transcribed into the record at this point.

[Rebuttal Testimony and Exhibits of Michael D. Bradley, USPS-RT-5, was received into evidence and transcribed into the record.]

USPS-RT-5

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

Postal Rate and Fee Changes, 1997	Docket No. R97-1

REBUTTAL TESTIMONY OF MICHAEL D. BRADLEY ON BEHALF OF UNITED STATES POSTAL SERVICE

TABLE OF CONTENTS

LIBRARY REFERENCES

The following Library References are sponsored by me and should be considered incorporated by reference in my testimony:

USPS LR-H-344	Econometric Programs to Calculate a Variability Based upon a 26 Accounting Period Scrub.
USPS LR-H-345	Errors-in-Variables Analysis Using 13 Period Differences.
USPS LR-H-346	Econometric Programs and Data to Estimate an Unbiased Cross-Sectional Variability.

PURPOSE AND SCOPE

The purpose of my testimony is to illuminate, clarify, and correct certain misconceptions, misstatements, and mistakes contained in the testimonies of United Parcel Service witness Neels (UPS-T-1) and OCA witness Smith (OCA-T-600). Because of the range and degree of misleading and erroneous statements in these testimonies, it is beyond the scope of my testimony to rebut them all. Consequently, the balance will be addressed by Professor John Ying in his testimony, USPS-RT-4.

I. THE VARIABLES USED IN THE ORIGINAL REGRESSION ANALYSIS ARE APPROPRIATE FOR MEASURING THE VARIABILITY OF MAIL PROCESSING LABOR HOURS.

Dr. Neels presents some apparent concerns about the use of hours as the dependent variable in the econometric equations and the use of TPH as the cost driver. These concerns are misplaced and unfounded, and seem to arise from a lack of familiarity with postal operations and staffing, and from a basic misunderstanding of postal costing.

A. Labor Hours Are the Appropriate Dependent Variables in the Econometric Equations.

Dr. Neels spends a surprising amount of time in his testimony expressing his concern about the use of labor hours as a dependent variable in the

econometric regressions used for measuring variability.[1] He starts from the obvious fact that accrued costs are measured in dollars and thus represent the multiplication of hourly wage rates and total hours worked. From that basic point Dr. Neels develops a concern that if one uses hours as the dependent variable in an econometric variability equation, one must be missing "something." These fears are unfounded, as they are based upon confusing the level of accrued cost with the variability of accrued cost. While it is true that wages play an important role in determining the level of accrued cost, they do not play such a role in determining its variability.

The reason for this difference is simple. Labor time, as measured by hours, responds to small, sustained changes in volume, but wage rates do not. As Dr. Neels acknowledges, wage rates are set by periodic, multi-year national contracts between the Postal Service and its unions.[2] The contracts do not depend on small, sustained volume changes. This basic fact undercuts Dr. Neels apparent concern, so to generate an issue he is forced to depend upon some speculations about the variations in wages and hours. As I demonstrate below, these speculations are off the mark suggest a misunderstanding of postal operations by Dr. Neels.

More generally, the assertion by Dr. Neels that labor time should not be used as the dependent variable in a variability equation reflects his unfamiliarity

---

[1] Direct Testimony of Kevin Neels on Behalf of United Parcel Service at 8, Tr. 28/15594.

[2] Tr. 28/15696-97.

with postal costing. In fact, this is not a new issue and labor time has already been used as a dependent variable in a variability equation by many different cost analysts and the Postal Rate Commission. Empirical studies of load time, the time spent loading pieces of mail into a variety of mail receptacles (which is quite similar to manual mail processing), have already related labor time to the pieces handled.

Studies by UPS witness Michael Nelson, MOAA et. al. witness Gary Andrew, ADVO witness Norman Lerner and the Postal Rate Commission itself all used labor time as the dependent variable and pieces handled as the cost driver.[3] This is the same approach that I follow in specifying the mail processing equations. Note that this approach of specifying labor time as function of pieces handled is not just an assumption, but rather it is part of a data analysis examined on the record in several omnibus rate cases.[4]

1. The specific concerns articulated by Dr. Neels are based upon misconceptions.

Dr. Neels first concern is that hours should not be used as a dependent variable because average wage rates can vary from facility to facility. He states:

---

[3] See, for example, "Direct Testimony of Gary M. Andrew on Behalf of MOAA et.al.," Docket No. R90-1, "Direct Testimony of Michael A. Nelson on Behalf of United Parcel Service," Docket No. R90-1, "Direct Testimony of Norman on Behalf of ADVO," Docket No. R90-1, and PRC Op., R90-1 at III-85.

[4] It is true that the dependent variable in those studies measured time in minutes or seconds and the dependent variable in the mail processing equations measure time in hours. Dr. Neels did not object to the unit of measurement in labor time.

> This schedule of wages may be higher or lower, depending upon the labor market, inflation, collective bargaining agreements and other factors. All else equal, the higher the wage rates, the higher the average compensation per hour will be.[5]

It is true that costs vary across sites when wages vary but, as explained above, a variability analysis measures how costs vary when volume varies. Wages are not a function of volume, particularly not small sustained changes in volume. Moreover, the fact that wages are varying across sites for reasons other than volume means that using dollar costs as the dependent variable in a variability equation would make finding the correct variability more difficult. That is because, in doing so, one would have to accurately control for all of the non-volume variation in wages. It is also important to recognize that Dr. Neels' approach of using dollar cost does not require a measure of average wages in the facility. Instead, it requires a measure of the average wages in each activity in each facility. These, in particular, do not vary with small changes in volume.

Dr. Neels' second concern about using hours as the dependent variable arises because he believes that the mix of hours varies from facility to facility:

> Average compensation per hour will also be influenced, however, by the *mix* of hours at a facility. (Emphasis in original).[6]

This concern is misplaced because the mix of hours within a facility does

---

[5] Neels at 8.

[6] Neels at 9.

not matter for an econometric analysis at the level of the activity. While it is possible that different facilities could have different mixes of activities and thus different mixes of labor hours, the type of hours within an activity will be the same from facility to facility. Moreover, even if they were not, this is exactly the type of site-specific heterogeneity that a fixed-effects model will control for. If Dr. Neels' concern were accurate, it would undermine only the use of a cross-sectional model, not a fixed-effects model.

Dr. Neels' third concern is that the mix of hours within a facility may change and costs can vary when the mix of hours varies.

> While one might argue that the schedule of wage rates is determined largely by general labor market conditions rather than by mail volume, the same cannot be said for the mix of types of time. There are a number of reasons for believing that the mix of hours at a facility might vary systematically with volume.[7]

Dr. Neels makes two mistakes here. First, he again confuses the requirements for an econometric analysis performed at the activity level with characteristics of labor at the facility level. Variations in volume simply do not cause variations in the mix of labor at any point in time, in a given activity.

In addition, Dr. Neels argues that there may be overtime paid in high volume periods and that this would affect the dollar cost pool.[8] He argues that

---

[7] Neels at 10.

[8] Neels at 9.

the dependent variable should include these effects. But Dr. Neels yet again confuses variations in non-volume factors with volume variability. If overtime is needed to handle seasonal peaks, these variations in costs are not caused by small, sustained increases in volume and including them in the dependent variable would cloud, not clarify, the accurate measurement of volume variability. These variations are there year after year, even if the overall volume level stays the same. That is, these types of variations are seasonal, not volume variable. One should control for seasonal variations in hours, as I do in my econometric equations, but there is no reason to complicate the process of finding the true volume variability by adding an additional seasonal variation to the data.

Dr. Neels' fourth concern is that hours are not comparable through time:

> While it is true that by focusing on hours Bradley has eliminated changes in costs that are associated with shifts in the overall wage schedule rather than volume, it is *not* true that the resulting measure of hours is comparable across sites or across time, a precondition for the use of hours as proxy for costs. The hours of supervisory personnel and skilled craftsmen are not the same as the hours of unskilled casual workers. (Emphasis added).[9]

Here Dr. Neels makes a mistake because he does not seem to understand Postal Service staffing. Supervisory personnel and skilled craftsmen are not assigned to work in basic mail processing operations. In fact, the type of labor used within a given mail processing activity is homogenous through time. Over time, supervisors don't start running OCRs and mail handlers do not start

---

[9] Neels at 11.

sorting mail. Hours within an activity are comparable through time.

2. Dr. Neels' concerns, if accurate, would be applicable to the old approach used by the Postal Service and the Postal Rate Commission.

It would seem that Dr. Neels has not completely thought through the implications of his concerns. He is arguing that hours should not be used as the dependent variable in an econometric variability equation because it misses the variation in costs caused by the response of wages to small sustained volume increases. In sum, he argues that he variability of wages with respect to volume is not zero.

But consider two arguments he makes in his testimony. First, he argues that "simple plots" show that labor hours are proportional to piece handlings.[10] Elsewhere, he argues that the Commission should assume that mail processing labor costs are proportional to volume.[11] Because costs are just equal to the product of wages and hours, we can calculate the mathematical conditions required for both assertions to hold. Define cost (C) as the product of wages (w) and hours (H). Then the elasticity of wages with respect to volume is given by:

$$\varepsilon_{C,v} = \frac{\partial (wH)}{\partial v} * \frac{v}{wH}. \qquad (1)$$

[10] Tr. 28/15760.

[11] Neels at 48.

Expanding the derivative yields:

$$\varepsilon_{C,v} = \left(\frac{\partial w}{\partial v} * H + \frac{\partial H}{\partial v} * w \right) \frac{v}{wH}. \quad (2)$$

Dividing through by wH yields:

$$\varepsilon_{C,v} = \left(\frac{\partial w}{\partial v} * \frac{H}{wH} + \frac{\partial H}{\partial v} * \frac{w}{wH} \right) v. \quad (3)$$

Simplifying terms:

$$\varepsilon_{C,v} = \left(\frac{\partial w}{\partial v} * \frac{v}{w} + \frac{\partial H}{\partial v} * \frac{v}{H} \right). \quad (4)$$

This expression shows that the elasticity of cost with respect to volume is the sum of the elasticity of wages with respect to volume plus the elasticity of hours with respect to volume:

$$\varepsilon_{C,v} = \varepsilon_{w,v} + \varepsilon_{H,v}. \quad (5)$$

If, as Dr. Neels has suggested, the elasticity of costs with respect to volume and the elasticity of hours with respect to volume are both 100 percent, then the only way that both of Dr. Neels' assertions could be true is if the elasticity of wages with respect to volume is zero. Unfortunately, this condition directly contradicts his concerns about using mail processing hours as a dependent variable in a

variability equation.

The mathematical exercise also demonstrates that the old approach to volume variable mail processing labor cost, in which a variability of 100 percent was assumed, relies upon the condition that the elasticity of wages with respect to volume is zero.

B. Piece Handlings Are the Appropriate Cost Drivers for Econometric Variability Equations.

Dr. Neels' apparent misunderstanding of how postal costs are generated also seems to lead him to his erroneous conclusion that piece handlings are not appropriate cost drivers for the econometric variability equations. In fact, even his "bedrock" assertion is erroneous. In opening his argument Dr. Neels states:

> It is also obvious that an econometric study of the variability of mail processing costs with changes in volume should involve an analysis of changes in the volume of mail delivered.[12]

But, of course this is not obvious. Anyone with a basic knowledge of mail processing knows that there are material volumes of mail that are delivered that essentially bypass mail processing.[13] The volume of mail delivered might be appropriate for a carrier street time analysis, but not for a mail processing analysis.

---

[12] Neels at 12.

[13] In addition, there are the volumes of mail that receive mail processing but are picked up by customers at postal facilities.

More generally, Dr. Neels is apparently unaware of the widely used practice of using cost drivers for measuring cost elasticities or variabilities. Activity-specific volumes are rarely available by postal activity and often it is not feasible to collect this information. The use of a cost driver has been used in many cost components including city carrier load time, purchased highway transportation, rural carriers, window service, city carrier access time, vehicle service drivers, and now mail processing.

In trying to justify his misplaced concern, Dr. Neels, unfortunately, makes a few more mistakes. First, he worries about the fact that some pieces of mail require more handlings than others. This is, however, an argument in favor of using a cost driver, like piece handlings, for determining variability. It is the characteristic that different classes of mail differentially participate in the various mail processing activities that rules out the use of raw originating volumes in measuring the variability of mail processing labor costs.

Dr. Neels also has a misplaced worry about the possibility that the relationship between piece handlings and volume can change through time. The Postal Service approach to costing does not assume constancy in this relationship. In fact, as explained by witness Degen and witness Christensen, by using the most recent years data to for the distribution key, the Postal Service approach explicitly allows for variation in the relationship between piece handlings and volume through time.

Fundamentally, Dr. Neels just does not seem to understand how postal costs are incurred and seems unfamiliar with the way the Postal Service and the

Postal Rate Commission measure volume variable costs. This is revealed in his statement that:

> Bradley has provided no information on the relationship between piece handlings and volume.[14]

While this is factually correct, it is misleading. Although my testimony did not present information on the relationship between piece handlings and volume, the Postal Service has presented such information. Moreover, there was no reason for me to present such information because, as I explained in my testimony, I investigated the "attribution step," which determines the variability of cost with respect to the cost driver. The "distribution step," in which the relationship between the cost driver and mail volume is addressed by witness Degen.

Dr. Neels further compounds the confusion on this issue by suggesting that this type of information is required only for my variability analysis:

> Without such information the Commission cannot determine what his piece handling variability estimates imply for the volume variability of mail processing costs.[15]

In fact, information about the relationship between mail volume and piece handlings is required for any variability analysis the Commission chose to use, including the historical assumption of 100 percent variability. To understand this

---

[14] Neels at 14.

[15] Neels at 14.

point, suppose that my econometric equations had supported, rather than rejected, the assumption that hours are proportional to piece handlings. The Commission would still have to "worry" about the relationship between piece handlings and volume.

II. THE MODS DATA ARE PLENTIFUL AND REPRESENT OPERATING DATA. AS BOTH BRADLEY'S AND NEEL'S RESULTS DEMONSTRATE, THEY ARE RELIABLE FOR ESTIMATING VARIABILITIES.

For the first time, participants in this proceeding have the data necessary to test the assumption that the variability of mail processing labor costs is 100 percent. The data are MODS data and have two distinct advantages. First, they are operational data. These data reflect the actual generation of hours from the handling of actual pieces. This means they are an excellent empirical basis for identifying the causality between work done and the cost required to accomplish that work.

Second, the MODS data are plentiful. In most cases, there are tens of thousands of data points available for estimating an econometric regression. This wealth of data has two implications. The analyst can be judicious in the use of the data because there is so much available. In many econometric studies, the analyst must decide which data to include and which to exclude from the regression. When the analyst has only hundreds of data points, there is pressure to retain data to ensure sufficient degrees of freedom. When the analyst has tens of thousands of observations, the balance should be placed on

improving the quality of the data relative to increasing the raw quantity.

Curiously, even with tens of thousands of observations, Dr. Neels seems to prefer quantity over quality. Despite indicating his belief that some of the MODS data points contain errors, he argues that an analyst should rely upon every single point![16] As I have explained, some of the MODS data points imply throughput rates on machines that are physically impossible. Nevertheless, Dr. Neels advocates using those data points in his regressions. The amazing thing about his approach to data use is that even though he uses data known to contain errors, his econometric results corroborate the results from the scrubbed data and imply a strong rejection of the hypothesis that the volume variability of mail processing labor is one hundred percent.

The choice of including or excluding data from an analysis invariably involves the use of judgement. In direct contrast to Dr. Neels' abuse of the term "scientific method" [17] the Commission has long understood this point:

> The econometrics literature does not generalize that deleting outliers is appropriate or inappropriate. This is a matter of judgement, and turns on the specific properties of the data and model being applied.[18] (Emphasis added).

---

[16] Neels at 46.

[17] Dr. Neels expressed the strange notion that replication requires both the ability to understand and reproduce a previous scientist's work and the requirement that the replicator agree with each of the research decisions made by the original scientist. See Neels at 33. To anyone familiar with scientific, particularly econometric, research this is a curious notion indeed.

[18] PRC Op., R90-1, at III-76.

It was, and is, my opinion that, (1) given the fact that the MODS data are operating data and (2) given the large amount of data available, the use of data scrubs is prudent and appropriate. I recognize that some judgment is required, particularly in the choice of a minimum of three years of data to ensure representativeness of a site's data. To investigate the robustness of that decision, I have re-estimated all of the MODS direct operation equations with a different, less restrictive scrub. In this alternative approach, I required a site to have only two years of continuous data to be included in the analysis.[19] The variabilities estimated by this process are presented in Table 1. That table shows the results are very robust to alternative scrubs.

Dr. Neels tries to make hay about the differences between his results based upon error-laden data and my results based upon clean data. In a misleading statement, he mentions only that his results generate higher variabilities. In fact, as he was forced to admit, his results sometimes provide higher variabilities and sometime provide lower variabilities. [20]

An overall assessment of his results shows that he actually provides corroboration for my results. Quite naturally, his results show more variation between the highest and lowest variabilities because they include observations that include data errors. One would expect such data points to increase the

---

[19] The detailed programs and results are presented in Library Reference H-344, Econometric Programs to Calculate a Variability Based upon a 26 Accounting Period Scrub.

[20] Tr. 28/15719-20.

Table 1
Comparison of Econometric Results from a 39 AP Scrub and a 26 AP Scrub

	Manual Letters		Manual Flats		OCR		BCS		LSM		FSM		SPBS Priority		SPBS Non-Priority		Manual Priority		Manual Parcels		Cancel & Mtr. Prep	
	>= 39 APs	>=26 APs	>= 39 APs	>=26 APs	>= 39 APs	>=26 APs	>= 39 APs	>=26 APs	>= 39 APs	>=26 APs	>= 39 APs	>=26 APs	>= 39 APs	>=26 APs	>= 39 APs	>=26 APs	>= 39 APs	>=26 APs	>= 39 APs	>=26 APs	>= 39 APs	>=26 APs
Pieces	0.772	0.770	0.748	0.762	0.628	0.635	0.774	0.767	0.869	0.872	0.781	0.784	0.619	0.598	0.370	0.354	0.403	0.407	0.300	0.308	0.566	0.569
Lagged Pieces	0.025	0.028	0.118	0.128	0.158	0.164	0.172	0.177	0.036	0.034	0.138	0.135	0.183	0.182	0.098	0.091	0.045	0.049	0.095	0.092	0.089	0.099
Manual Ratio	-0.166	-0.171	-0.249	-0.272	0.005	0.014	0.047	0.051	-0.008	-0.012	0.040	0.044	na	na	na	na	na	na	na	na	na	na
Time Trend 1	-0.001	-0.001	0.001	0.001	-0.005	-0.006	-0.002	-0.002	-0.001	-0.001	-0.001	-0.001	-0.003	-0.004	0.004	0.003	0.003	0.003	0.004	0.004	0.004	0.004
Time Trend 2	0.001	0.001	0.000	0.000	0.006	0.006	0.002	0.002	0.003	0.003	0.005	0.005	0.001	0.000	0.003	0.003	0.012	0.010	0.001	0.001	-0.001	-0.001
ρ	0.737	0.739	0.754	0.753	0.810	0.801	0.798	0.793	0.731	0.721	0.749	0.748	0.676	0.692	0.810	0.799	0.776	0.762	0.794	0.789	0.822	0.374
S.E.R.	0.092	0.095	0.083	0.083	0.011	0.109	0.098	0.099	0.045	0.047	0.059	0.060	0.200	0.209	0.109	0.124	0.189	0.193	0.210	0.219	0.098	0.104
R^2.	0.984	0.983	0.985	0.985	0.945	0.947	0.977	0.977	0.995	0.995	0.986	0.986	0.860	0.843	0.889	0.883	0.944	0.946	0.890	0.887	0.966	0.968
# Obs.	24,781	25,319	23,989	24,389	18,497	18,957	22,737	22,984	19,734	20,008	17,943	18,158	1,967	2,501	4,569	5,758	15,736	16,311	17,345	18,058	19,557	20,848
# Sites.	309	327	300	324	234	254	287	304	239	254	219	234	30	47	63	94	201	232	234	262	253	291
Avg. Pieces (1,000s)	9,235	9,119	3,593	3,493	15,454	15,039	37,572	37,379	23,980	23,413	5,889	5,821	688	647	1,419	1,332	707	666	252	246	15,389	14,873
last:	0.797	0.797	0.866	0.890	0.786	0.799	0.945	0.944	0.905	0.905	0.918	0.919	0.802	0.780	0.469	0.445	0.448	0.456	0.395	0.400	0.654	0.668

variation in the results. But, there is no mistaking the pattern of similarities. In those activities in which I estimated high variabilities, Dr. Neels estimates high variabilities. In those activities in which I estimated low variabilities, so does Dr. Neels.

If one compares my original results, my revised results based upon the two year scrub, Dr. Neels' results, and the untested assumption of one hundred percent variability, it is clear which set of results is the outlier — the assumption of one hundred percent volume variability. Figure 1 makes this point graphically.

One final issue on this subject requires attention. In discussing my scrubs, Dr. Neels decries the "throwing out" of 10 percent or 20 percent of the data. Yet, in his "recommended" variabilities to the Commission, Dr. Neels ends up "throwing out" over 98% of the data. By collapsing all the data for a single site down to one point, Dr. Neels throws out a tremendous amount of information, just as surely as if had thrown away the observations. Keep in mind that a cross-sectional analysis is performed with just one observation for each site; a cross-sectional analysis could be performed, for example, on only the last accounting period of data for each site. Seen in this way, it is clear that a cross-sectional approach throws out all data points for a site, but one. Table 2 shows the dramatic loss of information created by Dr. Neels' avowed approach.

Table 2
Number of Observations used to Estimate the Variability

Activity	Observations. with Complete Data	Bradley USPS-T-14	Neels UPS-T-1	Reduction in Data Set Size in Neels UPS-T-1
Manual Letter	28,648	24,781	425	-98.5%
Manual Flat	28,504	23,989	421	-98.5%
OCR	21,345	18,497	305	-98.6%
BCS	26,426	22,737	380	-98.6%
LSM	23,251	19,734 ~~23,919~~	321	-98.6%
FSM	21,544	17,943	285	-98.7%

III. THE ERRORS-IN-VARIABLES ANALYSIS DEMONSTRATES THERE IS A SMALL AMOUNT OF ERROR VARIANCE. THE ANALYSIS IS NOT AS MYSTERIOUS AS DR. NEELS SUGGESTS.

Dr. Neels seems to be a bit confused by the errors-in-variables analysis contained in my testimony and admits that the reasons for what he calls "anomalous" results are "not completely clear" in his mind.[21] Perhaps the results seem "anomalous" to Dr. Neels because he has an incomplete understanding of errors-in-variables analysis. This lack of understanding is suggested by his erroneous statement that measurement error necessarily causes the estimated variability to be less than the "true" variability.[22] Of course, it is well known that this is not true:

> One can calculate the nature of the bias in β by making different assumptions about the different covariances. We need not pursue this further here. What is important to note is that one can get either underestimation or overestimation of β.
>
> With economic data where such correlations are more the rule than an exception, it is important not to believe that the slope coefficients are always underestimated in the presence of errors in observations, as is suggested by classical analysis of errors-in-variables models.[23]

It is this misunderstanding that probably lies underneath Dr. Neel's misguided attempt to assign the differences between what he calls the "automatic"

---

[21] Neels, Appendix A, at A-3.

[22] Neels p. 19 and Appendix A at page A-3

[23] C. S. Madalla, Econometrics, McGraw Hill, 1977, New York, at 302

variabilities and manual variabilities to measurement error.[24] Another part of his confusion may lie in just not understanding the way the data are collected. This confusion causes him to misstate when an errors-in-variables analysis is required. Dr. Neels seems to think that the TPH recorded in automated and mechanized operations are the sum of FHP and subsequent handling pieces (SHP).[25] But this is simply wrong. The TPH for mechanized and automated operations are taken directly from machine counts and are not downflows from FHP. Any concerns about the FHP measure do not affect these TPH and the TPH for mechanized and automated operations are not subject to potential measurement error.

Dr. Neels also seems puzzled by the calculation of a negative measurement error variance from the errors-in-variables (EIV) formula. While it is true that an *estimated* variance will not be negative, a *calculated* one certainly can be. In the instant case, the reason for this result is quite simple. The formula for calculating the variance depends upon the difference between the fixed-effects estimator and the first difference estimator. In the case of the manual letter sorting activity, the first difference estimator happens to be slightly higher than the fixed-effects estimator. There is nothing "mathematically

---

[24] As Dr. Neels admits (Tr. 28/15225), when there are several possible reasons why estimated variabilities differ, one needs more information than the variabilities themselves to explain the difference. Given his admitted lack of understanding of postal operations, Dr. Neels apparently defaults to the erroneous idea that differences are due measurement error, under the false assumption that measurement error must bias the coefficients downward.

[25] See Neels at 16.

impossible" about this result, it is straightforward.[26]

Furthermore, it is no mystery how this result would occur. When the variable measured with error (here, TPH) is serially correlated, the relationship between the size of the fixed-effects estimator and the first difference estimator is ambiguous:

> Then, for the case T=3, the (fixed-effects) estimator is less biased than the first difference estimator if $(\rho_1-\rho_2)/(r_1-r_2) > (1-\rho_1)/(1-r_1)$ which holds if the serial correlation in the true variable decreases less slowly than the serial correlation in the measurement error. This type of condition generalizes to values of T larger than 3. While the condition seems plausible that $\rho_j > r_j$ and that the decrease in the serial correlation of the z's be less than for the v's, it is not overwhelming. Counterexamples are easy to construct. The particular case under consideration would need to be examined.[27]

Thus, if Dr. Neels had actually been interested in deriving a non-negative value for the variance of the measurement error, he could have accounted for possible serial correlation in TPH by calculating the errors-in-variables estimator for a "long" distance. For example, one can compare the fixed-effects estimator

---

[26] The weakness in Dr. Neels arguments is revealed by his attempt to have me call the errors-in-variables estimator the "true" variability. Despite my rejection of the point under cross examination, Dr. Neels continues to attempt to put those words in my mouth. See Neels at page A-3, especially footnote 26. I have not argued that the errors-in-variables analysis present the "true variabilities," otherwise I would have recommended them to the Commission. Rather, the errors-in-variables analysis shows that measurement error is not a stumbling block in estimating the variabilities.

[27] "Errors in Variables in Panel Data," Zvi Griliches and Jerry Hausman, Journal of Econometrics, Vol. 31, No. 1, Feb. 1986 at 93-118.

with the one year (13 accounting period) differences. That analysis is presented in Table 3.[28] Tt can be seen there that Dr. Neels' anxiety about a negative calculated variance is dispelled. Moreover, even with a 13 period lag, the errors-in-variables variability supports an absence of large and material measurement error.

Table 3
Econometric Results for the Errors-in-Variables Analysis
With a 13 Period Difference

	Manual Letter Sorting Activity	Manual Flat Sorting Activity
Fixed-effects β	0.6266	0.6972
13 Period Difference β	0.5222	0.6413
Errors-in-Variables β	0.7364	0.7353
Variance of TPH	0.0716	0.0881
Calculated Variance of Measurement Error	0.0152	0.0046

[28] The details of the errors-in-variables analysis is presented in USPS Library Reference H-345, Errors-in-Variables Analysis Using 13 Period Differences.

IV. DR. NEELS' AND DR. SMITH'S APPARENT INABILITY TO INTERPRET THE ECONOMETRIC EQUATIONS IS JUST A SMOKESCREEN.

Perhaps because they can produce no factual basis for criticizing my econometric equations, both Dr. Smith and Dr. Neels claim difficulty in interpreting the regression results. For example, both seem to be puzzled by the time trend variables and they both fall back upon the old canard of "short run" vs. "long run."

A. The Use of Time Trends is the Standard and Appropriate Method to Capture All Time Varying Non-Volume Influences on Hours.

There is a long history of using time trends to capture technological and other time-varying effects in econometric models. Even Dr. Smith admitted that this is done in both microeconomics and macroeconomics.[29] However, despite my clear indications that the time trends capture technological and other factors that influence hours through time, Dr. Neels oddly attempts to refute the notion that the time trends capture only technological change.[30] Dr. Neels also admits that he is not familiar with the basic econometric terms that describe this type of trend modeling, so perhaps it should not be surprising that he has difficulty interpreting the trends.[31] At the same time, Dr. Smith finds himself unable to

---

[29] Tr. 28/15904-06.

[30] For example, see Neels at 39, where he states "I do not believe that his time trend coefficients are really picking up the effects of technological progress."

[31] Dr. Neels states that he is unfamiliar with the econometric terms that describe the trend modeling approach: segmented trend and shifting trend.

interpret the time trend coefficients.[32] Fortunately for the Commission, this inability to understand the time trends is not universal. Witness Shew finds the information contained in the time trends to be "relatively simple" and "interesting."[33]

Both Dr. Smith and Dr.Neels seem to ignore the fact that the time trends are control variables; the time trends control for non-volume time varying effects. They are not the only way to control for these factors and both Dr. Neels and Dr. Smith ignore the fact that I also estimated the model without shifting trends. In USPS-T-14, I presented an alternative analysis with a simple time trend and time-period-specific effects in place.[34] The results of this alternative analysis produces variabilities well below 100 percent and generally lower than my recommended variabilities. This proves that my econometric results are not dependent on the specific time trend employed.

Moreover, both Dr. Smith and Dr. Neels are confused about what has been tested relative to time-period-specific effects. After reviewing PRC/UPS-XE-1, both seemed to suggest that time-period-specific effects had not been

---

(Tr. 28/15709). For a discussion of these terms see "Shifting Trends, Segmented Trends and Infrequent Large Shocks," Nathan Balke and Thomas Fomby, Journal of Monetary Economics, Aug. 1991, at 61-86

[32] See Smith at 15, "I am unable to conclude what the external effects measure or why they are positive or negative."

[33] See Direct Testimony of William B. Shew on Behalf of Dow Jones & Co, DJ-T-1, at 16, Tr. 28/15518.

[34] See USPS-T-14 at 72.

tested against a pooled model that did not allow such effects.[35] In fact, this is false. The Gauss Newton Regression tests calculated for my direct testimony indicated rejection of the null hypothesis of no time-period-specific effects. That is why I explicitly included time-period-specific effects in the form of the trend modeling and why I estimated the two-way model. The two-way model, for example, explicitly allows for both facility-specific effects and time-period-specific effects.

Furthermore, one of the advantages of the trend model I specified is that it is general enough to allow the overall TPH "slope" coefficient, the change in hours with respect to TPH, to vary through time. It is thus inaccurate to suggest that the fixed-effects models presented in USPS-T-14 do not include any time indexed coefficients.[36]

---

[35] Tr. 28/15776, Tr. 28/15805, and Tr.28/15960.

[36] In terms of PRC/UPS-XE-1 (Tr. 28/15776), this means that there has been testing of "the right hand flow."

B. Both Dr. Smith and Dr. Neels Resurrect the "Criticism of Last Resort": *The False Claim that the Econometric Analysis is* "Short Run."

Dr. Smith and Dr. Neels are both new to Commission proceedings and both have indicated that they have not reviewed the record of past proceedings and have not read many previous Recommend Decisions.[37] If they had, they would know that the Commission long ago faced the apparently difficult of "short run" and "long run." As the Commission understood then, and as I am sure that it understands now, this debate is a tempest in a teapot.

Economists define the "long run" as the ideal state in which all inputs are perfectly optimized and the firm is producing along at its minimum possible cost level. Given the nature of the enterprise and given the collective bargaining structure, it is fair to say that the Postal Service is not yet in this idealized state. Thus, any economist would have to agree that, by the strict economists' definition, Postal Service costs are not "long run." It is in this context that I correctly stated that postal costs are "short run."

This does not mean that I am talking about the costs for one day, one week, or one month when I use the term "short-run." Short-run costs may last for many years and may certainly last longer than the period of time for which rates are in force. That is why we all should follow Professor Baumol's advice and focus on the actual marginal costs. Those are the costs measured by my econometric analysis.

---

[37] Tr. 28/15903 and Tr. 28/15665.

Dr. Smith, for example, seems to suggest that in mail processing, the long run would be reached in one year:

> Based on witness Bradley's comments, it appears that the longer-run for the mail processing activities under consideration is approximately a year, given the Postal Service's extensive ongoing capital programs.[38]

Given Dr. Smith's time frame, there can be no doubt that my econometric results are "longer-run." One need only look at page 76 of USPS-T-14 to find a set of econometric results based upon annual data. Each data point in that analysis represents a "long run" period by Dr. Smith's definition, so an econometric analysis spanning many long-run periods can be nothing but long run. These annual results also rebut Dr. Neels claim that the results in USPS-T-14 are short run because they are based upon accounting period data:

> The fixed effects models that Bradley relies upon for his variability estimates do not appear to be capable of providing reliable estimates of the long-run variability of mail processing labor costs. Those models relate mail processing labor hours in a four-week accounting period to the number of piece handlings in that same period and in the previous period. Because these models look back only a single accounting period, they are not capable of detecting or accounting for the changes that take place over a longer period of time.[39]

---

[38] Direct Testimony of J. Edward Smith Jr, On Behalf of the Office of the Consumer Advocate at 16, Tr 28/15836-37.

[39] Neels at 39.

Dr. Neels also seems to have missed the end of my testimony in which I present fixed-effects models estimated on annual data. The annual analysis certainly avoids his perceived problem with "short run data."

It is more important, however, to recognize the Dr. Neels' statement is not correct. The frequency of the data does not determine whether the analysis is "short run" or "long run." Dr. Neels is apparently referring to the old comparison of a cross-sectional data set across many sites with a single time series data set from one site. Under certain circumstances, the cross-sectional data would be considered long run whereas the time series data would be considered short run. Upon a moments reflection, it becomes clear that this old comparison is not relevant for panel data. In a panel data set, one has a time series of observations for all sites. A panel data set is a set of repeated cross-sections and can certainly generate long run results. Dr. Neels would have the Commission believe that by taking nine years of experience at a site and collapsing all that information into a single data point, one can magically generate "long-run" results. Obviously, the elimination of information does not generate long-run results.

Dr. Neels also claims that his cross-sectional variabilities are higher than the fixed-effects variabilities because they are "long-run." As I demonstrate in the next section, this unsubstantiated claim is false. Dr. Neels' cross-sectional variabilities are higher because they are biased, not because they are long run. An unbiased cross-sectional model provides variabilities that corroborate the fixed-effects results.

V. THE FUNDAMENTAL RECOMMENDATIONS MADE BY DR. SMITH AND DR. NEELS ARE SPECULATIVE. WHEN THEY ARE IMPLEMENTED, THE RESULTS SUPPORT MAIL PROCESSING VARIABILITIES BELOW ONE HUNDRED PERCENT.

Dr. Neels' fundamental recommendation is that the Commission should pursue a cross-sectional analysis. Dr. Smith's fundamental point is that the fixed-effects model should be extended to include a capital variable.[40] In this section of my testimony I consider these recommendations and show the effect of implementing them.

A. The Simple Cross-Sectional Model is Biased.

In the presence of facility specific characteristics, a simple cross-sectional model is biased. Consider a simple panel data model:[41]

$$y_{it} = \alpha_i^* + \beta x_{it} + \mu_{it}, \quad i = 1,\ldots,N; \quad t = 1,\ldots,T. \qquad (6)$$

In this model the α^* are the facility-specific effects. Suppose one would attempt to estimate this equation by OLS on cross-sectional data. Because of the limited data point, doing so requires estimating a single intercept term and requires dropping the facility-specific variables, as Dr. Neels does.

It can be shown that the probability limit of the cross-sectional estimator is

---

[40] Dr. Smith also recommend the use of a "pooled" model. That model has already be soundly rejected on the record and bears no further consideration. Tr. 28/16081 and Tr. 29/16124-25.

[41] This discussion is taken from Cheng Hsiao, Analysis of Panel Data, Cambridge University Press, 1986, Cambridge, at 63.

given by:

$$plim\ \hat{\beta}_{OLS} = \beta + \frac{Cov(x_{it}, \alpha_i^*)}{\sigma_x^2} \quad (7)$$

where the bias arises because of the covariance between the right-hand-side variables and the omitted facility specific effects. It has already been established that the facility specific effects are correlated with TPH, the "x_{it}" in the above equation. Therefore, Dr. Neels' cross-sectional analysis is biased.

Although one cannot use the fixed-effects approach to control for facility-specific effects in a cross-sectional analysis, one could use data on actual variables to do so. If one knew the list of variables and collected data on them, they could be included in the cross-sectional analysis as a proxy for the facility specific-effects to mitigate the bias.

B. Data on Capital Variables Are Available at the Facility Level.

Dr. Smith has argued that mail processing labor equations should include some measure of capital. As I have explained before, it is possible to get some data on capital at the facility level, but such data are not available at the activity level. For example, the only capital in a manual letter operation would be the square footage of the building in which the operation was being conducted.[42] However, actual square footage by mail processing activity is not available. This

[42] The wooden cases used for sorting mail have long since been depreciated. Even new, their cost would be a trivial part of the activity's cost.

means if one wants to include capital in a mail processing labor equation, one must do it at the level of the facility. To consider Dr. Smith's recommendation, in concert with Dr. Neel's recommendation, I collected data on physical capital at the MODS facilities.

C. A Cross-Sectional Analysis with Capital Controls for Facility Specific Effects and Corroborates the Fixed-effects Model.

Because capital data are only available at the facility level, an unbiased cross-sectional analysis can only be estimated at that level. To ensure comparability, however, I first re-estimated the fixed-effects model at the facility level on the panel data used in USPS-T-14. In this baseline estimation I used total facility mail processing hours as the dependent variable. The model thus has the following form:

$$
\begin{aligned}
\ln HRS = {} & \left[\delta_1 + \delta_2 L\right] \ln TPH_L + \left[\delta_3 + \delta_4 L\right] (\ln TPH_L)^2 \\
& + \left[\delta_5 + \delta_6 L\right] \ln TPH_F + \left[\delta_7 + \delta_8 L\right] (\ln TPH_F)^2 \\
& + \left[\delta_9 + \delta_{10} L\right] \ln TPH_P + \left[\delta_{11} + \delta_{12} L\right] (\ln TPH_P)^2 \\
& + \left[\delta_{13} + \delta_{14} L\right] \ln TPH_{PR} + \left[\delta_{15} + \delta_{16} L\right] (\ln TPH_{PR})^2 \\
& \delta_{17} [\ln TPH_L * \ln TPH_F] + \delta_{18} [\ln TPH_L * \ln TPH_P] \\
& \delta_{19} [\ln TPH_L * \ln TPH_{PR}] + \delta_{20} [\ln TPH_F * \ln TPH_P] \\
& \delta_{21} [\ln TPH_F * \ln TPH_{PR}] + \delta_{22} [\ln TPH_P * \ln TPH_{PR}] \\
& + \delta_{23} XMAS + \delta_{24} Q4 \\
& + \delta_{25} [t_1] + \delta_{26} [t_2] + \delta_{27} [t_1]^2 + \delta_{28} [t_2]^2 + \varepsilon
\end{aligned}
\tag{8}
$$

In this equation, HRS represents all mail processing hours at a facility, TPH_L represents all letter TPH in a facility, TPH_F represents all flat TPH in a facility, TPH_P represents all parcel TPH in a facility, TPH_{PR} represents all Priority Mail TPH in a facility, XMAS is a seasonal dummy variable for the Christmas period, Q4 is a seasonal dummy variable for the fourth quarter, and t_1 and t_2 are the well-known time trends. Volume variability is measured by the sum of the coefficients on TPH_L, TPH_F, TPH_P, and TPH_{PR}. Estimation of this equation on the panel data set yields an overall variability of 66.3%.[43] As expected (due to scope

[43] For the details of the estimation process and the detailed results, please see USPS Library Reference H-346, Econometric Programs and Data to Estimate an Unbiased Cross-Sectional Variability.

economies) this is less than the system variability that I calculated using the disaggregated equations.

Data exist for three characteristics of facilities, their age, the number of mail processing square feet contained in the facility and the number of floors that perform mail processing. The most recent Fiscal Year for which these data are available is 1994.[44] Thus, a cross-sectional data set was constructed, at the facility level, using fiscal year 1994 data for hours and piece handlings. At first, equation (8) was estimated without any facility specific effects included. This replicates the cross-sectional model recommended by Dr. Neels.[45] As with his results, this generates a variability well over 100 percent.

When the capital variables are added, the bias is reduced, and the results approach the fixed-effects results. Table 4 presents the results. They make clear that Dr. Neels' extremely high variabilities are coming from omitted variables bias, not from a mysterious "long-run" effect. In addition, the results show that the facility-specific effects in a panel data model do a good job of capturing the effect of capital across facilities.

These results are based upon a limited amount of data and are not as accurate as the complete set of fixed-effects results presented in USPS-T-14, and I am not recommending that the Commission use them. They do provide

---

[44] The details of the data construction process as well as an electronic version of the data are included in USPS Library Reference LR-H-346.

[45] Because it is a cross-sectional model, the time trends and seasonal variables do not appear.

strong refutation of the speculations of Dr. Smith and Dr. Neels that the fixed-effects equations are mis-specified and short run. In addition, they once again demonstrate in dramatic fashion that any unbiased estimator of the volume variability of mail processing will produce a result showing that the variability is significantly less than one.

Table 4
Mail Processing Labor Variabilities
Derived from a Cross-Sectional Analysis with Capital

	Letter Coefficient	Flat Coefficient	Parcel Coefficient	Priority Coefficient	Variability
No Capital Variables Included	0.636	0.457	0.015	0.093	1.200
Adding Square Feet & Age	0.524	0.155	0.024	0.041	0.743
Adding Sq. Feet Age, and # of Floors	0.529	0.173	0.024	0.035	0.761

Finally, these results explain the apparent variation in variabilities presented in PRC/UPS XE2.[46] Those results showed that two sets of Dr. Neels' results matched quite closely with my results, but one set, the cross-sectional set, produced variabilities that were far above the others and far above one hundred percent. Dr. Neels speculated that the difference between his cross-sectional results and all the other results came about because his cross-

[46] Tr. 28/15785.

sectional results were "long-run."[47] We now see that the difference comes not because of that reason but rather because of specification bias. Dr. Neels agreed that a large variation in results between models could arise because of a mis-specification of one the models:

> If you are changing the specification of the model one often finds big changes in results. I mean that is known as specification bias, so I guess I wouldn't be surprised to see big changes in results when one changes the specification in ways that matter.[48]

His cross-sectional models suffer from exactly this type of bias. The capital variables in my cross-sectional models are statistically significant because they are embodying the important facility-specific effects. The fact that they are statistically significant signifies that omitting them from the cross-sectional equation causes an omitted-variables bias. That bias causes the cross-sectional variabilities to be artificial forced upward and to be well above one hundred percent.

---

[47] Tr. 28/15801.

[48] Tr. 28/15807.

CHAIRMAN GLEIMAN: Two participants requested oral cross examination of this witness, the Office of the Consumer Advocate and United Parcel Service. Does any other party wish to cross examine?

[No response.]

CHAIRMAN GLEIMAN: If not, then Mr. Richardson.

MR. RICHARDSON: Thank you, Mr. Chairman.

CROSS EXAMINATION

BY MR. RICHARDSON:

Q Good evening, Dr. Bradley.

A Good evening.

Q Unfortunately, good evening.

On page 9 of your testimony, you take issue with Dr. Neal's reference to the volume -- use of the term volume of mail delivered and suggest that that might be appropriate for a carrier's street time analysis but not for a mail processing analysis.

What is your view about whether or not the volume of mail processed rather than the total pieces handled, whether or not that would be appropriate for mail processing analysis?

A The mail volume, which is a measure of mail volume at the processing level, would be part of an analysis of volume variability of mail processing. As to whether or not it would be preferred or less preferred than, say, piece

handling I think in large part depends upon the relationship of the mail volume as measured versus the activities being performed.

For example, if we were measuring piece handlings by class of mail, let's say, and that's what we were calling mail volume at the processing level -- it was piece handling, but we classified, say, those piece handlings by class of mail -- by that definition of mail volume, I think it would be appropriate.

EVENING SESSION

[6:00 p.m.]

BY MR. RICHARDSON:

Q On page 14, you indicate, "I recognize that some judgement is required, particularly in the choice of a minimum of three years of data, to ensure representativeness of a site's data." That's on page 14 of your testimony, lines 3 to 5. Do you see that?

A Yes, I do.

Q Did you consider that such a requirement of a minimum of three years of data might eliminate the most important sites -- that is, the sites which have undergone major technological change with the installation of new equipment?

A Yes, I did consider that, and I don't think that that will be a problem, because as equipment's being introduced, it usually goes to larger sites first, and those are sites through which we've collected data over a long period of time.

Q Did you use any statistical techniques to determine how many months of data to use?

A Formally speaking, they're APs, but it was a judgement call, as I said, here. Basically, 39 is three years and 26 is two years, and so, I was not using a statistical technique but my judgement that three years of

data would be sufficiently long to represent the behavior at the facility.

Q But you didn't use a specific statistical technique.

A No, sir.

Q Is that your answer?

A No, sir.

Q Thank you.

On page 27 of your testimony, line 13, if you could refer to that, you indicate that you produced econometric results based upon annual data and that each data point in that analysis represents a, quote, "long run," end quote, period, by Dr. Smith's definition.

A Yes, sir.

Q Do economists specify the long run in terms of a time period or in terms of the variability of factors of production?

A Well, I think most economists would define it in terms of the flexibility to use inputs. However, my understanding is Dr. Smith defined it in terms of time.

Q Do you explicitly model factors of production other than labor as an independent variable?

A Again, please?

Q Do you explicitly model factors of production other than labor as an independent variable?

A Yes.

Q And what are those?

A For example, in the next few pages of my testimony, I included facility space as an example of a capital variable that could be included.

In addition, the fixed effects explicitly would account for other characteristics of the production process that would affect costs.

Q Besides the space -- well, as part of space, was square footage and floors --

A Yes, sir.

Q Now, you have gathered TPH and labor hours at the activity level. Isn't that correct?

A Yes, sir.

Q Have you gathered capital data at the activity level?

A As I suggested in my testimony, for example -- the capital variables I had available for me is not defined at the activity level. So, the answer is no.

Q For instance, the square footage is not at the activity level but at the facility level?

A That's correct.

Q And did you make an effort to determine if any of that data for capital was available at the activity level?

A I did, indeed, check into whether the space data

are collected by the actual activities on the floor, and my understanding is that it's not.

Q Did you make any effort to determine the availability of capital equipment at the activity level?

A I did. I asked people to look into that issue for me to see if such data were available, and in the time that I had to do my rebuttal testimony, I was not persuaded that any reliable such data were available.

Q If more time were available, could it be obtained, in your opinion?

A Well, certainly. If one had unlimited time and one was interested in, say, the number of machines by activity, you could presumably do a survey of facilities.

Q For instance, class sorting machine equipment --

A For example.

Q -- costs could be available, it would seem to you, then.

A I'm not so sure about the cost, but certainly the number of machines could be.

Q And how much time did you spend preparing your new study that you have in your rebuttal testimony?

A How much time personally did I spend on it?

Q Was involved in preparing this updated study that includes these new figures like square footage and floors and additional space.

A I don't know off-hand. I really didn't keep track of everybody's work involved in it.

Q Was it considerably less time than your initial studies in this case?

A The total time to prepare the rebuttal testimony was considerably less than the total time to prepare the direct testimony, yes.

Q And on page 31 of your testimony, you refer to physical capital. You say, "I collected data on physical capital at the MODS facilities." Could you tell me what you mean there by physical capital?

A Yes.

Economists often draw the distinction between physical capital and financial capital, and financial capital refers to the funding that a firm might use to pay for its operations. Physical capital would mean something like a building, and that's the term I was using here.

Q Again, you're speaking about the square footage, the age, and the number of floors in this particular study?

A Precisely so.

Q But nothing to do with the equipment, the mail sorting equipment.

A That's correct.

Q In your original equations, did you have any measure of capital other than the alpha intercept?

A No, sir.

MR. RICHARDSON: Those are the only questions I have, Mr. Chairman.

CHAIRMAN GLEIMAN: Mr. McKeever?

CROSS EXAMINATION

BY MR. McKEEVER:

Q Dr. Bradley, could you turn to page 14 of your testimony, please?

A I have it.

Q I'd like to direct your attention to lines 12 through 15. There you state "in a misleading statement, he, Dr. Neels, mentions only that his results generate higher variabilities." Do you see that?

A I do indeed.

Q In the next sentence you cite Dr. Neels' written cross examination in support of your statement, in fact, as he was forced to admit his results sometimes provide higher variabilities and sometimes provide lower variabilities. Do you see that?

A I do indeed.

Q Can you point to me where in his direct testimony Dr. Neels mentions only that his results generate higher variabilities?

A I don't have his direct testimony with me, but what I was referring to was in his discussion of the effects

of the scrub, the only results that he described in the text were the fact that -- I believe it was BCS, OCR were higher. He didn't mention any that were lower.

MR. McKEEVER: Mr. Chairman, I do have the transcript volume that contains Dr. Neels' testimony. I would like to furnish that to the witness with the Chair's permission.

CHAIRMAN GLEIMAN: Please proceed.

BY MR. McKEEVER:

Q Dr. Bradley, could you turn to page 30 of Dr. Neels' testimony. That is found on transcript page 15616.

A I have it.

Q That is, am I correct, in the part of Dr. Neels' testimony which discusses the data scrubs?

A It is.

Q I'd like to direct your attention to lines 20 and 21 there, Dr. Bradley, where Dr. Neels testified "using the full dataset produces volume variabilities that are often higher than those reported by Bradley." Do you see that?

A I do indeed.

Q In fact, Dr. Bradley, if you turn to page 32 of Dr. Neels' testimony, that is transcript page 15618, Dr. Neels reported the results for all of the activities including 12 instances where his results had lower variabilities; isn't that correct?

A I believe there are 12 instances where they are lower.

Q Is it still your testimony that in his direct testimony, Dr. Neels mentions only that his results generate higher variabilities?

A Yes, when I was referring to the word "mentions," I was referring to the sentence that says "for example, using the full dataset raises the estimated volume variabilities for MODS OCR, from 79 to 83, the estimate variability for MODS LSM sorting increases 91 to 98, for MODS bar code sorting, variability increases 95 to 108. There weren't any mentions of decreases.

Q That was right after a sentence that says "using the full dataset produces volume variabilities that are often higher than those reported by Bradley," is that correct?

A That is precise; yes.

Q Dr. Bradley, could you turn to page 13 of your testimony, please?

A I have it.

Q I'd like to direct your attention to lines three to five. There you state "despite indicating his..." that's Dr. Neels, "...belief that some of the MODS data points contain errors, he argues that an analyst should rely upon every single point." Do you see that?

A I do.

Q In stating that Dr. Neels believed that some of the MODS data points contained errors, I take it you were referring to Dr. Neels' testimony that -- and I'm quoting here Dr. Neels' testimony at transcript page 15601, if you'd like to turn to that. That's page 15 of his testimony.

A I have it.

Q At line 7 to 9. That scrutiny of your source for total piece handlings indicates potentially serious problems. Do you see that?

A I do.

Q There Dr. Neels is questioning the integrity of the entire total piece handlings data set, isn't he?

A I'm not sure I understand the question.

Q Well, isn't the title of that section of the testimony right at the top of that same page "There are serious shortcomings in the piece-handling data used in Bradley's econometric analysis"?

A That is the title.

Q And the discussion there is that TPH -- total piece handling data set. Is that correct?

A In this section of the testimony he is discussing potential data problems in the TPH data set. Yes, sir.

Q Okay. Thank you.

Now let's look at the second half of the statement

that you made on page 13 of your testimony at lines 3 to 5 where you state Dr. Neels argues that an analyst should rely upon every single point.

A Yes.

Q Do you see that?

Is it your testimony that Dr. Neels stated that data should never be examined for errors with the data that is shown to be wrong discarded from the analysis?

A No, my testimony is that in the instance of the analysis before us he has recommended using all usable data.

Q But your statement on page 13 was a little broader than that, wasn't it? You say that he argues that an analyst should rely upon every single point. Is that what your testimony says?

A Those are exactly the words that are there.

Q Thank you. Dr. Bradley, the purpose of postal costing is to determine the extent to which postal costs vary with mail volume; is that correct?

A One part of postal costing. I think generally the purpose of postal costing is to determine the volume variable cost per piece.

Q Well, now, in your effort to do that, you investigate the relationship between labor hours and total piece handlings; right?

A My effort relates to the first half of that

two-part -- the two-part process to get a volume variable cost per piece, and to estimate what's called the variability my econometric analysis related hours and piece handlings. That's correct.

Q And that first part is to determine the extent to which postal costs vary with volume; is that right? The first part of the two-step costing process.

A Yes, sir.

Q Okay. Could you turn to page --

A Let me be careful.

Q It doesn't?

A Not necessarily. No, sir. It's part of the overall process to do so. The first step determines what I would call the variability, which establishes the volume variable cost pool, and it's quite often the case that what one does in this two-step procedure is break down the cost-volume relationship into two parts.

The first part relates the cost to a cost driver, and the second part relates the driver to volume. So it's often the instance in postal costing that the first part actually measures a driver variability to get at volume -- to get that pool of volume variable costs.

Q But the purpose of doing that is to determine the extent to which postal costs vary with volume; is that correct?

A No, sir, the purpose is to determine unit volume variable costs.

Q Okay. So you disagree with the statement that the purpose of a variability analysis in postal costing is to determine the extent to which postal costs vary with mail volume? You disagree with that?

A It can do that, but it is not solely limited to that.

Q But is that the basic purpose of it?

A No. I think it's not.

Q Okay.

A Okay. Sorry.

Q Thank you.

Now, can I direct you to page 1 of your rebuttal testimony, please?

A Sure.

Q Lines 15 to 17.

A Um-hum.

Q There you state that Dr. Neels expresses concerns is the term you use --

A Um-hum.

Q About the use of total piece handlings as the cost driver. Do you see that?

Excuse me. About the use of hours. No.

A No.

Q I'll stick with what I said. Concerns about the use of total piece handlings as the cost driver.

A Yes, sir.

Q Okay. In fact, isn't Dr. Neels' concern that, as he says on page 12 of his testimony -- if you want to look at that, that's at transcript volume 15598.

And I'll direct your attention there to lines 7 to 9. That using total piece handlings as a proxy for volume can easily lead to erroneous conclusions regarding the volume variability of costs.

A Your question on that again, sir?

Q Isn't that the concern that Dr. Neels expressed?

A He did say that. I think that --

Q You think he meant something else, other than what he said?

A I think what he meant by this section was that one should -- one would be in trouble if you didn't use volume as the right-hand-side variable in the equation as the cost driver in the right-hand-side variable of the variability equation.

For example, if we look later on where he says even if I was correct in my assertion that the primary driver of cost in the activity is the number of pieces sorted in the activity, I cannot draw conclusions about volume variability of costs from analysis of piece handlings

without first considering the volume variability of piece handlings.

And that I think relates directly to a concern using TPH for the driver.

Q I understand that, and we'll talk about that in a little bit. But the title of this whole section of the testimony at the top of page 12, Dr. Neels' testimony, is "Total piece handlings is not a suitable proxy for volume."

Is that correct?

A That is the title.

Q Thank you. Now, again, on page 1 of your rebuttal testimony at lines 24 to 25, you state that Dr. Neels spends a surprising amount of time in his testimony expressing his concern about the use of labor hours as a dependent variable, do you see that?

A I do.

Q And you go on to state on page 2, at lines 19 and 20, that Dr. Neels asserts that labor time should not be used as the dependent variable in "a" variability equation. Do you see that?

A Yes, I do.

Q You use the term "a variability equation" there, right?

A The word "a" is used there, yes.

Q Yeah, you didn't say in the variability equation

that I use, is that correct?

A I meant nothing more than that. I mean I did use the words "in a variability equation", but I wasn't trying to broaden it to suggest that he was commenting on more than just my equations.

Q So even though you said he expresses a concern with using labor time as a dependent variable in "a" -- in "a" variability equation, you really meant to say in the one that you use, that was your intent, is that right?

A Yes.

Q Thank you. Dr. Bradley, on page 2 of your rebuttal testimony, at lines 7 to 9, you state that wage differences do not play a role in determining the variability of cost, is that correct? I am referring now, in particular, to lines 7 to 9, where you state, "While it is true that wages play an important role in determining the level", and that is your emphasis, "of accrued costs, they do not play such a role in determining its variability." Again, that is your emphasis.

A Correct.

Q So it is your testimony that wage differences do not play a role in determining the variability of cost?

A In this context, we are talking, again, about my mail processing analysis.

Q Right.

A And in the context of that analysis, it is my testimony that the wage differentials do not play a role in determining the variability. That is correct.

Q Is it your testimony that in Postal operations, as they actually exist, wage differentials do not play a role in determining the variability of cost? Let's put aside your equation, talk about what happens in the Postal Service.

A I believe my equations, putting them aside, but I believe they represent the operational reality and so, therefore, I think the answer to the question is that, even in operational reality, wage differences do not affect the variability of cost with sustained increases in volume. Yes.

Q Okay. And, for example, you state on page 9 -- page 4 of your testimony, rebuttal testimony, at line 9, and I am quoting here, that "Wages are not a function of volume, particularly not small sustained changes in volume." Do you see that?

A I do.

Q Now, you said particularly not small sustained changes in volume. Are you comfortable with saying wages are not a function of volume, period, and eliminating that "particularly when" phrase?

A Well, I put the qualifier in there because I am

specifically addressing the issue of volume variability and driver variability and those unit volume variable costs. Those are defined relative to small sustained increases in volume. In some -- what I had in the back of my mind was that in some global sense, ultimately, the Postal Service has to have volume to be able to pay -- to earn revenues to pay its workers.

And so I was a little bit concerned that if I made it too general, someone could say, well, isn't the case that really they have to have volumes to be able to have revenues to pay their workers? And so that's why I was being specific to the matter at hand.

Q Well, let's put aside that particular argument or point. Putting that aside, is it always true that the average wage actually paid to mail processing personnel is not a function of volume?

A I really wasn't testifying on that issue, one way or the other.

Q Well, you do say wages are not a function of volume.

A What I say is -- I think the whole sentence goes together, and I want to be careful to use it -- "Wages are not a function of volume" -- I think that's true -- "particularly not small, sustained increased in volume."

I believe it's true that generally speaking or

overall speaking wages do not depend upon the volumes coming in and out of the facility. I am always a little concerned -- as I understood your question, it was always the case such that or something to that degree.

Q Suppose we are not talking about small sustained changes in volume but larger changes in volume that may not be sustained, that just occur sporadically. Then are wages a function of volume?

A Well, the wages paid could be in the sense of if we had overtime pay being used to handle a large one-time seasonal increase in volume, sure.

Q So you agree that in the case of overtime, where volume comes in and it is necessary to incur overtime that wages are a function of volume?

A Well, I would say the average wage paid is because you are paying overtime labor. I wouldn't say as a general matter wages are a function of volume, no.

Q But at least in that instance where there is overtime wages are a function of volume, is that correct?

A I think the average wage paid would depend upon the seasonal peak in volume, so I think there are seasonal factors, but they are not really a function of volume in the sense of what I am trying to measure, sustained increases in volume, not temporary.

Q You weren't trying to measure wages -- the average

wages paid, any changes in them as a function of volume, is that correct?

A That's correct.

Q So your model wouldn't capture that effect, is that correct?

A That's correct.

Q Okay. Let me ask you to turn to page 5 of your testimony, please.

A I have it.

Q Lines 21 to 22.

A Got it.

Q There you state that, "Variations in volume simply do not cause variations in the mix of labor at any point in time in a given activity." Is that correct?

A Yes, sir.

Q Are you there saying that variations in volume do not cause variations in the mix of labor costs at any point in time in a given activity? Is that the same thing?

A No. What I am saying there is that variations in volume would not cause a change in the composition of labor hours at a point in time in a given activity.

Q And when you say labor hours you mean the --

A The types of hours that are being used.

Q Right. For example whether it is full-time personnel versus part-time personnel versus casuals?

A I think here were we talking more about, for example, I was referring more to types of labor by the postal grades -- mail handler, clerk, and different -- within the postal broad categories there's different wage scales, you know, 5, 6, 7 -- that's what I was referring to there.

Q And aren't there also different kinds of employees that the Postal Service has -- full-time, part-time, casuals?

A I believe there are, yes.

Q Okay. Is it your testimony that variations in volume do not cause variations in the mix of labor as among full-time, part-time, casuals at any point in time in a given activity?

A I hadn't considered that. I don't know.

Q Hadn't thought of that?

A No, sir.

Q Can you give me an answer now or is that something that you are just not able to answer now, sitting on the stand?

A I just don't know right now, no.

Q Okay. So you are not able to tell me that if there are changes in volume in any particular time you might get a change in the mix of those types of labor?

A Say it again?

Q Never mind. I'll move on. I think you have answered the question.

Now that sentence says variations in volume simply do not cause variations in the mix of labor at any point in time in a given activity.

A Yes, sir.

Q Do variations in volume cause variations in the mix of labor hours at the facility level?

A They could.

Q So within a facility variations in volume could cause variations in the mix of labor within the facility?

A It's possible. For example, if volume rose and that meant more mail went to automated operations than to manual operations we might have a variation in those activities and therefore if the labor hours were somewhat different in one versus the other across a facility, the total mix would change.

Q Well, how about if volume rose and it were necessary to call in casuals, for example, to handle the volume. Can that also happen?

A I believe it could.

Q Okay. Now you cited an instance where let's suppose volume rose and more mail shifted to automated activities.

Isn't it possible that volume would rise and more

mail would be processed in manual operations rather than in automated operations because of the increase in volume?

A I think I probably said too much already in terms of my operational knowledge.

It's my understanding though, again, what we are talking about here, I think it is important to keep in mind, is measuring the response in hours to a sustained increase in volume and I don't believe that a sustained increase in volume in and of itself should cause more manual sorting. I would think that would go to automation, but that is just my judgment.

Q Well, how about just initially when the volume increased and before it was around long enough to be sustained? Would it then possibly cause activities or mail processing to shift from automated to more manual?

A If, say, we compressed down to a heavy night -- let's go down to one night.

Q How about a heavy week?

A Well, let me do my night first.

Q Okay.

A If we think about a heavy night -- and again, this should all be taken with the qualification that I'm not an operational expert, but my understanding would be that, if there was a heavy night and the mail wasn't able to be sorted on the automated activity -- on the automated

equipment to make the processing window, then that night you might have an increase in manual hours to get the mail out of the facility by the processing window. So, I think, on a temporary basis, it's possible, yes.

Q Now, how about taking my heavy week?

A I don't know. I mean that would be an operational question whether, over the course of the week, they could plan enough to adjust the staffing and scheduling of the automated operation. I don't know enough to answer that one.

Q Thank you.

Turn to page 4 of your testimony again.

A I have it.

Q Lines 18 to 23. There you state that Dr. Neels' concern about using hours as a proxy for cost is also based on a belief that -- and I'm quoting here -- "the mix of hours varies from facility to facility." Is that correct?

A That's correct.

Q And then you quote a statement that, quote, "average compensation per hour will also be influenced by the mix of hours at a facility." Is that right?

A That's correct.

Q Suppose Dr. Neels had omitted the phrase "at a facility" in the sentence that you quote. Would you agree with that statement?

A I would need to look at the context of the statement before I would agree or disagree.

Q So, you can't agree in the abstract that average compensation per hour will also be influenced by the mix of hours.

A Mr. McKeever, I just wanted to think about it before I agreed or disagreed --

Q Sure.

A -- just look at it.

As I recall the question, it was would I agree with the quoted statement if the words "at the facility" were deleted from the statement.

Q Let me make it clear.

A Sure.

Q Would you agree with the statement, "average compensation per hour will also be influenced by the mix of hours"?

A It can be, yes.

Q Okay. But not necessarily?

A If it turns out that everyone in the hours mix is being the same rate, then the average wouldn't be influenced at all. If the mix implied different people had different wage rates, then the overall average would be influenced by the mix.

Q Okay. Thank you.

Now, you go on to say at the bottom of page 4 and at the top of page 5 that Dr. Neels' concern is misplaced because the mix of hours within a facility does not matter for an econometric analysis at the level of the activity.

A Yes, sir.

Q Do you see that?

A I do.

Q Is it your view that the mix of hours at a facility has no relationship with the mix of hours at an activity or at the activities in the facility?

A What I believe is that the mix of hours in the activity reflects the -- sorry. What I believe is that the mix of hours at the facility would reflect the mix of activities within that facility.

So, for example, in a facility, if we had, say, more allied operations -- cross docking or something to that extent -- then the mix of hours may have more mail handling hours relative to clerks based upon the mix of activities within the facility.

Q So you're talking about at one particular point in time, is that how I interpret your answer?

A Yes, in comparing facility to facility, I was holding time constant; yes, sir.

Q Suppose the mix of hours at a facility changes over time, I take it that means there would have been a

change in the mix of hours at an activity; is that correct?

A No, sir. Again, I think that the same story would hold, that if we compare a single facility at points in time, the mix of hours within the facility would be a function of the relative activities in that facility at time period one and at time period two. It would not reflect any changes in the mix of hours within each of those activities first in time period one or in time period two.

Q Well, my question is taking time period one and comparing it to time period two, we have posited that the mix of hours at the facility changes from time period one to time period two. Doesn't that necessarily mean that there must have been some change in the mix of hours at the activities within that facility?

A No, sir; not at all. That could easily happen if we simply have changes in the relative size of the activities.

Q The change in the relative size of the activities would lead to a change in the mix of hours at the facility?

A Yes, sir.

Q But not in any of the activities at the facility?

A That's correct.

Q Suppose the change in the mix of hours were due to the fact that the facility had incurred overtime? That's a possibility that can happen, can't it?

A The question is -- I guess I'm getting a little confused in what we mean by "mix of hours," but certainly the ratio of overtime to straight time could change if the facility is occurring overtime; yes, sir.

Q You state on page five of your testimony at lines three to four that the type of hours within an activity will be the same from facility to facility; do you see that?

A On page five, line three?

Q Page five, that's right, line three.

A Yes, I have it.

Q When you said "type" there, were you using that to mean the same thing as the mix of hours within an activity will be the same?

A Here, the idea that within an activity, the hours would be clerk hours of a certain grade or mail handler hours of a certain grade, so yes.

Q I can equally read your testimony to say that the mix of hours within an activity will be the same from facility to facility?

A Oh, okay. Let me try to clarify that a little bit. I think in the previous page, we were talking about what I would call the ex-post or actual mix of hours that one would find. Here, when I'm talking about types, I'm talking about the nature of the hours that are used in any operation. I'm trying to make the point here that within a

particular activity, the Postal Service uses a particular type of labor.

We would not expect or we would expect across different facilities the same types of labors to be used in the same activity. Same type of labor used in an manual activity in facility A will be used in the manual activity in facility B. That's the point I'm trying to make here.

Q Let me ask you to turn to page six of your testimony.

A I have it.

Q At lines 23 to 24.

A Right.

Q There you state supervisory personnel and skilled craftsmen are not assigned to work in basic mail processing operations. Do you see that?

A I do.

Q You state -- what did you mean by basic mail processing operations there?

A Here, I was trying to -- what I meant by that phrase, basic mail processing operation, was trying to convey the notion that supervisory personnel would not be assigned to hand process the mail in response to volume changes. The quote I cite, Dr. Neels had suggested that there is a concern because the hours of supervisory personnel and skilled craftsmen aren't the same as on

skilled workers and I was trying to point out that's certainly true but within an activity, the Postal Service doesn't take, for example, mail handlers and put them in a clerk activity or supervisors and put them in a clerk/mail processing activity.

Q Well, you did say skilled craftsmen are not assigned to work in basic mail processing operations; is that right?

A Yes. For example, you would not find clerks, mail clerks, on the platform doing mail handler operations.

Q But would you find a skilled mail handler doing mail processing operations?

A No. Well, let me again try to be a little careful. The skills are defined by those categories. I'm not sure -- no matter how skilled inherently a mail handler would be, I believe the Union rules would preclude them from sorting mail.

Q As you say, you were responding to something in Dr. Neels' testimony; is that correct?

A Yes, sir.

Q Let's go back to that testimony.

A Okay.

Q In particular, page 11 of his testimony, which I believe is found on the transcript at page 15597.

A I have it.

Q And there he states, at lines 11 and 12, quote, "The hours of supervisory personnel and skilled craftsmen are not the same as the hours of unskilled casual workers." Do you see that?

A I do see it.

Q Do you agree that the hours of a full-time worker are not the same as the hours of a casual worker?

A Well, if we're parsing the words, I would say that statement's just wrong, because an hour's an hour no matter who's working it.

Q But don't different people get paid different things for the same hour?

A I think what he meant to say is that the wage costs of hours of supervisory personnel and skilled craftsmen are not the same as the wage costs of the hours of unskilled casual workers, and that I would agree with.

Q You would agree that the wage cost of a full-time employee, for example, is different from the wage cost of a casual. Is that correct?

A I don't know. I don't know.

Q You don't know the answer to that.

A Not to be sure.

Q Did you ever look at --

A I know --

Q Go ahead.

A I know the casual workers, they have more flexibility in using them, but it could be possible that a casual worker got paid at the same rate as a full-time worker, or maybe not, I don't know.

Q How about the efficiency of the two? Do you think that a regular full-time worker would be more efficient than a casual?

A Don't know.

Q You don't know that. Are you saying that all hours are equally productive?

A That's a very hard statement. I don't know how we're measuring productivity, and I don't know what we mean by all hours. So, I don't know that I could answer that one either way.

Q Are the hours of a full-time employee as productive -- let me put it the other way. Are the hours of a casual employee as productive as those of a full-time employee doing the same activity?

A Don't know, haven't studied it.

Q Don't know.

Dr. Bradley, on page 6, at lines 2 to 6, you state, quote, "If overtime is needed to handle seasonal peaks, these variations in cost are not caused by small sustained increases in volume." Do you see that?

A I do, indeed.

Q Okay. So, there again we're back to your statement that it's only small sustained increases in volume that matter? Well, let me ask you --

A Yes. For the variability analysis, what we're talking about would be the responsive cost to small sustained increase in volume, yes, sir.

Q Okay.

Is it your testimony that the variations in cost caused by the need to handle seasonal volume peaks are not caused by volume increases?

A It's my testimony that any variation in overtime cost caused by seasonal variations in volume are not caused by sustained increases in volume and should not be part of the volume variability measurement.

Q Well, let me ask my question again, then.

A Okay.

Q Because I think you answered a different question.

A Oh. Sorry.

Q Is it your testimony that the variations in cost caused by the need to handle seasonal volume peaks are not caused by increases in volume during those peaks?

A I think that any seasonal variations in cost would be associated with the seasonal variations in volume, although those would not be what I call sustained increases in volume and one would have to control for them in an

econometric equation.

For example, if we had a Christmas peak and productivity changed, that could cause some variation in costs associated with the peak volume.

Q Well, I'm assuming that it's not a sustained increase in volume and that's why it's a seasonal peak. Is that correct?

A A seasonal peak would not be sustained, that's correct.

Q Okay.

Now, again, is it your testimony that the variations in cost caused by the need to handle seasonal volume peaks are not caused by increases in volume?

A Well, I guess I want to be a little bit careful here, because I wouldn't want to suggest that these variations are caused by the increases in volume that are used to measure volume variability.

What they're caused by are seasonal variations in volume. It could be an increase; it could be a decrease. And so, what the seasonal costs are caused by are the seasonal variations in volume, either increases or decreases.

Q But they are caused by increases in volume, just not the kind of increases in volume that you care to measure. Is that correct? Or that you think should be

measured.

A Yes. I think that, again, they're caused by seasonal variations in the pattern of volume, not necessarily increases or decreases over the course of the year, and I would agree that those should not be part of the variability measurement, yes, sir.

Q Even though those increases in seasonal costs are caused by volume increases, it's your testimony that that's not relevant for your costing purposes. Is that right?

MS. DUCHEK: If I could clarify here, I think, Mr. McKeever -- I think Dr. Bradley didn't just focus on seasonal volume increases, as you seem to be doing. He clearly stated there could be seasonal volume increases or decreases.

MR. McKEEVER: Mr. Chairman, I'll be happy to ask both questions after I get an answer to my first one.

CHAIRMAN GLEIMAN: Ms. Duchek, it's not a question of what Dr. Bradley focused on. It's a matter of what question is being put to him and whether he is prepared to answer it or not, and I think he should try to answer the question as directly as possible. Otherwise, it's going to be a longer night than it might otherwise be.

MS. DUCHEK: I had thought he had answered the question, but if Mr. McKeever wants to ask it again, then that's fine to have Dr. Bradley answer it again.

THE WITNESS: I hate to ask you, but would you ask it again, please?

MR. McKEEVER: Certainly.

BY MR. McKEEVER:

Q Dr. Bradley, I take it that it's your testimony that seasonal -- that variations in cost caused by the need to handle seasonal increases in volume are, in fact, volume-caused but that that's not relevant for purposes of your analysis. Is that correct?

A No, I wouldn't say it's not relevant. I think it is relevant.

Q Okay.

A And let me explain how. I think what we're trying to measure here is how -- we're trying to get back to the unit volume variable cost that we talked about at the beginning of my cross examination. That's also sometimes called the marginal cost.

And so, what we do when we try to measure marginal costs is we're trying to measure the increase in cost associated with an increase in volume that is sustained, not just one day or one week but that's sustained.

It's certainly true that, over the course of the postal year, there are seasonal fluctuations in volume, just like in agriculture there's seasonal fluctuations, and it's well known that, to accurately measure marginal cost or unit

volume variability cost, one needs to take out those seasonal variations, and they are relevant, because if you don't take them out, you're going to confound your measurement of the marginal costs, you're going to confound the way that costs respond to sustained increase in volume.

So, yes, they are relevant and you need to put seasonal factors into control for them.

Q They're relevant because you want to exclude their impact from your analysis. Is that correct?

A Well, I want to exclude their impact from the measured volume variability, not from the -- they're in the analysis, but I want to exclude the seasonal variations in volume and hours from clouding the measurement of the volume variability. So, that's where I want to exclude them.

Q And that's not because, you want to exclude them, not because they are not caused by volume, those increased costs, but because you don't think that is what you should be measuring, is that right?

A No, sir. They are not caused by sustained increases in volume, which is what we measure with volume variability.

Q But they are caused by increases in volume, aren't they, just not sustained increases in volume? It is very simple question, Dr. Bradley.

A I will stipulate that the seasonal variations in

cost are caused by the seasonal increases or decreases in volume.

Q Thank you.

A Sure.

Q In fact, decreases in cost resulting from decreased volumes, as you move from a seasonal period to a non-seasonal period can also occur, is that right?

A Decreases in volume and cost --

Q Decreases -- decreases in cost --

A Decreases in cost.

Q -- resulting from decreases in volume, as a result of the fact that you are no longer in a seasonal period, but you are in a non-seasonal period, that occurs, doesn't it?

A What I had in mind was actually the summer months when volume falls below a sustained level. But I think it is certainly true that if we move out of a peak volume period, both cost and volume, over the course of the year, would come down. Yes, sir.

Q Okay.

Dr. Bradley, let's assume that it were necessary to incur overtime costs in order to handle a non-seasonal peak that occurred randomly.

A Okay.

Q Would that have been captured by your seasonal dummy variables?

A The hypothetical is a non-seasonal peak in volume that is a random increase?

Q Right. A spike in volume that happens one day, one week.

A It had to be one AP in my case, because that is the frequency of my data, is an AP to show up. But let's say it is big enough to show up in the AP level.

Q Yes.

A If we had a random increase, that would probably show up in the residual, if it was just a one time random event.

Q It wouldn't be captured by your seasonal dummy variable?

A The seasonal dummy variable would not capture -- would not control for a one time random peak in volume, that's correct.

Q Now, you said that would turn up in your residual term, is that right?

A It could. It could.

Q But suppose your variable is hours, right, not cost, and if it were overtime, isn't an hour -- if you are using hours, isn't an hour an hour?

A If -- sorry.

Q Go ahead.

A If the peak in volume caused them to add hours, to

the extent that the model was -- captured this one time random event, hours would maybe go up by more than the volume you would think would normally cause, because it is using -- adding overtime hours, and that is what I meant by saying it would show up in the residual.

Q All right. But suppose it would cost not only more hours, but overtime hours, as opposed to regular time hours.

A Right.

Q The full effect of that wouldn't be captured, would it, of that increase in cost?

A Fortunately, my model, that secondary confounding influence of a one time random event causing wage rates to change would be excluded, but otherwise it would, again, cloud or confound the measure of variability. Yes.

Q Okay. And you are happy about that because that is not what you want to measure, that particular impact on cost?

A I wouldn't quite say it is not what I want to measure, I think it is not appropriate for measuring for volume variable costs.

Q Okay.

Please turn to page 7 of your testimony.

A I have it.

Q On lines 7 to 10 you state that Dr. Neels is

arguing that hours should not be used as the dependent variable in ~~N~~ an econometric variability equation because it misses the variation in costs caused by the response of wages to small sustained volume increases. Do you see that?

A I do.

Q I take it there that the N econometric variability equation again isn't meant to mean that Dr. Neels says it never should be used, but rather you meant that to mean he didn't mean -- he argues it shouldn't be used in your equation.

A Yeah. I really wasn't trying to have any hidden meanings there. It was just --

Q Okay.

A The phraseology.

Q Okay. What do you mean by the response of wages in that sentence?

A Variation in wages increases or decreases to small sustained volume increases.

Q On that same page, Dr. Bradley --

A Um-hum.

Q At lines 12 to 13 --

A Um-hum.

Q You state that Dr. Neels, and I'm quoting here, argues that simple plots show that labor hours are proportional to piece handlings. Do you see that?

A Yeah, that was my understanding. Yes.

Q That was your understanding?

A No, that's what I said. I'm sorry. That is what I said.

Q That is what you said. Okay.

A Yes.

Q And you cited transcript volume page 15760 for that; is that correct?

A Yes, I did cite there.

Q And there Dr. Neels was responding to a question put by Ms. Duchek at the bottom of the page. Do you have that?

A Not quite. The page again?

Q Page 15760 is the question, and page 15761 is where the answer appears.

A I was doing 156, sorry, 15730, 15760. Got it.

Q Okay. Isn't it true that the question there was I am looking at the statement -- this is a question by Ms. Duchek -- I am looking at the statement where you say simple straightforward unadorned plots of the raw data tend to confirm this view.

That was the question, right?

A That is what the question says; yes, sir.

Q And let me ask you to go back to Dr. Neels' testimony at page 5, lines 10 to 11, and that is in fact

what Dr. Neels said. Is that right? That simple, straightforward unadorned plots of the raw data tend to confirm this view. Is that correct?

Transcript page --

A I have it. Common sense indicates that labor costs should be fully variable. Simple, straightforward unadorned plots of the raw data tend to confirm this view.

Q Tend to confirm this view.

A Yes, sir.

Q He doesn't say they -- ~~he~~ it shows that -- that labor hours are proportional to piece handlings, does he? Which is what you stated in your testimony.

A He confirms it.

Q He said that --

A I mean, that's even stronger than "show" from the way I would interpret it.

Q "Tends to confirm" is stronger than "show" in your vocabulary?

A Yes, sir. I took this to be a fairly strong statement. Yes.

Q Well, okay. I guess I can't quarrel if you think "tends to confirm" is stronger than "show" something, I guess we'll leave it that.

A Well, again, I wasn't -- it really wasn't my idea -- it wasn't my intention to parse words or be

particular here. I mean, the general point I understood his testimony to suggest was that the variabilities should be one, and the variabilities are measured by the relationship between costs and piece-handlings. And here and other places I -- even later on he says treat mail processing labor costs as 100-percent variable. That's a statement saying costs should be 100-percent volume variable with mail.

It seemed to me his testimony was suggesting that the Commission use its traditional assumption for costs and that the plots themselves confirmed the notion that hours were proportional with TPH, and as this part of my testimony shows, those both don't hold together.

Q Well, we'll leave it stand what Dr. Neels said and what you said he said.

A Yes, sir.

Q Could you turn to page 9 of your testimony, please?

A I have it.

Q On that page you criticize Dr. Neels for stating that, and I'm quoting here, quoting Dr. Neels' statement on that page of your testimony: An econometric study of the variability of mail processing costs with changes in volume should involve an analysis of changes in the volume of mail delivered.

That's Dr. Neels' testimony. Is that correct? That you quote there.

A Are we talking about the -- on lines 14 through 17?

Q Yes.

A That start with the words "It is also obvious"?

Q Yes.

A Yes, sir; that's -- I'm quoting him there.

Q And you say that's not obvious, and you criticize him for using the term "volume of mail delivered." Is that correct?

A Yes, sir.

Q Okay. And you indicate in the footnote there that part of the problem with that statement is that there are volumes of mail that receive mail processing but are picked up by customers at postal facilities.

Do you see that?

A I do see the footnote.

Q Is it your testimony that mail which is processed by the Postal Service but is picked up by customers at postal facilities is not delivered by the Postal Service?

A Well, that's -- I mean, I think that's a definitional issue, and I don't know what their official definition of delivered versus not delivered is.

The only point I was trying to make here is that

really it works both ways. There are some mail -- some mail volumes which skip processing, that -- like bypass mail, presorted mail -- skip processing and go right to the delivery unit they're delivered -- and in addition there is mail that firms will pick up at the facility. And certainly by the traditional definition of working say with carrier street time or rural street time that mail's not delivered. There's no delivery cost incurred.

Q And you state on that page and I am quoting here -- this is on lines 19 to 21 -- "Anyone with a basic knowledge of mail processing knows that there are material volumes of mail that are delivered that essentially bypass mail processing." Is that correct?

A Yes, sir.

Q By the way, is there any mail that receives no mail processing?

A Well, if -- my understanding is that there is a type of mail which is sorted, delivery point sequenced, drop shipped to the delivery unit, and I believe that that mail would not get any mail processing. Yes, sir.

That would be mail which comes in trays to the carrier. The carrier puts it on their truck or van and delivers on the route.

Q And the mailer delivers it to the delivery unit?

A It is drop shipped to the delivery unit. Yes,

sir.

Q So there are some types of mail that bypass mail processing in total is your testimony?

A I believe that is true. Yes, sir.

Q Okay. Now Dr. Neels indicates in his testimony an awareness that some mail receives very little processing, doesn't he?

A He could.

Q You don't know? You don't recall if he does?

A Again?

Q You don't recall if he does indicate that?

A I don't recall right now, no.

Q Well, let me direct you to transcript page 15598.

A Right. I have it.

Q That is --

A 15598, I have it.

Q That is page 12 of Dr. Neels' testimony?

A Yes.

Q And there at line 16 to 17 he states, quote, "An item that requires both a primary and a secondary sort will experience more piece handlings than one that requires only a single sort."

Do you see that?

A Yes, I do.

Q And he says in the very next sentence, "A

presorted drop shipped item will require less processing than one that is deposited in a corner mailbox with other unsorted items." Is that correct?

A It does say that.

Q And then on lines 13 to 16 he gives an example contrasting mail that goes through several postal facilities as opposed to one that may travel through fewer postal facilities, is that right?

A He does give such an example.

Q Okay. In fact, isn't one of the criticisms that he makes of your analysis that the number of piece handlings vary significantly depending on how much mail processing different pieces get so that the number of total piece handlings is not a good measure of volume?

A Actually, he makes the criticism but it is really not -- should not be directed at my testimony. I think the criticism would be directed at the total Postal Service unit volume variable cost measurement.

My testimony is relating hours to piece handlings and the relationship between piece handlings and volume, which is where this criticism would be directed, would actually be relevant to the distribution side or Mr. Degen's testimony.

Q Well, wasn't his criticism that you should have measured volume of mail as opposed to number of piece

handlings in order to determine the volume variability of cost?

A I believe he said something to that extent, I would agree. I think he was wrong in saying it, but he did say it.

Q Okay. Now going back to Dr. Neels' quote that you put forth on page 9 of your testimony, talking about the volume of mail delivered.

A Yes sir.

Q Suppose Dr. Neels had used the phrase "changes in the volume of mail received" as opposed to "delivered" -- would you then criticize his statement?

A Yes. I am not quite sure what the term "received" means. We often talk about originating volume, which is the mail sent.

Q Well, let's suppose he had said that. Then would you criticize his statement?

A Yes, I would. I would suggest that one wouldn't necessarily want to use the originating volumes in an econometric study of mail processing costs.

In fact, ironically, for some of the very reasons that he mentions that we were talking about just a few minutes ago on page 12, because it's quite possible that a single piece in originating mail may have different amounts of mail processing piece handlings associated with it, and

so I think it would be useful to break the two parts apart, hours to piece handlings, piece handles to volume.

Q Are you saying that piece handlings are not proportional to volume?

A That relationship is really the purview of Mr. Degen's testimony, the relationship between piece handlings and volume.

Q Do you have a view one way or the other as to whether total piece handlings are proportional to volume?

A Again, one needs to be careful to qualify the answer to the statement, but certainly I think for example at a point in time there is a proportionality there.

I mean roughly speaking I would expect the more volume you have, using the economist's term ceteris paribus, the more piece handlings you would have. More than that I couldn't specify.

Q So you don't know whether they are directly proportional or not?

A Well, if you mean by directly proportional that they have a positive relationship, in that sense directly, yes, I would assume that they are directly related in that sense.

Q No, I mean that if mail volume goes up 10 percent, total piece handlings go up 10 percent. That is what I mean by directly proportional.

A I haven't really formed a view on that one way or the other.

Q You haven't investigated that, is that right?

A No. That was Mr. Degen's testimony.

Q It's your testimony that Mr. Degen investigated that?

A I believe that his testimony deals with the issue of proportionality between TPH and volume and that he has an assumption in there of the requirements for proportionality.

Q He has an assumption --

A I believe that's true.

Q -- that they are directly proportional?

A Right.

Q So he didn't do any empirical analysis one way or the other?

A Well, I don't think that's true.

I think he did measure IOCS tallies by class of mail and he has some measure of volume and relates those two.

Q You believe that he did an analysis to determine whether total piece handlings are directly proportional to volume?

A I think he did an analysis. I am not so sure he did a statistical analysis, to be precise.

Q Well, you said he did an analysis. Did he do an

analysis of whether mail volume is directly proportional to total piece handlings? I should state it the other way around.

Did he do an analysis of whether total piece handlings is directly proportional to volume?

A I will leave that to him to answer actually.

Q Okay. We started out -- at least I guess that depends on how far you go back --

A Sorry --

Q -- your statement, which actually occurs on page 10 of your testimony at lines 9 to 14, you there quite clearly state that ~~rural~~ raw originating volumes should not be used in measuring the variability of mail processing labor costs, is that right?

A I think that's what I just said and I did say that in my written testimony too, yes.

Q Now the purpose of this proceeding is to set rates, isn't it, postal rates?

A I believe so. Yes, sir.

Q Okay, and mailers pay rates on ~~rural~~ raw originating volumes, don't they?

A I believe so.

Q They pay for the service of having their mail volumes delivered, is that right?

A Well, they pay for a variety of services. Some

would pay for delivery, yes. Again, this gets into the fine distinction of if mail is picked up at the facility is it delivered or not, but if we call that delivery that would be part of the process, yes.

Q Okay. That's what the rates are based on -- the mail that mailers give to the Postal Service to be delivered, broadly defined.

A I think the rates are based upon the costs --

Q Right.

A -- among other factors that relate to originating volumes, sure.

Q That's why mailers pay rates is what I meant to ask.

A I think mailers -- like me -- I think I pay for mail so that it gets to the destination I'd like it to get to, yes.

Q Okay. Thank you. Dr. Bradley, still on page 10 of your testimony, at lines 18 to 21. You state that by using the most recent years' data -- you have got a typo there, but -- for the distribution key, that term "years" there, should be an apostrophe before the S or after the S? Is it y-e-a-r-apostrophe-s or y-e-a-r-s-apostrophe?

A I meant singular, so I believe that would be before the apostrophe -- or the apostrophe before the S.

Q Okay.

A Thank you, though.

Q You're welcome. Page 11 of your testimony, please.

A I have it.

Q Lines 23 to 25. There you state that the relationship between mail volume and piece handlings is required for any variability analysis the Commission chose to use, including the historical assumption of 100 percent variability. Do you see that?

A I do.

Q Now, that statement is true only if, as posited by you, in the next two sentences that go over to the next page, the equation uses piece handlings rather than volume as the independent variability, isn't it?

A No. My next sentences were proposed as an example of understanding that. But I believe it would be true that there really are volumes and there really are piece handlings and there really are costs. And even under the historical approach, where we just 100 percent variability between cost and volume, implicitly in that process has to be -- an implicit relationship between volume and piece handling for that to work out.

Q Well, that is if piece handlings is used in the equation, that's true, is that correct?

A Well, okay, apart -- let's put aside the equation.

If we are not -- suppose we are not using the equation, in the old method there was no equation, no estimated equation. Still, implicitly, there is a relationship that must hold because we know, or at least I believe, there's volumes, and then there's piece handlings which incur costs, and then there's costs. And so whether or not we specifically measure each of those links, the link exists and the causality flows in that direction. So --

Q Well, there may be a lot of -- go ahead. I'm sorry, I thought you were finished.

A So what I had in mind in the statement was just this notion that, even under the old approach, there is an implicit assumption there about the relationship between volume and piece handlings.

Q But are you saying that one cannot do an analysis using only volume, you have to use piece handlings?

A I don't think I was being that strong. I think what I was suggesting was that an accurate -- I mean, again, we have to be careful in how we are measuring volume here. It is not inconceivable to me that volume is piece handlings in mail processing. That your measure of mail processing volume would be some measure of piece handling. So I wouldn't want to say you couldn't use volume in that sense.

I think one would be very careful in using, say, originating volume, RPW type volume, in this type of

analysis. Sure.

Q Let's go to page 13 of your testimony.

A Okay.

Q There you state at lines 5 to 6 that some of the MODs data points imply throughput rates on machines that are physically impossible. Do you see that?

A I do.

Q Do you know the maximum throughput rates on the different types of equipment used by the Postal Service?

A At this time I don't have them committed to memory.

Q Did you look at them in connection with your analysis?

A When I was doing my original direct testimony, I did talk to Postal experts to find out what the engineering standards were and the maximums that machines could so. Yes, sir.

Q You did collect information on what is the maximum throughput rate for OCR, for example?

A I don't -- I wouldn't say I collected information, but I did ask Postal Service engineering types to provide that information, they said so, yes.

Q Did you write it down and keep it?

A No, I didn't because, as it turns out -- what I was really working for there was some sort of a standard

where I could draw the line and say, okay, every data point above this level must be eliminated. And I could never sort of get what I felt was a firm commitment to that exact number. So in that sense --

Q So you didn't -- go ahead.

A So I didn't choose -- that's why I went to the 1 percent tail, because I didn't choose a particular number that I presented as the cut-off.

Q So you did not use any information on what maximum throughput rates were in determining what data points to eliminate in your productivity scrub, is that right?

A Well, as a guideline, I used it. I didn't use it as a specific measure, but I used it as a guideline. For example, if the engineering throughput rate, under ideal conditions, for an OCR is 6,000 pieces an hour, and I have observations in my data of 200,000 pieces or 28,000 pieces per hour, I felt that violated that engineering standard.

Q Well, did you compare those numbers? Did you compare what was in your 1 percent tails and say, okay, this is a good test of the maximum throughput rate of an OCR, an LSM, an SPBS?

A I think informally I did. I did no statistical test of it, but informally, I believe we looked at the data. I looked at the data and said that in many instances -- now, I am not saying necessarily every data point in the 1 percent

tail exceeded those limits, but in many instances, there were data points that did exceed those limits.

Q Go ahead.

A The issue is with, you know, tens of thousands of data points, I just didn't look at every one for that purpose. And I chose what I thought was perhaps less judgmental but objective standard of 1 percent tails.

Q Aren't there different throughput rates on those different machines? For example, an OCR has a different throughput rate than an SPBS?

A Yes, sir. Yes, sir.

Q And so if you used one of those, let's say the one that had the higher throughput rate, you -- or the one that had the lower throughput rate, you are using a test that didn't apply in the case of the other piece of machinery, is that right?

A I'm sorry if I misspoke. What I meant to suggest was that for each activity, we got the throughput rate for the relevant machinery, not that I just used the OCR for all of them.

Q But, in any event, the test that you adopted for discarding data in your productivity scrub was not pegged to maximum throughputs for different types of machines, is that correct?

A That's correct.

Q Now, your productivity scrub eliminates not only the 1 percent -- the high 1-percent tail of the distribution but also the low 1-percent tail. Is that right?

A That is correct.

Q Let's turn to page 16 of your testimony, Dr. Bradley.

A I have it.

Q Now, there you state at lines 12 to 13 that, when Dr. Neels did his cross-sectional analysis, he, quote, "ends up throwing out over 98 percent of the data" and that he does so by collapsing all the data for a single site down to one point. Do you see that?

A I do.

Q Now, am I correct that all of the observations with complete data, no missing values, were, in fact, used to calculate the single point for each site in that cross-section analysis?

A My recollection is that, in doing the cross-sectional analysis, Dr. Neels used what he defined as the -- all usable observations for each site in calculating the average value.

If that site had one piece of data, he used one data to calculate the average. If it happened to have 117, he used all 117.

Q Thank you.

Turn to page 20 of your testimony, please.

A Yes, sir, I have it.

Q Okay. At lines 4 to 6, you state, quote, "Dr. Neels seems to think that the TPH," total piece handlings, "recorded in automated and mechanized operations are the sum of FHP," first handling pieces, "and subsequent handling pieces." Is that correct?

A That what it says, yes.

Q And you state that that's simply wrong. Is that right?

A Yes, sir.

Q You cite page 16 at Dr. Neels' testimony to support your statement about what he seems to think, that the TPH recorded in automated and mechanized operations are the sum of FHP and subsequent handling pieces. Is that right?

A I do cite page 16, yes, sir.

Q Now, on that page, Dr. Neels does not even use once the phrase "automated and mechanized operations," does he?

A He certainly refers to machine counts in the previous sentence. He doesn't use the word "automated and mechanized operations," but certainly they're included in this discussion.

Q Well, he started off the discussion by going to

one of your interrogatory responses. Isn't that correct?

A It does start that way, yes, sir.

Q I'm sorry. You said a minute ago that he refers to machine counts?

A When he was quoting me, line 6 --

Q Yes. That's your quote. That's your word, right, machine counts. You said in your interrogatory response --

A It is my word, but he is using it.

Q Okay. Well -- okay. But he doesn't say, when he says first handling pieces is part of the piece handling variable used by Dr. Bradley, that he's talking about automated and mechanized operations in that sentence, does he?

A He doesn't remove them. I mean he just makes a general statement, and that would certainly include automated and mechanized.

Q Okay.

Now, did you look at the MODS manual, by the way?

A Yes, I did.

MR. McKEEVER: Okay.

I have a copy here. With the Chair's permission, I would like to give it to Dr. Bradley.

CHAIRMAN GLEIMAN: Certainly.

BY MR. McKEEVER:

Q Could you read the first sentence of Section 413.1

into the record, please, Dr. Bradley?

A 413.1?

Q Yes.

MS. DUCHEK: I'm sorry. I was going to say, Mr. McKeever, if you wanted to read it into the record, that would be fine. Maybe that would speed things along.

MR. McKEEVER: I don't know that I can read any faster than Dr. Bradley.

THE WITNESS: I'm a pretty fast reader. Are we ready?

MR. McKEEVER: Ready.

THE WITNESS: Where automatic machine counters or meters are not available, letter and flat mail is weighed into distribution operations.

BY MR. McKEEVER:

Q Thank you. Is it your testimony, Dr. Bradley, that the Inspection Service audit of December 1996 did not criticize the piece handling information for automated and mechanized operations?

A I didn't discuss the Inspection Service report at all here.

Q Did you look at it at all in connection with your testimony?

A This is the one on piece handling?

Q It's the one that's entitled National Coordination

Audit, Mail Volume Measurement and Reporting Systems, that has been discussed a fair amount in this proceeding.

A I actually saw it after my direct testimony but before my rebuttal testimony, so in that period.

MR. McKEEVER: Mr. Chairman, with the Chair's permission, I'd like to provide Dr. Bradley with a copy of that document. I do have copies of the pages that I intend to refer to from that document.

CHAIRMAN GLEIMAN: Please proceed.

BY MR. McKEEVER:

Q The document has been filed as library reference H-220.

A Thank you.

Q Could you turn to page eight there, please, Dr. Bradley?

A I have it.

Q Now, the cover page -- I'm sorry. Let me take it back for a minute. The cover page is dated December 1996; correct?

A Yes, sir.

Q That's in fiscal year 1997?

A Yes, it would be.

Q Now, going back to page eight, that page is entitled Management Operating Data System, MODS - Finding; is that correct?

A Yes, sir.

Q The first sentence indicates that the finding revealed "large variances between the first handling piece volume projected from MODS and actual pieces counted." Do you see that?

A I do.

Q That was based on a review of the scale weight system at 20 sites; is that correct?

A That's what it says.

Q Now, can you go to the third paragraph, please?

A I have it.

Q The first sentence of the third paragraph on that page states the SWS, scale weight system, the SWS at one site was not used to determine the FHP volumes for automated mail. Do you see that?

A I see the sentence; yes, sir.

Q The last sentence in that same paragraph states that management at that site stated that the scale weight system was not used at that site because the scales weren't close enough to the automation operations. Do you see that?

A I do.

Q Thank you. Dr. Bradley, let's go to page 23 of your testimony.

A I have it.

Q At lines 19 to 21 and again in footnote 31, you

state that Dr. Neels "admits that he is not familiar with the basic econometric terms that describe this type of trend modeling."

A I see that.

Q And you cite page 15709 of the transcript for that statement; is that correct?

A Now I've lost it, sorry.

Q Maybe I have the wrong page cite. We are on page 23, right?

A I thought it was 15904.

MS. DUCHEK: The citation is actually on the footnote that carries over onto page 24.

THE WITNESS: Oh, sorry.

BY MR. McKEEVER:

Q My citation is correct.

A Yes, 15709.

Q Right, do you have that in front of you?

A Just a minute.

Q Okay.

A I do.

Q And Dr. Neels was there asked whether he was familiar with certain terms such as shifting trend and segmented trend. Is that correct?

A Yes, sir.

Q And his answer was "Not as a precisely defined

econometric term." Is that correct?

A That is correct.

Q Thank you.

Dr. Bradley, could you turn to page 29 of your testimony, please?

A I have it, sir.

Q There you state, on lines 7 to 8, that Dr. Neels' fundamental recommendation is that the Commission should pursue a cross-sectional analysis. Do you see that?

A I do.

Q Now, you didn't mean to say there that Dr. Neels' fundamental recommendation of what the Commission ought to do in this case is to use the variabilities calculated by any of the cross-sectional analyses in this case, did you?

A What I was referring to, although I didn't specifically say it, was Dr. Neels' recommendation to use -- his recommended variabilities were cross-sectional variabilities based upon a modified version of my model.

Q Is it your testimony that he recommended that the Commission should adopt those variabilities in this case?

A Why don't we just check? Let me refresh my recollection here.

Q Well, let me help you. Let me direct you to page 15591 of the transcript, please, which is page 5 of Dr. Neels' testimony.

A Hold on a second. Say that again?

Q Page 15591 of the transcript.

A Got it.

Q Now, at lines 12 to 14, Dr. Neels stated, quote, "I recommend that the Commission stand by its traditional position and treat mail processing labor costs as 100-percent volume variable." Is that correct?

A It says that exactly there, yes, sir.

Q Okay.

A What I was referring to in the section was -- later on in the testimony -- I don't have the page cite to give you, sir, but later on he says that he recommends using his cross-sectional variabilities.

Q Well, doesn't he say if the Commission --

A Sorry. To be fair, he says, if the Commission were to adopt an econometric approach, they should use the cross-sectional variabilities, yes, sir.

MR. McKEEVER: Okay.

No further questions, Mr. Chairman.

CHAIRMAN GLEIMAN: Is there any follow-up?

[No response.]

CHAIRMAN GLEIMAN: Questions from the bench?

[No response.]

CHAIRMAN GLEIMAN: Would you like some time for redirect?

MS. DUCHEK: Five minutes would be fine.

CHAIRMAN GLEIMAN: That's okay. We'll give you your five minutes, and then what we're going to do, after you have your five minutes and we finish with this witness, is we're going to take a half-hour break.

We have three more witnesses to go tonight, and we will finish all three witnesses. A half-hour will give people an opportunity to do what they've got to do with their cars, maybe run next door or across the street and get a sandwich or whatever.

I'm not opposed to people bringing food back into the hearing room or coffee or whatever if they choose to, as long as you're careful not to mess the place up, because I wouldn't want our admin staff to yell at me tomorrow for letting you bring food and drink into the room.

So, we'll give you your five, and then we'll finish up.

[Recess.]

CHAIRMAN GLEIMAN: Ms. Duchek, whenever you're ready.

MS. DUCHEK: Mr. Chairman, we have no redirect.

CHAIRMAN GLEIMAN: In that case, we'll come back at five minutes after eight, and as I said, you're all permitted to bring whatever you want, within reason, back into the hearing room, as long as you don't mess up our

living room, and at that point, we'll pick up with our next witness.

Dr. Bradley, I want to thank you for your appearance here today and for your contributions to our record, and you are excused, sir.

THE WITNESS: Thank you.

[Witness excused.]

[Recess.]

CHAIRMAN GLEIMAN: Our next witness, appearing on behalf of the Magazine Publishers of America, is Mr. Higgins and he is already under oath in this proceeding.

Counsel, if you could move his testimony.

Whereupon,

PAUL HIGGINS,

a rebuttal witness, was called for examination by counsel on behalf of Alliance of Nonprofit Mailers, American Business Press, Coalition of Religious Press Associations, Dow Jones & Company, Inc., Magazine Publishers of America, The McGraw-Hill Companies, Inc. National Newspaper Association, and Time Warner, Inc. and, having been previously duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. CREGAN:

Q Mr. Higgins, I have just handed you two copies of a document designated MPA-RT-2, Testimony of Paul Higgins on

behalf of a bunch of parties I won't mention at this late hour.

Are you familiar with the contents of this document?

A Yes.

Q Was the document prepared by you or under your supervision?

A It was.

Q Do you have any revisions or corrections this evening?

A No, I don't.

Q If you were to testify orally today, would your testimony be the same?

A Yes, it would.

MR. CREGAN: Mr. Chairman, I will move Mr. Higgins' testimony into evidence and I will hand two copies to the reporter.

CHAIRMAN GLEIMAN: Are there any objections?

[No response.]

CHAIRMAN GLEIMAN: Hearing none, the testimony and exhibits of Witness Higgins are received into evidence and I direct that they be transcribed into the record at this point.

[Rebuttal Testimony and Exhibits of Paul Higgins, MPA-RT-2, was

received into evidence and transcribed into the record.]

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

POSTAL RATE AND FEE CHANGES, 1997

DOCKET NO. R97-1

REBUTTAL TESTIMONY
OF
PAUL HIGGINS

ON BEHALF OF
ALLIANCE OF NONPROFIT MAILERS,
AMERICAN BUSINESS PRESS,
COALITION OF RELIGIOUS PRESS ASSOCIATIONS,
DOW JONES & COMPANY, INC.,
MAGAZINE PUBLISHERS OF AMERICA,
THE McGRAW-HILL COMPANIES, INC.,
NATIONAL NEWSPAPER ASSOCIATION,
AND
TIME WARNER INC.

Communications with respect to this document may be sent to:

James R. Cregan
Counsel
Magazine Publishers of America
Suite 610
1211 Connecticut Avenue, N.W.
Washington, D.C. 20036
(202) 296-7277

March 9, 1998

TABLE OF CONTENTS

AUTOBIOGRAPHICAL SKETCH

My name is Paul Higgins. I am a Senior Analyst with Project Performance Corporation. I filed testimony in this proceeding responding to Notice of Inquiry No. 4 on behalf of the Magazine Publishers of America. A full description of my background and qualifications appears in that testimony, filed as MPA-NOI-1.

I. PURPOSE AND SCOPE OF TESTIMONY

For over 25 years spanning nine rate cases, the Postal Service (and the Postal Rate Commission) assumed that mail processing costs were almost totally volume variable, or, in econometric parlance, that the cost elasticity of mail processing was approximately 1. During this time and these cases the Service offered no quantitative or statistical analysis to support that assumption despite the fact that mail processing has always been the largest component in both the attributable and the total costs of the Postal Service, and despite the fact that this period has been marked by both rapid and profound improvements in statistical techniques and by substantial changes in the way mail is prepared and processed. Any analysis that it did offer relied on supposition rather than data.

The record in this case clearly contradicts this long-held assumption, and is devoid of any evidence to support it. Indeed, there is substantial evidence to the contrary. As I state in my conclusion:

- There is no doubt on this record that the cost elasticity of mail processing is substantially less than 1.
- The long-held unsubstantiated assumption that mail processing costs are almost totally volume variable has been shown to be invalid.
- There is ample evidence on this record to resolve the issue of the cost elasticity of mail processing econometrically.

In this case, much to its credit, the Service tested this previously unsubstantiated but extraordinarily important assumption. USPS witness Bradley presented testimony (USPS-T-14) on the cost elasticity of mail processing based on an econometric study. It showed that the cost elasticity of many mail processing operations is much less than 1. Thus, he found that there are large returns to scale in mail processing operations.

His testimony has prompted three Presiding Officer's Information Requests, one Notice of Inquiry from the Commission, testimony from UPS witness Neels (UPS-T-1), and testimony from OCA witness Smith (OCA-T-600). Professor Bradley, witness Neels, and I all filed testimony responding to Notice of Inquiry No. 4. (NOI 4).

In this testimony, I review the written direct testimony of witnesses Neels and Smith, witness Neels's oral testimony, as well as witnesses Bradley's and Neels's responses to NOI 4. To set a perspective for this task, and since the direct testimonies of witnesses Neels and Smith criticize witness Bradley's analysis, I also review his analysis.

Given the evidence in this case and the current state of the art in applied econometrics, I believe that the issue of the variability of mail processing is fully amenable to an econometric analysis. In fact, given the evidence and the state of the art, it would be unreasonable to claim that the evidence is insufficient to allow an econometric cost elasticity estimate. I believe that if a "science court" comprised of leading economists were convened to decide whether the issue of mail processing cost elasticity should be resolved through the use of econometrics, that "court" would rule unanimously that not only should it be, but that any other approach would be unreasonable.

The evidence in this case makes it equally clear that the elasticity of mail processing is less than 1. In fact, as I pointed out in my response to NOI 4, "the average mail processing variability is no higher than Professor Bradley's figure of 76.4 percent." Tr. 29/16125-26. As I also pointed out in my response to NOI 4, the results of the

requested analysis rule out the pooled model and show that the fixed-effects and the unrestricted models produce reasonably consistent results.

In the remainder of this testimony, I explain the basis for my conclusions that witnesses Neels and Smith are wrong in their criticisms of witness Bradley's approach and results. Witnesses Neels and Smith have both tried to attack the theoretical underpinnings and analytical approach of witness Bradley. In Section II, I rebut their criticisms, showing that they lack merit. Witnesses Neels and Smith have also tried to attack witness Bradley's data scrubs. In Section III, I show that witness Bradley's use of data is appropriate - his data scrubs are standard practice and his use of panel data helps in the error-in-variables problem. Witnesses Neels and Smith have also raised a wide range of issues pertaining to witness Bradley's econometric methods. In Section IV, I show that witness Bradley has used proper econometric methods and that their criticisms are groundless. Section V presents my analysis of the oral cross-examination of witness Neels. Finally, Section VI presents my conclusions.

II. ATTACKS ON WITNESS BRADLEY'S THEORETICAL UNDERPINNINGS AND ANALYTICAL APPROACH LACK MERIT

Witnesses Smith and Neels have both claimed that there are defects in witness Bradley's theoretical underpinnings and in his analytical approach. In this section of my testimony, I show that neither economic nor econometric theory provide any basis for these claims.

In part A, I examine witness Smith's claim that visual inspections of witness Bradley's data refute his results. I explain why statistical analysis is superior to visual inspection.

In part B, I analyze witness Smith's claim that witness Bradley should have estimated a production function rather than a cost function. I explain that while either approach is acceptable from a theoretical position, witness Smith's preferred approach is

intractable. In part C, I also show that witness Smith's claim that witness Bradley's method excludes the impact of capital is wrong. In similar fashion, I show that contrary to witness Smith's assertions, witness Bradley's model is sufficiently detailed for the task at hand.

Finally, in part D, I refute points that witnesses Neels and Smith have raised about "length of run" issues. I show that they are extremely confused on these issues, not just because their criticisms are mutually contradictory, but because they also have misstated what determines "length of run" and how it influences ratemaking.

A. Visual Inspection of Data Is Vastly Inferior to Statistical Analysis

Visual inspection of selective two-dimensional "slices" through multivariate data may sometimes be useful for suggesting relationships. It is, however, inadequate and misleading as a means of analyzing them. It is inadequate because it is entirely subjective – the human eye is simply incapable of discerning the curve or surface that best describes a complex cloud of data points, particularly if it has more than two dimensions; if the points are numerous, bunched up, or overlap each other; if the points are dispersed in irregular patterns; or if the points are not precisely indicated on the graph. It is misleading because a two-dimensional plot restricts the viewer to looking at partial relationships in the data, excluding from view other variables that may affect the dependent variable, or the relationship between the plotted variables. In effect, it invites the viewer to assume that all relevant information is either summarized by the graph or held constant, when in fact other confounding variables are merely hidden from view.

Witness Smith makes clear that his case for rejecting Professor Bradley's fixed-effects model, and for preferring the pooled model, is based largely on his examination of numerous plots of witness Bradley's data for various mail processing operations. Tr. 28/15841-49. In this section of my testimony, I show that witness Smith's analysis of

these plots (exhibits OCA 602 and 603, Tr. 28/15870-77 and 15878-96, respectively) is without merit, as it contains numerous unwarranted assertions, unfounded generalizations, and errors in judgment.

Witness Smith's graphs consist of two basic types. The first set, contained in exhibit OCA 602, consists of plots of the logarithm of total hours against the logarithm of total piece-handlings (TPH) for each of seven direct mail processing activities at MODS facilities – OCR, BCS, LSM, Manual Letters, Manual Flats, SPBS Non-Priority, and Manual Priority – in which data from all of the facilities are combined. The second set, contained in exhibit OCA 603, consists of plots of hours against TPH for selected individual facilities in each of four activities: Manual Letters, Manual Flats, OCR, and LSM.

Regarding the first exhibit, witness Smith states:

> The data presented in exhibit OCA 602 are visually compelling in demonstrating a variability approaching 100 percent between labor hours and mail volume [Tr. 28/15847.]

This is, quite simply, indefensible. There is no conceivable way that witness Smith or anyone else could tell, by looking at these plots, whether the variability of hours with respect to TPH in each activity is "approaching 100 percent" or any other particular value. One can certainly form general impressions of what the elasticity of one variable might be with respect to another by looking at data plots, but no more than that. Such impressions, however, as witness Bradley has testified, can be misleading. Tr 11/5581-82. This is true for three major reasons.

First, the data that witness Smith plotted, and that witness Bradley and others statistically analyzed, are not simple cross-sections or time-series, but rather constitute a panel containing repeated observations on a cross-section of facilities over time. As such, they contain variation in the hours-TPH relationship in two different dimensions –

temporal (within any given facility over time) and cross-sectional (across different facilities in any given time period) – rather than just one. Witness Smith's graphs ignore this distinction.

To illustrate the implications of this error, consider the following simple, two-part thought experiment: (1) Turn to exhibit OCA 602 and select any two points at random from any one of the plots. (2) Now try to determine whether the two points are (a) observations from different sites in the same time period, (b) observations from the same site in different time periods, or (c) observations from different sites in different time periods. The point is, of course, that it can't be done using these plots. Yet according to witness Smith, making such distinctions is crucial:

> [T]he measurement of changes in labor with short-run changes in output is irrelevant for the purposes of this proceeding. The relevant measurement of cost incidence should focus on the expansion path reflecting expansion or contraction of the scale of the facility in the foreseeable future.... [Tr. 28/15841.]

Thus, witness Smith contradicts himself on this point: on one hand he claims to believe that short-run variations in costs should be ignored for purposes of analyzing cost variability, and that long-run variations are all that matter; on the other hand, his graphical analysis, which is the centerpiece of his testimony[1], conflates short-run and long-run variations in cost to the point of permitting no distinction between them whatsoever. Witness Smith's fascination with his data plots, which show disparate sets of points on a page in a manner that obscures their complex interrelationships, illustrates the power of such incorrect analysis to mislead.

Second, the data witness Smith attempts to represent in his bivariate plots are, in fact, *multivariate*. Even if, against all the evidence on this record, we were to assume away any individual facility effects – as one would have to do in order to prefer the pooled

[1] Tr. 28/15841.

model[2] – witness Smith admits that other explanatory variables besides TPH belong in the model.[3] Why, then, should he believe that it is possible to ascertain the value of the elasticity of hours with respect to TPH while restricting his attention to just this one explanatory variable? In fact, this type of partial graphical analysis suffers from the same infirmities as the analogous regression analysis in which all but one of the relevant explanatory variables have been excluded: any inferences about the elasticity of the dependent variable with respect to this one included variable will be biased and inconsistent.[4] The *only* conditions under which the relationship between hours and TPH could be assessed in this fashion without an automatic presumption of bias would be (i) if the other variables in witness Bradley's model had no effect on hours – which is tantamount to saying that they don't belong in the model – or (ii) if each variable witness Smith excludes from consideration in his bivariate graphs is completely uncorrelated with TPH.[5] Neither condition holds in this case: the other regressors in the model are highly significant, and clearly belong in the model; and not one is uncorrelated with TPH in the sample. Hence, the inferences witness Smith draws from his bivariate data plots concerning the volume variabilities of mail processing costs fail the test of reasonableness, since they are presumptively biased.

Finally, even if witness Smith's analysis of his graphs were not fatally flawed for the reasons already stated, his analysis would still fail because it is based on plots in which most of the data he claims to have examined do not actually appear. In all but one plot, in fact, the majority of the data points are hidden from view (in all but two, over 70 percent are hidden), as Table 1 shows.

---

[2] This assumption would, of course, be groundless since it has been rejected in multiple statistical hypothesis tests.

[3] This is implicit in Dr. Smith's recommendation that the Commission accept Bradley's pooled model, which he made at numerous points throughout his direct testimony, *e.g.*, Tr. 28/15839, 15841, 15843-4, 15846-7.

[4] For a discussion of the bias and inconsistency caused by omitting relevant variables, see Jan Kmenta, *Elements of Econometrics*, Macmillan, 2nd edition 1986, at 443-44.

[5] *Ibid.* See also William H. Greene, *Econometric Analysis*, Macmillan 1990, at 259-61, and Arthur S. Goldberger, *A Course in Econometrics*, Harvard University Press 1991, at 183-85.

Table 1 Hidden Observations in Smith's Exhibit 602			
MODS Operation	Usable Observations	Hidden Observations	Percent Hidden
OCR	18,497	15,131	81.8
BCS	22,737	18,818	82.8
LSM	23,919	17,382	72.7
Manual Letters	24,781	20,872	84.2
Manual Flats	23,989	19,918	83.0
SPBS Non-Priority	4,569	2,522	55.2
Manual Priority	15,736	7,604	48.3

The reason that the majority of the data points in witness Smith's graphs are hidden from view is that they are obscured by other points – piled one atop the other, as it were. SAS®, the statistical software he used to produce these plots, warns the user when this occurs by using different letters to represent different numbers of coincident points in the plot ("A" for one point, "B" for two points, and so on), and by printing a warning beneath each plot listing the number of hidden points.[6] Witness Smith apparently believes that this phenomenon of data "bunching" has no bearing on his ability to interpret visually the patterns observed in his data. In response to a written interrogatory asking him to confirm that he "could not visually inspect the pattern of 18,818 data points [on page 3 of 8 in OCA 602] because they are hidden and do not appear on the plot," witness Smith wrote:

> I confirm that I inspected the pattern for the points plotted. Some of the 'Z' data plot a large number of data points located at the same point, and, accordingly, data points which are plotted on a combined basis do not plot individually. [Tr. 28/15919.]

[6] "By default, PROC PLOT uses different plotting symbols (A, B, C, and so on) to represent observations whose values coincide on a plot....[T]he output [also] includes a message telling you how many observations are hidden." *SAS® Procedures Guide Version 6*, Third Edition, SAS Institute, Inc., Cary, NC, 1990 at 416.

Further, he admitted that each "Z" in the plot "indicates that 26 or more points are present in the vicinity of the letter" and that "the letter 'Z' appears in [this one] plot about 100 times."[7] *Ibid.*

Witness Smith seems unaware that the position and orientation of the least-squares regression surface describing these data (and hence its slope with respect to TPH) is influenced not merely by the location of the points, but also by the number in any one locale. A gravitational metaphor is apt here: as with gravity, the force of attraction exerted on the line, pulling it in a given direction is proportional to the "mass" of the data located near that spot. Thus, other factors being equal, the greater the number of hidden points at a spot on the graph, the greater the influence of that spot.

The graphs included in exhibit OCA 603 are plots of hours against TPH (in levels rather than logarithms this time) for selected facilities in each of four direct mail processing activities at MODS facilities – Manual Letters, Manual Flats, OCR, and LSM. Witness Smith claims to be able to determine the model specification, if any, with which the data for a particular operation at a given site are most consistent:

> A plotting of data points which ultimately has a positive intercept on the dependent variable, the hours-axis, is consistent with witness Bradley's fixed effects conclusions. A plotting of data points which result in a blob of data is not indicative that the fixed effects (or any other approach) is consistent with witness Bradley's conclusions. Finally, a plotting of data points essentially through the origin is consistent with the pooled case. [Tr. 28/15878.]

Further:

> For each of the four types of activities presented....I selected representative graphs....The three types of plots by location include, a plot that is in good agreement with a fixed effects regression; a 'blob' type of plot, indicating that for the location under consideration there does not appear to be a clear data relationship; and a plot that is in good

[7] In fact, since 18,818 observations are hidden from view in this plot, each "Z" would have to represent approximately 188 hidden points, on average.

> agreement with a pooled effects regression such as presented, but not endorsed, by witness Bradley in response to Presiding Officer's Information Request #4. [Tr. 28/15879.]

I do not believe this is correct. Panel data need not have any particular implied intercept values (or signs) in order to reject the restriction of the pooled (or for that matter, the "between") model: they need only exhibit intercepts that vary by site, which is best determined by performing a statistical test of the restriction. Nor does a plot in which most of the points seem to lie along a well-defined curve or line emanating from the origin necessarily imply that the pooled model is appropriate: this is an empirical question, and depends on whether or not the data support the restriction of a common intercept. If they do not, then the plot is not "compelling," but merely misleading.[8] Finally, a plot that looks like a "blob" doesn't necessarily indicate a lack of consistency with either model: again, without taking into account the nature of the cross-section and time-series components in the data, a "blob" could be represented best by a single regression surface or by several regression surfaces, a question best left to a formal statistical test. That witness Smith thinks otherwise is an indication of his misunderstanding of panel data. By plotting his data without regard for the obvious fact that each point can be classified simultaneously in two dimensions – by its time period and its facility – he lost whatever ability he might have had to contribute a meaningful graphical analysis to these proceedings.[9]

---

[8] This point is aptly made in Figure 1.1 of Cheng Hsiao, *Analysis of Panel Data*. Econometric Society Monograph No. 11. Cambridge University press, 1986, p. 7.

[9] In principle, it is conceivable that a plot of panel data could be constructed that would allow a researcher to perform an analysis similar to the one Smith tried to do – for instance, one could imagine identifying cross-section units by color and time-period by using distinct symbols in the plots. In practice, however, this would be unlikely to be useful, because of the large number of facilities and time periods in witness Bradley's data set.

B. *Witness Smith Confuses Theoretical with Applied Statistics*

I believe that Witness Smith believes that Professor Bradley's analysis of mail processing labor costs is flawed because it did not begin by specifying the production function of the Postal Service. According to witness Smith,

> Economic theory uses production functions in specifying cost functions. Economists specify production functions as representing the relationship between the inputs to the production process (*i.e.*, labor, capital, etc.) and the outputs (*i.e.*, the product)....Cost functions are derived from the theory of production functions. [Tr. 28/15826.]

Further,

> [s]ince witness Bradley's cost equations for each activity are not fully derived and justified in terms of economic theory, the cost equations may provide a good data fit on an operational basis at a given facility. Nevertheless, the equations generally lack explanatory power for the purpose of cost allocation. [Tr. 28/15828.]

I believe that witness Smith is incorrect in this assertion: I am aware of no requirement that an empirical analysis of cost variability need begin by explicitly specifying or estimating the production function.

It is true that the theoretical development of the cost function entails minimizing the costs of producing a quantity of output subject to the limitations imposed by the current technological possibilities, as represented by a production function. But this is largely a textbook exercise[10], used to illustrate the relationship between the firm's cost function and the underlying production function, and has very little bearing on applied studies such as that undertaken by Professor Bradley.

[10] Indeed, one can find reference to this development in most graduate economics textbooks concerned with the theory of the firm. Two of the most commonly used are Hal R. Varian, *Microeconomic Analysis* (3rd edition, W. W. Norton & Co. 1992), and David M. Kreps, *A Course in Microeconomic Theory* (Princeton University Press 1990).

It is, however, worth noting one of the results of this theoretical development in light of witness Smith's criticism. One of the key elements of the theory of the firm is that there is, in general, no reason to prefer a production function approach to one that begins directly from the firm's cost function, because the latter "summarizes all of the economically relevant aspects of its technology."[11] In other words, the production function cannot provide any information above and beyond what can be obtained from the cost function.

Conversely, there are a number of reasons why a cost function approach is preferable. The most obvious, in this case, is a practical issue: a production function assumes the firm has just one output.[12] This clearly is not true of the Postal Service, which offers dozens of separate subclasses and rate categories of mail delivery service, as well as numerous other products and services, for sale to the public.

Even ignoring this obvious impediment, witness Bradley was wise to estimate a cost function directly for two additional reasons. First, estimating a production function would have taken him far afield of his task. Witness Smith apparently believes that encyclopedic knowledge of "the relationship between the inputs to the production process (*i.e.*, labor, capital, *etc.*) and the output...including capital/labor tradeoffs, expansion paths, and economies of scale" – in short, of the precise form and parameter values of the production function – is a prerequisite for obtaining reliable estimates of volume variability. In fact, volume variability entails knowledge only of the much more limited concept of scale economies, which can be adequately estimated without knowing the precise specification of the production function.

Second, production function estimation is much more burdensome than cost function estimation. This is largely because it requires the analyst to assemble accurate observations not only on labor and output, but on capital services as well. This

[11] Varian, *op. cit.*, at 84.
[12] Kreps, *op. cit.*, at 238.

requirement raises a host of intractable measurement problems, all of which revolve about the fact that capital goods consist not of flows of (relatively) homogeneous factor services, but of a heterogeneous stock of widely disparate real assets – buildings, machines and tools, vehicles, storage areas – possessing different prices and vintages, different uses, and different expected lifetimes. There is neither an easily obtainable "flow" measure of capital services corresponding to the hours of labor input, nor an easily obtainable marginal value measure for capital services corresponding to the wage.[13] In summary, this is a swamp that is best avoided:

> There are basically two ways to approach [the estimation of factor-demand and cost functions]. One...is to estimate, by some procedure, the underlying production function for some activity and to then calculate, by inverting the implied first-order relations, the factor-demand curves (holding output constant). The cost function can then be calculated also. This, however, is a very arduous procedure....It would seem to make more sense to start with estimating the cost function or the factor-demand curves directly.[14] [Emphasis added.]

Finally, witness Smith does not seem to understand the advantages of using a flexible functional form when estimating the cost function. Unless the researcher knows *a priori* the precise form of the production function – and I know of no one who would claim to possess this information in the case of the Postal Service – specifying the production function in advance of performing a cost analysis at best would serve no useful purpose, and at worst could tempt the researcher to impose unwarranted restrictions on the cost function via his choice of model specification for the production function. This is due to the "primal-dual" relationship between the cost and production functions.[15] Each specific form of the production function implies a specific functional form for the corresponding cost function that is its dual. Clearly, if one knew the specific form of the

---

[13] See, *e.g.*, William J. Baumol, *Economic Theory and Operations Analysis* (4th edition, Prentice-Hall 1977), chapters 25 and 26.

[14] Eugene Silberberg, *The Structure of Economics: A Mathematical Analysis* (2nd edition, 1990) at 281-5.

[15] For a discussion of duality in economics, see Silberberg, *op. cit.*, chapter 7, and Baumol, *op. cit.*, chapter 14.

primal (*i.e.,* production) function, then imposing this prior information when estimating the cost function would improve the resulting estimates. For example, if we somehow knew that the production function were of the Cobb-Douglas form with constant returns to scale, then one can show that the cost function obtained by minimizing costs subject to this production function would be of the same form – a useful piece of information.[16] In the absence of such specific information, however, there is little to be gained by going through this exercise. Either one could specify the production function as a flexible form, in which case the information obtained would be equivalent to what one would obtain by fitting a flexible form of the cost function directly, or one could impose a more restrictive form onto the production function arbitrarily, which would bias the resulting estimates.

C. Witness Smith is Wrong to Claim that Witness Bradley's Analysis Excludes Capital

Witness Smith alleges that total pieces handled is not "the only or even the major driver" of labor costs in mail processing (emphasis in original). Tr. 28/15825. He goes on to list "the types and age of equipment, arrangement of the production process, product demand, and types of processing activities" as the additional cost drivers that, he believes, witness Bradley should have used in his model. *Ibid.*

This is an odd assertion for someone who criticizes the Postal Service's variability witness in this case for failing to adhere sufficiently to the orthodox economic theory of the firm.[17] According to this theory, a fully-specified cost function contains two general types of explanatory variables: input prices, and the level of output.[18] If input prices are

[16] Varian, *op. cit.*, at 87. Of course, if one knew this it would still be unnecessary to begin one's analysis with the production function as witness Smith claims: one could simply impose the restriction directly when specifying the cost function.
[17] *E.g.*, Tr. 28/15822, 15823, 15825, 15826.
[18] Varian, *op. cit.*, at 49-77; Kreps, *op. cit.*, at 250-58.

assumed to be constant, then the cost function has but one explanatory variable – the level of output.

But if a theoretically correct cost function need not include direct measures of the stocks and vintages of various types of capital goods, it is nonetheless important that it include indicators of the effects of technological change on costs. This is typically done by including time trends in the model, on the assumption that technical advances occur over time.[19] Witness Bradley's model goes beyond this simple approach in two respects: he addresses the issue of automation directly by his inclusion of the manual ratio in the letter and flat sorting models, and he accommodates the uneven spatial distribution of technical advances by allowing for site-specific intercepts.

D. Witnesses Neels and Smith are Confused And At Odds with One Another on the Issue of Length-of-Run. Each Has Ignored Results Reported by Bradley that Answer Their Criticisms in This Regard.

Neither witness Neels nor witness Smith is precise in defining "long-run" and "short-run", either in theoretical or econometric terms. As it happens, these witnesses also disagree with one another on this important point. Worse still, each of them is internally inconsistent: as I show in this section, their theoretical definitions are at odds with their respective econometric specifications. Finally, each of their criticisms

[19] This is not to say that time trends necessarily capture only the effects of changes in technology, as witnesses Neels and Smith appear, mistakenly, to believe (*e.g.*, Tr. 28/15620, Tr. 28/15831). As witness Bradley stated in his response to DMA/USPS-T14-24, trend variables capture not only the effects of technological changes over time, but also the effects of any other covariate of mail processing labor hours that is correlated with time but not represented elsewhere in the model. It is therefore futile to attack Bradley's results on the ground that the trend coefficients don't conform to one's prior expectations concerning the impact of technological change, as Neels does (Tr. 28/15621-25), since the trends may be capturing other (possibly unknown) effects that vary with time. Virtually all cost models estimated with time-series or panel data include trends, for the very good reason that whatever is causing costs to vary over time should not be allowed to contaminate the parameter estimates of interest, in this case those associated with total piece-handlings.

concerning length of run has already been answered effectively by witness Bradley in his direct testimony. Thus, their testimony on the subject should be rejected.

Witness Neels claims that:

> [t]he fixed effects models that Bradley relies upon for his variability estimates do not appear to be capable of providing reliable estimates of the long-run variability of mail processing labor costs. These models relate mail processing labor hours in a four-week accounting period to the number of piece handlings in that same period and in the previous period. Because these models look back only a single accounting period, they are not capable of detecting or accounting for changes that take place over longer periods of time. Their short-run view of labor cost variability calls into question their relevance to this proceeding. [Tr. 28/15625] (emphasis added).

Continuing in this vein, he states that

> [t]he extent to which mail processing labor costs vary with volume will depend upon the time horizon over which volumes and costs change....Thus, the estimate one gets for the volume variability of mail processing labor costs may differ, depending upon how long a time is allowed for costs to respond to changes in volume. [Tr. 28/15625-26.]

Witness Neels is arguing that it is the time horizon of the model that determines whether it is "short-run" or "long-run." Note that he does not, in either excerpt, provide an indication of the length of the time horizon that he has in mind. He goes on to note, however, with apparent approval, that

> "[i]n past proceedings, the Commission has relied upon evidence of the long-run variability of costs in its findings regarding the attribution of costs. 'Long-run' in this context, has been interpreted as changes that occur over periods longer than a year." *Ibid.* (footnote omitted).

Thus, it would seem that we have our answer: witness Neels believes that witness Bradley's model is flawed because the latter includes only a single-period lag in the set

of explanatory variables, rather than including more lags, or lags at a distance of more than one accounting period from the one in which current labor hours are measured.

The remedy for this supposed infirmity, were we to accept it at face value, is clear: include a lag (or lags) of duration longer than a single accounting period. It is therefore surprising that this is not what he recommends. He instead proposes an altogether different model, the "between" model estimated by witness Bradley as a by-product of one of his statistical tests.[20] *Ibid.* Witness Neels claims, without substantiation, that the between model "de-emphasizes the effects of short-term increases and decreases in volume" (Tr. 28/15627), "emphasizes the contrast between facilities that differ systematically in the volume of mail they process" (Tr. 28/15628), and is "less subject to attenuation due to errors-in-variables bias than [the] fixed effects model" (Tr. 28/15629). In fact, the between model does not merely "de-emphasize" time-varying effects and "emphasize" cross-section effects – it ignores all information in the data except "the contrast[s] between facilities". This is one of the reasons this estimator is biased: it excludes the (very significant) non-volume time-varying effects that are clearly expressed in the data when a model accommodating such effects is used. Whether cross-section data are less subject to the attenuation problem caused by measurement error, as witness Neels asserts, is an untested hypothesis. He offers an explanation for why this might be true, based on the metaphor of measurement errors "averaging out" in going from the full data set to facility-level means, but no other evidence in support of his assertion. In any case, the relevance of this argument depends in large measure on the seriousness one ascribes to the errors-in-variables problem in total piece-handlings. As I show in section III of my testimony, witness Neels has greatly exaggerated this problem.

Witness Neels then observes that

> [t]he volume variabilities implied by the cross-sectional models are often higher than those reported by Bradley and are generally very close to 100

[20] The between model is a cross-section model estimated on a single data point for each facility consisting of the arithmetic mean of each variable for each facility.

> percent (or greater than 100 percent, implying diseconomies of scale). The differences between the...results [of the between model] and the fixed effect results can be attributed to the fact that the cross-sectional results are closer to the long-run volume variabilities and are less subject to attenuation effects caused by measurement error in the piece-handlings variables. [Tr. 28/15629.]

Witness Neels is incorrect. The between model, as well as the pooled model, is biased and inconsistent. This is so because, like the pooled model of which witness Smith is so enamored, the between model imposes the unrealistic restriction of common slopes and common intercepts across all mail processing facilities. This restriction was, of course, tested and thoroughly discredited in the statistical tests performed by witnesses Bradley and myself in response to Notice of Inquiry No. 4. Tr. 28/16070-101 and T5. 29/16121-140. It is this bias, and not any supposed "long-run" qualities, that explains the exceptionally high variability estimates produced by the between model.

While witness Neels did not recommend, or provide for the record, results from a model that comported with his suggestion of a model with a longer time horizon, witness Bradley did so in his direct testimony. Although it would not have been practical to include 12 or more separate lagged piece-handling terms in order to comply with witness Neels's demand for a model with a time horizon "longer than a year"[21], Professor Bradley did re-estimate his fixed-effects model using "same-period-last-year" (SPLY) data. This model tests the hypothesis "that the determinant of staffing for mail processing activity in a given accounting period is the amount of volume growth over the same period in the previous year." He found that:

> the results from estimation on the SPLY data confirm the general result [that] the variabilities are less than one and repeat the pattern that the variabilities for manual activities are below variabilities for mechanized and automated activities. The estimated variabilities are quite low, however. [USPS-T-14 at 77-78.]

[21] Since piece-handlings are highly correlated from one AP to the next, including more than one or two would lead to intractable multicollinearity problems.

Thus, it would seem that witness Neels's concern over the supposed shortness of the time horizon was for naught: if anything, including lags at greater distance from the current accounting period seems to lower, not raise, variabilities.

In contrast to witness Neels, witness Smith takes a different view on the length-of-run question. He complains that

> [t]he time period under analysis for the cost function estimation is not adequately defined for [witness Bradley's] cost equation. The data span at least 39 time periods; however, most of witness Bradley's comments and analysis suggest that he is looking at essentially "monthly" or, more precisely, four-week periods. Given the short-run four week time frames he nevertheless intermingles short-run and longer-run considerations. [Tr. 28/15835-36.]

Not content with just the two options of "short" and "long" runs, witness Smith has introduced yet a third concept – "longer-run" – without giving a definition of what he means. With some diligence, however, we can infer that what troubles witness Smith is the high frequency of witness Bradley's data – the fact that the data come to us in four-week "frames" or periods, rather than in longer increments. I therefore am puzzled that witness Smith appears to have ignored witness Bradley's inclusion of results from the re-estimation of his regression equations using annual data. The results are instructive:

> The results based upon the annual data generally support the results from the AP data in the sense of replicating the pattern and magnitude of the estimated variabilities. The annual results are not preferred, however, because they are based upon substantially less data than the accounting period data and thus do not embody an effective way to capture non-volume time-related effects. [USPS-T-14 at 75-77.]

As we found with witness Neels's concern over the time horizon, it appears witness Smith was worried for naught over the problem of the 4-week time-frame: it makes little real difference to the estimated variabilities.

In concluding this section, I should like to be clear on two points, one statistical, the other theoretical. From a statistical standpoint, neither witness Neels nor witness Smith has proposed an alternative model that comports with his putative criticism of the length of run of the witness Bradley's model. Both sought to portray witness Bradley's reliance on a fixed-effects model as somehow violating what, they believed, was the proper length of run for mail processing cost models. In fact, the fixed-effects specification does not preclude a model from being either "short-run" or "long-run." A fixed-effects model merely affords each site its own intercept, which can be separately identified so long as at least two distinct data points are available on each facility. The separate-intercepts model is thus one of the models to consider when estimating a cost relationship with panel data. One may decide to reject it, upon application of the appropriate statistical tests, if the results indicates either that time-invariant facility-specific effects are not significant, or that a less restrictive model is justified.[22] It is, however, perfectly consistent with either a short-run or a long-run cost function. Failing to account for inter-facility heterogeneity in the presence of significant facility-specific effects, on the other hand, is clearly unreasonable, since doing so yields biased, inconsistent variability estimates.[23]

From a theoretical standpoint, there is no reason for confusion concerning long-run and short-run costs. Both concepts are well understood, and are included as part of the common curriculum in economics at the introductory undergraduate level. In economics, calendar time is <u>not</u> what determines length of run. Rather, length of run has to do with which inputs are variable and which are fixed. "Long-run" refers to a period of time that is sufficiently long that all factors of production – including structures as well as machinery – are freely variable. "Short-run" refers to any length of time shorter than that, so that at least one factor is fixed.[24]

---

[22] As I show in response to NOI-4 Tr. 29/16122-7, the first hypothesis is clearly false, whereas the latter has some validity.
[23] See, *e.g.*, Hsiao, *op. cit.*, at 5-8.
[24] *Cf.* Tr. 11/5523 *et seq.*

Thus, while there is only one long-run in any given context, there is no unique short-run, since different types of capital require widely differing periods of time to be purchased and installed, or altered in any significant way. (In the Postal Service context it might require, say, up to a year to upgrade or replace an OCR in a given facility, including the time required for planning and budgeting, installation, and troubleshooting, while replacing or significantly altering a building would presumably take far longer.) Since there is no unique definition of short-run, it is therefore all the more important to be precise when using these terms to stipulate what one means.

In the context of Postal rate-making, the appropriate length of run to consider is not a mystery: it is the period of time during which the proposed rates are expected to be in effect. This point was made quite succinctly by Professor Panzar on this record when he said that rates should be based "on the marginal costs that will actually be incurred...to serve a sustained increase in volume over the time period during which the prices will be in effect." Tr. 11/5417-8.[25]

Witness Bradley's variability estimates meet this criterion. Empirically estimable cost functions embody length of run by the manner in which they are specified. As the dual to the production function, a fully-specified long-run cost function includes the relative prices (or "rental rates" in the case of capital) of all productive factors – it is the inclusion in the model of factor prices, not factor levels, witness Smith's arguments to the contrary notwithstanding, that accommodates variations in factors over time.[26] Alternatively, if detailed price data are unavailable or unobservable – as is usually the case for capital goods – then proxies can be used to capture the impact of such changes.

[25] See also the testimony of William J. Baumol (USPS-T-3) on behalf of the Postal Service in the R87-1 Docket at 12.

[26] See, e.g., Robert G. Chambers, *Applied Production Analysis: A Dual Approach*, Cambridge University Press, 1988.

Professor Bradley's model contains such proxies for capital "prices." Consider a general specification of a long-run cost function of the form

$$(1) \quad C_{it} = f(\alpha_i, w_{it}, y_{it})$$

where C is a measure of cost, f(.) is a general function, w is a vector of input prices, y is the output level, and α is the facility fixed effect. Assuming that the vector of input prices can be decomposed into time-varying and cross-sectional components, then we can write:

$$(2) \quad w_{it} = \mu_i + \lambda_t + \varepsilon_{it}$$

where μ_i is a time-invariant component that does not vary within facility, λ_t is the time-varying component, and ε_{it} is a white-noise disturbance term. Substituting this specification into equation (1) yields:

$$(3) \quad C = f(\alpha_i, \mu_i, \lambda_t, \varepsilon_{it}, y_{it})$$

This expression is, in effect, witness Bradley's cost equation. Note that α_i and μ_i cannot be separately identified (nor need they be), although the facility fixed-effects specification captures their joint impact, and λ_t it is witness Bradley's trend variables.

III. GIVEN THE NATURE OF THE DATA, WITNESS BRADLEY'S APPROACH TO DATA CLEANING IS APPROPRIATE. FURTHERMORE, HIS ERRORS-IN-VARIABLES ANALYSIS IS BOTH CORRECT AND INSIGHTFUL. WITNESS NEELS'S TREATMENT OF THESE ISSUES, BY CONTRAST, IS FLAWED.

Witness Neels exaggerates the severity and extent of the measurement error problem in Professor Bradley's data. He then objects to the data cleaning witness Bradley undertakes prior to his regression analysis, claiming that no data scrubbing should be

performed. When viewed in light of his expressions of concern over the impact of measurement errors on the variability estimates, witness Neels's opposition to any data cleaning, no matter how careful and reasonable, is inexplicable.

Worse, however, is witness Neels's apparent misunderstanding of the errors-in-variables problem in the context of panel data. He does not seem to understand the power that panel data bring to this analysis. Witness Neels's claims – that witness Bradley's errors-in-variables analysis contains (unspecified) mathematical flaws, that measurement errors in TPH necessarily bias witness Bradley's variabilities downward, that comparing the relative magnitudes of automatic versus manual variabilities provides insight into the errors-in-variables problem – are all groundless.

In part A of this section, I demonstrate that witness Neels has exaggerated the extent of the measurement error problem. In part B, I criticize his extreme position on data cleaning. Finally, in part C, I illustrate how witness Neels has failed to grasp the errors-in-variables problem as it applies in the case of panel data.

A. Witness Neels Exaggerates the Extent of the Measurement Error Problem

Witness Neels exaggerates the extent of the measurement error problem in the MODS data. He uses the presumed presence of measurement errors in the total piece-handlings (TPH) variable for certain operations as though it infects all of witness Bradley's results equally, stating:

> The MODS piece handlings data that Bradley relies on for major portions of his analysis have been the target of considerable criticism. A recent review of measurement systems conducted by the U.S. Postal Inspection Service found large variances between the piece handlings figures contained in the MODS system and actual piece counts. These variances were attributed to a variety of different causes, including inadequate conversion factors, improper data input, and out-of-tolerance scales. The magnitudes of these variances could be substantial. [Tr. 28/15601 (footnotes omitted).]

The presence of such problems is not in dispute on this record. Indeed, witness Bradley has acknowledged their existence. Tr. 11/5369-70. What is at issue is, first, the prevalence and distribution of such errors in the data, and second, their likely impact on the variability estimates derived from these data.

Regarding the first issue, all data sets used to conduct applied statistical research have some likelihood of containing keypunch errors and similar mistakes that accumulate due, in large part, to simple human fallibility. Witness Shew is instructive on this point:

> Errors can creep into each stage of a data collection process, from observing an activity (*e.g.,* mail handling) to recording the observations, to compiling them in summary records. Once that process is complete, it is usually impossible, in effect, to reach back in time to spot mistakes that were made. That leads many researchers, myself included, to assume that any data set is likely to contain errors, some perhaps quite serious, that will remain invisible. [Tr. 28/15548.]

Despite the ubiquity of random errors, applied statistical analysis remains a useful analytical and management tool, with good reason: regression analysis, as with most of the tools employed by applied statisticians, is surprisingly robust to most of the commonly-encountered violations of assumptions about how our data are generated. In the case of measurement error, where a possibility exists of systematic bias or inconsistency, the likely consequences are generally well understood.

The specific sources of error cited by witness Neels provide clues as to their likely prevalence and distribution in the MODS data set. In the testimony cited above, witness Neels is highlighting the findings of the 1996 "National Coordination Audit of Mail Volume Measurement and Reporting System", which found an unusual prevalence of errors resulting from "inadequate conversion factors, improper data input[ting], and out-of-tolerance scales" (*ibid.*). This has mixed implications for the distribution of measurement errors in the MODS data set, as witness Bradley has noted:

> [S]everal of the report's findings are irrelevant for my analysis because much of the data set used in my analysis is not based upon FHPs [First Handling Pieces], but rather on the end-of-run data and machine counts. This is true for all automated and mechanized activities. The issues of measurement error due to inaccurate weighing and/or conversion factors is an issue only in the manual activities. [Tr.11/5369.]

Witness Neels attempts to rebut witness Bradley on this point, arguing that:

> First Handling Pieces is a part of the piece handling variable used by Professor Bradley; the MODS Manual states clearly in Section 212.2 that Total Piece Handlings is the sum of First Handling Pieces and Subsequent Handling Pieces. Even if the MODS counts of downstream handlings are totally free from the measurement problems that infect estimates of First Handling Pieces, all of the problems surrounding the measurement of First Handling Pieces are still passed forward into Bradley's analysis. [Tr. 28/15602.]

But witness Neels merely begs the question of the accuracy of the FHP counts. He appears to have ignored witness Bradley's main point in the response quoted above, namely that *both First Handling Pieces and Subsequent Handling Pieces are the result of machine counts in all activities other than the manual operations*, and are therefore substantially free of errors. Moreover, an increasing fraction of mail volume processed in the manual operations consists of rejected pieces from mechanized and automated operations, for which machine counts also exist. For these portions of the mail processed in manual operations, as well, there is no presumption of error. In sum, witness Neels has stirred up a tempest in a tea cup. While inaccurate scales and conversion factors remain a concern, they are a problem only in the manual operations, which account for only a small, and declining, fraction of the total mail volume processed by the Postal Service, and increasingly are not problematical there, either.

B. Witness Neels Is Incorrect on Data Cleaning Issues

In view of his expressed concern over the errors-in-variables problem, witness Neels's attitude towards data cleaning is inexplicable. On one hand, he expresses concern

over the quality of the data, as I have already shown. On the other hand, witness Neels argues that no data cleaning is permissible, even when independent information is available that could improve the quality of the data, and hence of the estimates based on that data:

> In the absence of any external validity checks, it is hard to find a clear and objective basis for deciding which data to use and which data to discard. For this reason, as described above, the best approach is to dispense with all of the "scrubbing" and run the analyses on the full set of data. [Tr. 28/15632.]

This position does not comport with current practice in applied statistics. Data scrubs that improve the quality of the data by eliminating influential outliers that are believed to be contaminated with gross measurement error improve the properties of the estimates derived therefrom, rather than biasing them.

Witness Neels is correct that outlier observations in the extreme tails of the distribution are not necessarily caused by measurement error. Tr. 28/15612. One could, in fact, go further, and stipulate that there is no reason to suppose that most data points with measurement error necessarily reside in the extremities of the distribution, making detection of all measurement errors in the data an impossible task. It is the measurement errors in the tails of the data distribution ("outliers"), however, that tend to cause the greatest mischief when the goal of the research is to obtain reliable estimates of slope parameters.[27] Therefore, it is incumbent upon the researcher to focus attention on possible data errors in the outliers, and to correct or eliminate them where possible.

Witness Bradley's data scrubs were not simple-minded, as witness Neels appears to believe. His first "scrub" merely eliminates observations with missing values from the

[27] See, e.g., David A. Belsley, Edwin Kuh, and Roy E. Welsch, *Regression Diagnostics: Identifying Influential Data and Sources of Collinearity*. Wiley Series in Probability and Mathematical Statistics, 1980, especially pp. 6-9.

data set. This is not properly termed a scrub at all, but is rather a computational necessity if econometric estimates are to be obtained. His continuity scrub, while not strictly necessary, is appropriate: it makes sense to restrict the estimates to facilities where a long run of data are available in order to obtain a data set with adequate variability to estimate the time-varying (i.e., either trending or seasonal) elements of the model. The productivity scrub is eminently reasonable, since it eliminates values that are physically impossible.[28]

A major concern when cleaning data is that the procedure not lead to greater bias than that occurring as a result of using error-ridden data. Witness Neels claims that he prefers to examine each possible data point measured with error in order to try to "understand" the process of how the error crept in (Tr. 28/15800). While this approach appears reasonable, in fact it depends on subjective judgment, inviting a results-driven data cleaning. Witness Bradley, on the other hand, uses a series of impersonal data screens so as to minimize the likelihood of introducing, perhaps unconsciously, experimenter bias into the results in this manner.

C. Witness Neels Does Not Appear to Understand the Nature of the Errors-In-Variables Problem in Panel Data

Witness Neels does not appear to appreciate the distinction between the simple errors-in-variables analysis derived from a simple model and the analysis that is applicable with panel data. In discussing his understanding of the errors-in-variables problem, witness Neels states:

> Econometric studies are especially sensitive to data errors. It is a well-established econometric principle that measurement error in an independent variable causes downward bias in coefficient estimates. This result is stated clearly in a recent text:

[28] Tr. 11/5285.

> As long as σ_u^2 [the variance of the measurement error in the independent variable] is positive, b [its estimated coefficient] is inconsistent, with a persistent bias toward zero.... The effect of biasing the coefficient toward zero is called attenuation.[29] [Tr. 28/15604-5.]

In fact, the model of measurement error being discussed in the particular passage witness Neels excerpted from Professor Greene's textbook concerns "that of a regression model with a single [badly measured] regressor and no constant term"[30], rather than a fixed-effects model with multiple regressors and multiple site-specific intercepts of the sort that witness Bradley estimated.

Professor Greene does go on to discuss the effects of measurement error in a fixed-effects model in a later section of his textbook that covers models for panel data. Here is how he frames the issue of measurement error in the introduction to that section:

> A recurrent problem in using microeconomic data is errors of measurement. As we saw [in a previous chapter], this is a thorny problem, and our conclusion there was a pessimistic one. Unless we can use some otherwise unknown parameters, the least squares estimates will be inconsistent, and little can be done to remedy the problem. Griliches and Hausman (1986) show that <u>the picture brightens considerably when panel data are used</u>. [31] [Emphasis added.]

The reason that "the picture brightens considerably" when using panel data, according to Professor Greene, is that several alternative estimators are available, notably the fixed-effects (or "within") estimator and various differenced estimators. While each of these alternative estimators, considered separately, is inconsistent in the presence of measurement errors in one or more of the explanatory variables, each one results in a

---

[29] The excerpted passage is from William H. Greene, *Econometric Analysis*, Third Edition, Prentice Hall, 1997, p. 437.
[30] *Ibid.*
[31] The citation in this passage is to Zvi Griliches and Jerry Hausman, "Errors in Variables in Panel Data," *Journal of Econometrics* 31 (1986), pp. 93-118. See also Cheng Hsiao, *Analysis of Panel Data*. Econometric Society Monograph No. 11. Cambridge University Press, 1986, pp. 63-65.

different sort of inconsistency. By exploiting the additional information gleaned from the differences between these estimators, its possible to identify the seriousness of the errors-in-variables problem, and recover consistent estimates of the parameters. This approach is known as the "method of moments", and is what witness Bradley implemented in his direct testimony.[32]

Since this method has already been adequately explained in witness Bradley's direct testimony I will not belabor it here, other than to point out errors witness Neels made. Witness Neels claims to have proven that witness Bradley's errors-in-variables analysis contains mathematical errors. Rather than finding them, however, witness Neels merely provides what he believes is an indirect proof by contradiction:

> In his direct testimony Professor Bradley presents the results of an analysis that, he claims, quantifies the effects of measurement error in his piece handlings variable....However, there are problems in this analysis that call into question its ability to support these claims. Bradley claims to have found upward bias in his estimate of the volume variability of the manual letter sorting activity rather than the downward bias that Greene states is the result of measurement error. As shown in Appendix A to my testimony, the formulas that Bradley himself presents in his direct testimony show clearly that upward bias is a mathematically impossible result. Bradley's finding of upward bias is therefore a sign of serious and fundamental flaws in his analysis. [Tr. 28/15608.]

There are, I believe, a number of factual errors in this statement which I will address in turn. First, the passage that witness Neels excerpted from Professor Greene's textbook discusses attenuation in an estimated slope parameter, not in the volume variability estimate derived from parameter estimates. Witness Neels has made an incorrect leap when he infers from Greene's discussion that attenuation in a parameter estimate implies attenuation in the variability estimate. To see why this is the case, recall that witness Bradley used the translog functional form, which includes both linear (in logs) and quadratic (in logs) terms in TPH. If there are errors in the TPH, then both the linear and quadratic regressors also contain error, and the attenuation phenomenon

[32] USPS-T-14 at 80-84.

that witness Neels discusses applies equally to both. Since the estimated slopes on these two regressors are of opposite sign, the sign of the *net* effect of any attenuation bias on the variability estimate is indeterminate. Thus, witness Neels should not claim, as he does in the above-cited passage, that witness Bradley's finding of evidence of upward bias in the manual letters variability estimate is *prima facie* evidence that witness Bradley's analysis is flawed. In fact, it is entirely consistent with the standard errors-in-variables analysis.

Second, witness Neels's claim that the analysis in his Appendix A (Tr. 28/15635-39) provides proof that witness Bradley's errors-in-variables analysis is flawed suffers from a fundamental misperception. Witness Neels claims to have shown that "the only way to arrive at such a conclusion [namely that the errors-in-variables estimator of the volume variability for manual letters is lower than either the fixed-effects or the first-difference estimator] would be for the variance of the measurement error to be negative, a mathematically impossible result."[33] In fact, Professor Bradley's result is not anomalous at all. Witness Neels's mistake was to assume that a variance estimate obtained by substituting regression point estimates derived from a finite sample into an equation that only holds exactly in the limit as the number of facilities becomes arbitrarily large necessarily would yield values that comport with theoretical variances in all cases. As is true of any finite-sample estimator, there is always a small chance that low-probability events can occur in the sample. In this case, the relative magnitudes of the within and first-difference estimators are such that a negative variance is implied. Clearly, this is not a "mathematically impossible result," since witness Neels, himself, has derived it mathematically.

Finally, it is possible to show mathematically that the degree of attenuation resulting from errors in an explanatory variable in a panel data set is inversely related to the degree of variation between cross-section units under fairly general conditions. Since

the MODS data display very large between-facility variances, this could well explain the lack of evidence of attenuation in the manual sorting activities that apparently bothers witness Neels so much.

But for the sake of argument, let us examine witness Neels's point, in order to determine the maximum impact it may have on witness Bradley's volume variability estimates. Witness Neels states that

> Bradley's volume variability estimates are derived from a dataset that is the end product of an extensive editing process in which enormous amounts of data are eliminated.... [Tr. 28/15609]

Witness Neels claims that Bradley's data scrubs altered the statistical characteristics of the data so completely that his variability estimates were fundamentally altered:

> The volume variability estimates derived from this reduced dataset are substantially altered from those derived from the initial dataset. [*Ibid.*, emphasis added.]

I examined the evidence to evaluate the validity of this claim. Table 2 compares witness Neels's estimated volume variabilities based on witness Bradley's scrubbed data with those he derived using Bradley's methodology applied to the unscrubbed data. Witness Neels's recommended ("between") model estimates are also included for the sake of comparison. (All three sets of estimates were take from PRC/UPS XE 2, Tr. 28/15781.)

[33] Tr. 28/15637. Neels goes on to admit that he does not know why Bradley has obtained the results that he did – "The reasons for these anomalous results are not completely clear...." *Ibid.*

Table 2 Volume Variability by Operation: Comparison of Effects of Scrubbing and Misspecification					
Operation	Neels Scrubbed (1)	Neels Unscrubbed (2)	Neels Between (3)	Scrubbing Effect (2) - (1)	Specification Error (3) - (1)
Manual Letters	80	84	125	4	45
Manual Flats	87	90	131	3	44
OCR	79	83	121	4	42
BCS	95	106	132	11	37
LSM	91	97	121	6	30
FSM	92	102	116	10	24

Source: PRC/UPS XE 2 (Tr. 28/15785).

As the numbers in Table 2 clearly show, witness Neels's claim is without merit. Despite his inclusion of observations that "clearly contain some cases beyond what is considered to be physically possible" (Tr. 11/5285), the impact of witness Neels's elimination of the Bradley data scrubs on the estimated variabilities is relatively small – in all but two cases in the range of 3 to 6 percentage points, and never by more than 11. The average change was a bit over 6 percentage points.

By contrast, the estimates produced by witness Neels's preferred ("between") model cause much more dramatic shifts in the variability, ranging from 24 to 45 percentage points difference. The average change was 37 percentage points. Comparing the two Neels estimates to witness Bradley's results provides perspective on the relative importance of measurement errors and specification error in causing potential bias in the variability estimates. It is clear that the specification errors caused by imposing the common slopes/common intercept assumption on the data is a far more serious problem.

IV. WITNESS BRADLEY APPLIED STATE-OF-THE-ART ECONOMETRIC METHODS IN DERIVING HIS VARIABILITY ESTIMATES

Contrary to the opinions of witnesses Neels and Smith, Professor Bradley applied a state-of-the-art econometric analysis to the problem of empirically estimating the volume variability of mail processing costs. Notable features of his analysis include his use of an unusually rich panel data set that captures both the cross-sectional variation in the productivity relationship among individual facilities, as well as the time-varying components; using a flexible functional form that allows the estimated regression to approximate any functional form indicated by observed patterns in the data, rather than imposing one arbitrarily; correcting for the effects of serial correlation; and allowing for time-varying effects through the use of seasonal dummies, trend variables, and a dynamic structure.

Witness Bradley also tested the major assumptions underlying his model. Rather than arbitrarily selecting a model and assuming that it met the criteria of the particular problem at hand, he used the data to test for (and confirm the presence of) individual facility effects, serially correlated residuals, and lagged adjustment of a facility's labor force to changes in volume. He also provided results from a number of alternative models to indicate the robustness of his estimates to alternative assumptions and measurement errors.

Because Professor Bradley did a good job of explicating his econometric methodology in his direct testimony, there is relatively little that needs to be added. However, I will address three areas in this section of my testimony that, I feel, should be emphasized in this record. In part A of this section, I discuss the added power that panel data can bring to an empirical cost analysis, and point out how witness Bradley took advantage of this power to enhance his analysis. In part B, I discuss the specification testing that Bradley undertook during the model design phase of his analysis. In part C, I discuss his choice of functional form.

A. Witness Bradley Exploited the Added Power Afforded by Panel Data

The availability of panel data from the MODS and PIRS data sets on this record has meant that detailed information was available on both the cross-section variation among different mail processing facilities at a point in time, and the changes over time within individual facilities. It is thus much more informative than either pure time series or pure cross-section data, permitting the analyst to distinguish between purely localized factors affecting the relationship between costs and volume in a facility and those that characterize the Postal mail processing system as a whole. It also provides a powerful antidote to the often intractable problem of measurement error in plant-level data. Witness Bradley's approach took advantage of this power, as I have already shown in section III of this testimony.

B. Witness Bradley Performed Numerous Tests of his Model's Specification

Witness Bradley performed numerous statistical tests during the model specification stage of his research to guide his choices of model and estimation technique. The first question he addressed was whether there was evidence of significant time-invariant individual facility effects. These would be substantial differences among sites in the average labor productivity of a given operation due to intrinsic differences among facilities, including "the age of the facility, the quality of the local labor force, and the quality of the mail that the facility must process." USPS-T-14 at 39-40. Bradley performed what he termed a "Gauss-Newton regression (GNR)" test for individual facility effects. *Ibid.* at 41-43. More commonly termed a Lagrange multiplier (or "LM") test in the econometrics literature, it involves the estimation of the restricted (in this case, pooled) model to obtain the residuals, which are subsequently analyzed for

evidence of misspecification.[34] The hypothesis of no individual facility effects was strongly rejected by this test.[35]

Having identified the presence of significant facility effects, Professor Bradley next faced the problem of how best to accommodate them in his model. As he noted, there are two basic choices: the random-effects and fixed-effects specifications. Because he was working with data that were not a random sample, and the intended use of the model was to make inferences that would be applied primarily to within-sample facilities, he noted that there was some *a priori* justification for using the fixed-effects specification. USPS-T-14 at 44. However, the random-effects model has the advantage of greater efficiency because fewer parameters are estimated.[36] The main danger of using random-effects is that the individual effects may be correlated with the included explanatory variables, which, if true, would imply that the random-effects estimator is inconsistent.[37] Witness Bradley performed a Hausman test – the standard statistical method for detecting the presence of correlation between the individual effects and the included RHS variables.[38] The random-effects model was decisively rejected. USPS-T-14 at 45-6.

Witness Bradley next considered the possibility that, because of the high frequency and long duration of his data, his model might need to accommodate serial correlation of the disturbances. He performed a Durbin-Watson test, modified to allow for the fixed-effects specification, and found strong evidence of autocorrelation. USPS-T-14 at 48-9. Failure to account for this in his model, while implying no bias, would have

---

[34] Russell Davidson and James G. MacKinnon, *Estimation and Inference in Econometrics*, Oxford University Press, 1993, ch. 3.
[35] This finding was later confirmed by *F* tests conducted by witness Bradley and myself in response to NOI No. 4. Tr. 28/16071-94 and Tr. 29/16121-40.
[36] Greene, *op. cit.*, p. 495.
[37] *Ibid.*
[38] J. Hausman, "Specification Tests in Econometrics," *Econometrica* 46 (1978), pp. 69-85; J. Hausman and W. Taylor, "Panel Data and Unobservable Individual Effects," *Econometrica* 49 (1981), pp. 1377-98.

implied a relatively inefficient estimator and strictly invalid inferences.[39] Thus, witness Bradley chose to correct for autocorrelated disturbances. USPS-T-14 at 49-51.

Finally, while not part of witness Bradley's formal specification testing, I would note that he performed a number of informal sensitivity tests to assess the robustness of his chosen specification. In this category I would include the fixed-effects model without serial correlation correction (USPS-T-14 at 70-1), which indicated that the results of his preferred model did not depend on this correction; the two-way classification model (*ibid.* at 72-4), an alternative specification of time-varying effects to illustrate that the inclusion of time trends was not driving his main results; the model estimated using annual data, which showed that his results did not depend on the use of high frequency data (*ibid.* at 75-7); and the model estimated using SPLY data, which illustrated that his results did not change dramatically with the inclusion of a lagged TPH variable at greater remove from the current period (*ibid.* at 77-9). These were informal assessments involving judgment, rather than formal statistical test procedures. Taken as a whole, they indicate that witness Bradley's preferred model is reasonably robust, and confirm the general conclusion that volume variabilities in mail processing are generally well under 100 percent.

C. Witness Bradley's Functional Form Is Appropriate

Witness Bradley chose to specify a transcendental logarithmic ("translog") functional form for his cost functions. USPS-T-14 at 35-38. He states that he did so because he had no "prior operational knowledge" to guide him to a specific functional form for the cost or production function. *Ibid.* This admission of seeming ignorance actually represents the current state of the econometric art for empirical cost functions. A flexible function form avoids imposing unjustified restrictions on the parameters of the underlying technology through the choice of functional form, by instead approximating the true, but unknown, cost function with a specification containing enough parameters

[39] Greene, op. cit., pp. 436-9.

to provide a reasonable approximation to whatever the true function might be.[40] The translog, in particular, is a generalization of the Cobb-Douglas and similar functions that restrict factor substitution elasticities to be equal everywhere.[41]

In spite of its common use in the econometrics literature, Professor Bradley's use of the translog form caused confusion on the part of some parties. Witness Smith, as I have already mentioned, appears to believe that intimate knowledge of the specific "capital/labor tradeoffs, expansion paths, and economies of scale" (Tr. 28/15826) is readily available. On the contrary, it rarely if ever is and, when prior knowledge is not available, specifying and estimating a translog cost function provides the analyst no less information about these characteristics than would a similarly specified production function. Witness Neels apparently misinterpreted the additional parameters contained in the translog functional form and, as a result, in his discussion of attenuation due to errors-in-variables confused the notion of attenuation in a parameter estimate and attenuation in a statistic calculated from multiple parameter estimates.

V. WITNESS NEELS ERRED ON ORAL CROSS-EXAMINATION

In his appearance before the Commission, witness Neels responded to a number of questions. I believe that some of his answers were incorrect. In part A of this section, I discuss his responses to questions concerning Cross-Examination Exhibit PRC/UPS-XE-1 entitled "Nested Sequence of Models". Tr. 28/15776. In part B, I discuss his responses to questions concerning Cross-Examination Exhibit PRC/UPS-XE-2 entitled "Comparison of Bradley and Neels Econometric Results". Tr. 28/15785.

[40] E. Diewert, "An Application of the Shephard Duality Theorem: A Generalized Leontief Production Function," *Journal of Political Economy* 79 (1971), pp. 481-507; and E. Berndt and L. Christensen, "The Translog Function and the Substitution of Equipment, Structures, and Labor in U.S. Manufacturing, 1929-1968" *Journal of Econometrics* 2 (1973), pp. 81-114.
[41] Greene, *op. cit.*, p. 526.

A. Answers Regarding "Nested Sequence of Models"

Witness Neels was asked a series of questions based upon a Cross-Examination Exhibit entitled "Nested Sequence of Models". He was asked about the manner in which witness Bradley had tested the random-effects model.[42] In fact, witness Bradley performed the standard statistical test – Hausman's test – to ascertain whether a random-effects model could be used; the random-effects model was strongly rejected.[43] USPS-T-14 at 43-46. Witness Neels was correct in pointing out that witness Bradley also made an *a priori* argument in favor of the fixed-effects model, based on the fact that the data are not a random sample, and inferences from the model were to be applied primarily to facilities within the sample. *Ibid.*

Witness Neels was then asked whether the model with facility-specific slope and intercept parameters was tested.[44] His answer contains both a factual error and a statement which I consider at best confusing. Witness Neels erred when he said that

[42] CHAIRMAN GLEIMAN: Did he then test and reject the random effects model against the next most restrictive model that lacks time-indexed coefficient, the fixed index, the fixed effects model?

THE WITNESS: I hesitate – what I recall of Dr. Bradley's, and I may have misspoken before, but my recollection of Dr. Bradley's testimony was that he discussed the random effects and the fixed effects as alternatives and I recall he had somewhat of an a priori argument, not a statistical argument, in favor of the fixed effects model. I don't recall what his test was between those two, whether it was statistical or whether it was theoretical. [Tr. 28/15777-78.]

[43] Neels later admitted this on oral cross-examination by the Postal Service. Tr. 28/15806.

[44] CHAIRMAN GLEIMAN: Was the next most restrictive model that lacks time-indexed coefficients, the model that allows both the slope and the intercept to vary by facility, tested to see if it is consistent with the data?

THE WITNESS: It was tested relative to the fixed effects model and I think by Higgins and Bradley against the pooled model. I don't believe it was tested against the more general model where both the slope coefficients and the intercept coefficients vary both across facilities and across time. That would be the model shown in the topmost box [in the Cross-Examination Exhibit, "Nested Sequence of Models"]. [Tr. 28/15779.]

the general model with intercept and slope parameters that vary by facility "was tested relative to the fixed effects model and I think by Higgins and Bradley against the pooled model." Tr. 28/15779. The *F* test used in NOI 4 is a test of restrictions imposed on a more general model, not a test of the more general model *per se*. In the case of the mentioned test, it was the set of restrictions embodied in the fixed-effects model that was tested, not the more general model; it would have been more correct to say that the fixed-effects and pooled models were tested relative to the more general model with all parameters varying across facilities.

Witness Neels's answer was, again, at best confusing. He implied that the model with facility-specific slope and intercept parameters could be tested against the model at the top of the Cross-Examination Exhibit, enclosed in the box labeled "Most General Model". No such test can be performed. The so-called "Most General Model" in the exhibit is not estimable, because it has a far greater number of unknown parameters than there are observations in the data set. It is therefore not likely of any practical relevance to this proceeding.

More generally, none of the models with accounting period-specific effects that appear on the right-hand side of the Cross-Examination Exhibit, "Nested Sequence of Models", is strictly relevant, either. The time and facility indexes shown in the exhibit suggest that a logical symmetry exists between these two types of effects. No such symmetry exists, for the simple reason that specifications with separate intercepts for each accounting period do not make a great deal of sense. By contrast, it is reasonable to assume the possibility of separate intercepts for each site.

Given the extremely wide range of sizes and the geographic dispersion apparent in the MODS data, there is a strong presumption that the mean level of labor hours will vary discontinuously from site to site. There is no such presumption in the case of accounting period effects. If anything it is, rather, the reverse. Recall that these effects

consist of the average system-wide change in mean hours from one four-week accounting period to the next. The entire mail processing system's labor costs for mail processing would probably not move around discontinuously between one accounting period and another, apart from the seasonal effects that are already included in the model. This is simply not how non-volume time-varying effects occur, in mail processing or any other industrial process. This is why applied econometricians generally include site (or plant, or firm) effects in their cost functions, whereas they do not generally include time-varying parameters.[45]

This is not to say that such a specification is not of interest, or that no such model was considered on the record. Witness Bradley reported the results of a two-way model with time-period and facility intercepts in his direct testimony. He found that "the two-way variabilities are lower than the [fixed-effects] model and in some cases the two-way variabilities are materially lower. Nevertheless, the general patterns found in the [fixed-effects] model are confirmed." USPS-T-14 at 72-74.

Witness Neels then made a statement about the preferred order of testing.[46] On that issue, witness Neels is mistaken: it is generally accepted good practice, when testing

---

[45] See, *e.g.*, J. R. Norsworthy and S. L. Jang, *Empirical Measurement and Analysis of Productivity and Technological Change: Applications in High-Technology and Service Industries.* Elsevier, 1992; and Robert G. Chambers, An exception to this generalization might arise in cases where the frequency of the data were much lower than the four weeks that Bradley worked with, or if there were only a few time-periods worth of data per cross-section unit.

[46] CHAIRMAN GLEIMAN: Now, is it standard econometric practice to search for an estimation method by sequentially testing more restrictive models against less restrictive models, in other words, to go from the specific to the general?

THE WITNESS: This is an area of sort of what is considered to be good practice. I think – my sense is that one, generally, should begin with the most general and ask whether you can move to the more restrictive, because if you start with the more general, you are less likely to make a wrong turn. There are some technical reasons for starting with a more general model. You are less likely to run into a model which is subject to misspecification. So, I think – I think the counsel of perfection is probably to start with the more general and work your way in the other direction to see, you know,

nested linear restrictions of the sort that witness Bradley and I performed in response to NOI No. 4, to begin from the most parsimonious model and work from there toward more general specifications.[47] This is consistent with generally accepted scientific methods wherein, on one hand, we have our empirical data, and on the other we have our hypotheses – some of which may be theoretical in nature, and others of which may be more speculative. The general goal is to reconcile our hypotheses with the available evidence, if possible, or if not, then to call into question one or more of our hypotheses. In so doing, we are guided by the objective of finding the simplest model that is consistent with the data.

B. Answers Regarding "Comparison of Bradley and Neels Econometric Results"

Witness Neels was also asked a series of questions concerning Cross-Examination Exhibit PRC/UPS-XE-2 entitled "Comparison of Bradley and Neels Econometric Results" (Tr. 28/15785). These questions concerned the state of the record with respect to the various econometric estimates of volume variability of mail processing labor costs. Witness Neels was first asked about the robustness of the volume variability estimates.[48] His response is marred by a significant mistake. Witness Neels

---

see whether imposing restrictions to get – to achieve a more parsimonious model leaves you with something that is statistically defensible. [Tr. 28/15780.]

[47] This is a reflection of a general preference for the simplest model that is consistent with the available evidence – an application of Occam's Razor. For an example which embodies this ordering of tests from most restrictive to less restrictive, see Hsiao, *op. cit.* at 12-18.

[48] CHAIRMAN GLEIMAN: Now the question is, in your opinion, are any of the econometric results shown in the table robust and stable?

THE WITNESS: Not in my opinion. I've actually said to my associates that work with me on econometric studies that a good study should be like shooting elephants. It should be a really big target and easy to hit no matter how you do it. And if differences in methodology give you pretty drastic differences in results, that is always to me a warning sign that we don't fully understand what's going on, and it's really – that's the basis for my unease with this line of analysis, and I think, you know, the information that's presented in this table to me amply demonstrates the fact that, you know, we haven't yet figured out what the relationship is between labor – mail handling labor costs and volume. [Tr. 28/15786-87.]

made a fundamental error by placing all of the specifications listed in the exhibit on the same plane: those that were shown to be completely inconsistent with the available evidence in the various statistical tests that have been performed in this proceeding *should not have been included in his answer.*

I am not arguing that stability and robustness should not be considered when selecting a preferred model – indeed, they are important criteria for evaluating alternative specifications of econometric models. But they are by no means the only criteria. Others that are equally important include data coherency and admissibility (including absence of autocorrelated disturbances and misspecification), parsimonious parameterization, and encompassing (or the ability to explain the characteristics of rival models).[49] The coherency and admissibility criteria clearly rule out at least two of the models specified in the exhibit – witness Bradley's estimates without correction for serial correlation, and witness Neels's "modified version of Bradley's cross-sectional (i.e., between) model.[50]

If these inadmissible models are excluded from the exhibit, then the picture changes considerably from the one witness Neels painted. Rather than arrows scattered around the target, there are instead tight patterns of arrows clustered about the bulls-eyes. I would also observe that the exhibit did not show the variability estimates for the one statistical model that was not rejected by a statistical test in this proceeding, namely the model with intercept and slope parameters that vary by facility. In the concluding section of my testimony, I include a table that shows the variability estimates from this unrestricted model using both the simple arithmetic means and the TPH-weighted

---

[49] See, *e.g.*, David F. Hendry and Jean-Francois Richard, "On the Formulation of Empirical Models in Dynamic Econometrics," *Journal of Econometrics* 20 (October 1982), pp. 3-33; and Edward E. Leamer, "Model Choice and Specification Analysis," Ch. 5 in *Handbook of Econometrics*, Vol. I, Zvi Griliches and Michael D. Intriligator (eds.), North-Holland, 1983.

means of the facility-specific estimates for each of the direct MODS mail processing activities. Note that these estimates, while in most cases somewhat lower than those produced by witness Bradley's preferred model, are nonetheless reasonably close and certainly provide additional evidence in favor of the hypothesis that mail processing labors costs are less than 100 percent variable.

Witness Neels and I definitely differ regarding econometric practice. He seems, by his "shooting at elephants" comment, to imply that econometric analysis is only valid when one obtains the same results regardless of the specification one chooses. I do not agree. Not all models are created equal – some models are "more equal than others." In particular, specifications that are clearly at odds with the available evidence – and at the risk of sounding redundant, let me emphasize that by this I mean these models that fail to account for the obvious individual facility effects that are present in the data are not relevant. They are "off the table", not part of the conversation, unworthy of consideration. From a statistical standpoint, the only models that remain standing after the responses to NOI No. 4 by witness Bradley and myself are the fixed-effects model of witness Bradley, and some form of the unrestricted model with facility-specific slopes and intercepts.

Witness Neels was then asked to comment further on the alleged "instability" of the results presented in the exhibit. He uses this opportunity to argue, once again, for the discredited cross-sectional model:

> THE WITNESS: The one that I will share my thoughts about, the distinction that I thought about the most and that's the one between Dr. Bradley's recommended results and my own, I think I said in my direct testimony that there were two – it seemed to me that there were two aspects of the cross-sectional models that I had identified as the best of the bunch, which I thought helped to explain the difference in variabilities.

[50] Witness Neels's "All Usable Observations" results are inadmissible as well, but for another reason: he erred in his construction of the time trend variables, causing them to count consecutively across discontinuities (gaps) in his data.

> One is the fact that in the cross-sectional model, you know, the way it was implemented you average across all the observations associated with the site, so you're constructing in a sense a composite observation that summarized what we know about volume over an extended period of time. I think -- as I said in my direct testimony, that has the effect of averaging out some of the measurement error that's associated with the MODS data, and as it reduces the relative importance of measurement error, I think it eliminates some of the downward bias and variability estimates that can be attributed to that cause. [Tr. 28/15787-88.]

I have already discussed these matters in section III of my testimony. I will merely highlight the conclusions I drew there that bear directly upon what witness Neels has said here: (1) witness Neels greatly exaggerates the measurement error problem; (2) even if he had not done so, his assertion that this would bias Dr. Bradley's variabilities downward is wrong: there is no automatic presumption that the direction of asymptotic bias is downward, given the functional form witness Bradley employed; (3) he ignores witness Bradley's errors-in-variables analysis, which showed that its effects are negligible for the manual operations; (4) while compressing all of the observations on each facility into a single average point may (or may not -- he offers no proof) reduce the measurement error problem, it leaves witness Neels with a far more serious problem: he is recommending a model that has already been statistically tested and rejected out of hand, namely the specification with common slope and intercept parameters for all facilities. The *F* tests I performed in response to NOI No. 4, and especially the test of the pooled versus fixed-effects specifications performed by witness Bradley in his response to NOI No. 4, leave no room for doubt on this point. It is much more plausible that it was the imposition of this restriction, rather than any alleged errors-in-variables problem, that caused the variability estimates from the between model to differ so drastically from the others on the record.

Witness Neels continued:

> I think the other thing which partly explains it is the nature of a cross-sectional model[;] it's generally held that cross-sectional analysis comes closer to giving you long-run effects, because you're comparing different types of facilities with different levels of volume. I mean, as you know, my

> cross-examination earlier today indicated there are systematic differences in volume across facilities, and you get a chance to see what the operation looks like as its adopted to those different levels of volume.
>
> I think the numbers here suggest that if you look across from smaller facilities to larger facilities you find labor hours increasing more than proportionately, and I think that may be closer to the long-run effect, although, you know, I repeat my earlier reservations about this line of approach. [Tr. 28/15788.]

Again, I have already disposed of witness Neels's conflation of "cross-section" with "long-run" in section II of my testimony. To assert that a fixed-effects model is associated with a particular length of run is simply wrong: the fixed-effects specification does not preclude a model from being either "short-run" or "long-run." It merely permits the regression to reflect time-invariant facility effects to the extent that they are present in the data. Acceptance or rejection of the model is properly determined by application of the appropriate statistical test, not by simple references to "long-run" costs. Failing to allow for inter-facility heterogeneity, on the other hand, yields biased, inconsistent variability estimates.

There are also other, much more intuitive arguments against witness Neels on this point that also may be worth considering. No matter what one thinks of the U.S. Postal Service's ability to manage its mail processing operations, it is unlikely that they would ramp up the scale of their processing facilities to an extent that they find themselves operating well beyond the point at which all scale economies have been exhausted – in other words, well into the region where unit costs are rising rapidly. And yet this is precisely what witness Neels would have us believe when he says "if you look across from smaller facilities to larger facilities you find labor hours increasing more than proportionately." Tr. 28/15788.

This, of course, is completely at odds with what we would expect by the economics of the firm. But, more tellingly, it also directly contradicts a point witness Neels made in response to another question:

> CHAIRMAN GLEIMAN: Now suppose the number of facilities were increased by ten percent while the average volume at those facilities remained unchanged. Would total processing labor cost for the system as a whole increase by ten percent regardless of the mail processing variability observed at the facility level?
>
> THE WITNESS: That's what I would expect to see happen. It's – in assuming that the new facilities look overall like the old facilities, all you're doing is replicating an identical operation at a new site, and if that's true, you would expect cost to just increase linearly with the number of facilities, or in your example with the volume. [Tr. 28/15790-91.]

Thus, it is witness Neels's estimates of volume variability that seem to be unstable, rather than the other estimates on this record: on one hand he is recommending a model that yields variability estimates well in excess of 100 percent – 125 percent for Manual Letters, 131 percent for Manual Flats, 121 percent for OCR, 132 percent for BCS, and so forth – and yet, in response to a direct question, he states that mail processing is characterized by constant returns to scale on the basis of discussion about the Postal Service "replicating" its operations.[51]

Finally, witness Neels engages in a series of responses to questions concerning how elasticities are computed from an empirically estimated cost function.[52] His responses

---

[51] Neels later admitted on cross-examination that he did not believe his own replication story. Tr. 28/15808-9.

[52] CHAIRMAN GLEIMAN: [Referring to Table 7 on page 54 of witness Bradley's direct testimony] Coefficient estimates involving squares or cross products are omitted from table 7 as a consequence of using mean centered data. Some coefficient estimates are in table 7 but do not enter into the calculation of elasticities that appear on the bottom line. Among these are manual ratio at facility[,] time trends – time trend 1 and time trend 2.

Now, I have some questions I want to ask you. If an estimated coefficient is not used to calculate elasticity, does it constitute an assumption that the variable is not influenced by the volume directly or indirectly?

THE WITNESS: I believe that's correct.

CHAIRMAN GLEIMAN: Is this assumption plausible for a manual ratio?

suggest a lack of understanding about the econometric estimation of cost elasticities. He should have answered that every variable included in the model enters into the calculation of the estimated volume variabilities. Witness Neels can test whether the manual ratio affects the estimated volume variability by rerunning one of witness Bradley's letter or flat operation regressions with the manual ratio excluded. I am quite certain he will find that the estimated variability will change.

Witness Neels also let stand the impression that the squared and cross-product terms do not enter into the calculation of the variabilities "as a consequence of using mean centered data." Of course, they do enter into the computation of the elasticity. The elasticity of a dependent variable of a function with respect to a marginal change in one of the independent variables of the function is approximated by the partial derivative of the function with respect to that independent variable. Given witness Bradley's choice of the translog functional form, the squared and cross-product terms do indeed enter into the calculation. The stratagem of estimating the model in deviations from means is simply an expedient that allows the researcher to obtain the elasticity directly off of the regression printout, rather than having to compute it after the fact with a calculator or pencil and paper. It has no effect on the value of the elasticity, and will give precisely the same answer as if the model had been estimated on the untransformed data and the elasticity then computed at the mean values of the data.

THE WITNESS: I'm not sure that it is. I spoke earlier about a hypothetical situation in which increases in volume could lead to a change in the manual ratio which would have an indirect – establish an indirect relationship between volume and costs that would not be captured simply by focusing on the coefficients on pieces and lagged pieces shown in table 7.

CHAIRMAN GLEIMAN: Should the coefficient of manual ratio be used in elasticity calculation given that the TPH is a determinant of manual ratio?

THE WITNESS: If TPH across activities, which would have to be the case, is a determinant of the manual ratio, then that contribution to volume variability should be taken into account. Tr. 28/15794-95.

Witness Neels was then asked a related question concerning the facility fixed effects:

> CHAIRMAN GLEIMAN: If fixed effects coefficients in the Bradley model, alpha (i), reflect differences among facilities that are indirectly influenced by volume, should the fixed effects coefficients also enter into the elasticity calculation?
>
> THE WITNESS: I think the same argument holds there. If a relationship can be established between volume and the fixed effects coefficients, then I think that indirect effect should also be incorporated into the overall estimate of the relationship between volume and cost. [Tr. 28/15796]

Once again, witness Neels's answer is not correct. The fixed-effects coefficients clearly do "enter into the elasticity calculation" – they affect the estimated variabilities quite strongly, as evidenced by the dramatic manner in which they leap upward as a result of heterogeneity bias when the individual facility effects are suppressed.

There is also a more subtle argument at play here that should also be addressed. The question could be interpreted as asking whether, to the extent that the individual facility fixed effects are correlated with volume changes, shouldn't they be added onto witness Bradley's elasticity estimates? If this was witness Neels's interpretation of the question, then his answer was also incorrect, for the following reason. Mail processing volume variability is concerned with response of costs to a small added increment of mail of a given type to the overall mail processing system – not, with respect to an increment of mail entering into a specific processing facility. So while it is likely true that the individual effect for a given facility is positively correlated with total piece-handlings at that facility, the correlation of the latter with respect to volume changes at the national level is approximately zero. This, in turn, implies that the correct answer to the question is "no".

VI. CONCLUSION

I have reviewed all of the evidence filed in this case pertaining to the cost elasticity of mail processing. Based both on this review and my training in econometrics, I conclude that witnesses Neels's and Smith's attacks on witness Bradley's study are unwarranted. Witness Bradley has presented a textbook example of how to perform this kind of analysis. His theoretical underpinnings are correct, his data scrubs are reasonable, and his econometric methods are proper. In fact, given his training and his years of experience in postal economics, one would and should expect nothing less. In contrast, I showed that there is generally no merit to the criticisms of witnesses Neels and Smith.

There is no doubt on this record that the cost elasticity of mail processing is substantially less than 1. The long-held unsubstantiated assumption that mail processing costs are almost totally volume variable has been shown to be invalid. There is ample evidence on this record to resolve the issue of the cost elasticity of mail processing econometrically. In this case, much to its credit, the Service tested this previously unsubstantiated It would be wrong to conclude, based on the evidence in this record, that while witness Bradley had made a nice start, there still remains too much uncertainty or too many unresolved issues to estimate mail processing cost elasticities using an econometric analysis. This is simply not the case: not only did witness Bradley make a nice start, he also made a nice finish. While we may debate which is the better econometric approach to estimate numeric values for the cost elasticity, clearly such an estimate should be computed and used in this case. The fact that an econometric estimate is, and perhaps always will be, imperfect should not deter us. Use of a sophisticated, state-of-the-art estimate is far superior to reliance on an invalid assumption.

I also find that there is ample evidence on this record to estimate numeric values for the cost elasticity of mail processing operations. The evidence already in this record and the evidence I present in this testimony together clearly indicate that either witness

Bradley's fixed-effects model or the unrestricted model is appropriate. Witness Bradley's model has an advantage in that it can be used to estimate a single cost elasticity for each operation but the disadvantage that the F test shows it is inferior to the unrestricted model. The unrestricted model, while superior from the perspective of the F test, has the disadvantage that there is still a need to weight the individual results to produce the requisite national elasticity estimate. Fortunately, there is no need to choose between the two models; the results they produce, if one combines the facility-specific variability estimates from the unrestricted model by using the arithmetic (unweighted) mean or the mean weighted by piece-handling variability, are remarkably consistent, as I show in Table 3 of my NOI response, reproduced here. Tr. 29/16127 (MPA-NOI-1 at 6).

Table 3
Variabilities From Witness Bradley's and Unrestricted Models

Operation	Unweighted Mean Variability	Weighted Mean Variability	Witness Bradley's Variability
Manual Letters	.511	.462	.797
Manual Flats	.562	.491	.866
OCR	.670	.736	.786
BCS	.845	.795	.945
LSM	.805	.809	.905
FSM	.733	.733	.918
SPBS Priority	.681	.667	.802
SPBS Nonpriority	.492	.472	.469
Manual Priority	.307	.371	.448
Manual Parcels	.277	.295	.395
Cancel/Mail Prep.	.358	.348	.654

In the interest of taking a reasonably conservative position, I suggest that the variabilities from the fixed-effects model, which in all but one instance are larger than either the weighted or unweighted mean variabilities from the unrestricted model, are the appropriate choice. I recommend this even while understanding that, on econometric grounds, the variability estimates from the unrestricted model may be slightly preferred.

I should also point out that both of these models are far superior to every one of the alternative models. As I describe in my testimony, there are compelling reasons to reject each of these alternatives. The pooled model is decisively rejected by the F test requested in NOI 4, and its specification of a single slope and single intercept has nothing to recommend it from a theoretical, statistical, or operational perspective. Further, as I point out in my testimony, the family of models on the right hand side of PRC/UPS Cross-Examination Exhibit No. 1 (Tr. 28/15776) has no theoretical basis. Finally, the most general model is not an alternative since it cannot be estimated.

CERTIFICATE OF SERVICE

I hereby certify that I have this date served the foregoing document upon all participants of record in this proceeding in accordance with section 12 of the rules of practice.

James R. Cregan

Washington, D.C.
March 9, 1998

CHAIRMAN GLEIMAN: Oh, God, it is getting worse rather than better. Three participants requested oral examination. I thought we were supposed to be getting a shorter list here of Witness Higgins. Office of Consumer Advocate, United Parcel Service and the United States Postal Service.

Does any participant have oral cross-examination for Witness Higgins whom I did not mention?

[No response.]

CHAIRMAN GLEIMAN: No. If that is the case, then Mr. Richardson, would you like to begin your cross-examination?

MR. RICHARDSON: Thank you, Mr. Chairman.

CROSS-EXAMINATION

BY MR. RICHARDSON:

Q Good evening, Mr. Higgins.

A Hello.

Q On page 12 of your testimony, you indicate or state on lines 22 through 24 --

A I have it.

Q Do you have that in front of you?

A Yes, I do.

Q You say, "In fact, volume variability entails knowledge only of the much more limited concept of scale economies which can be adequately estimated without knowing

the precise specification of the production function."

A Yes.

Q Is it your testimony that the role of capital is irrelevant in exploring the estimation of volume variability?

A The role of capital?

Q The role of capital --

A No, sir.

Q -- is irrelevant.

A No, sir.

Q Do you think it should be used in this case?

A Used in what sense, sir?

Q As part of the specification in the volume variability econometric model.

A Do you mean by that do I think that a measure of capital should be directly included in a cost function?

Q As a variable, yes.

A As a variable. No, I don't think that that would be appropriate.

Q Why not?

A Cost functions are dual functions to production functions. They are alternative ways of obtaining information about production technology. However, they don't typically involve direct measures of capital. That is not to say that capital is not indirectly involved. But I

would not -- to answer your question, no, I would not put a direct measure of capital in.

Q Then other than the manual ratio variable and the time variable, did you find any significant modeling of capital in this proceeding?

A I would surmise that the individual facility dummy variables that were estimated as part of Bradley's fixed effects model incorporated some attributes of capital variation cross-sectionally.

Q Besides those, is there any other indication?

A No.

Q Are you aware of the Postal Service long term investment plan to invest several billion dollars in the next few years, roughly $17 billion in the next five years, for investment in other programs?

A Only very casually, sir. I have not studied it.

Q Would you expect that to influence any of your conclusions on volume variability?

A Which ones would those be particularly?

Q Well, the results that you have -- would the expenditures on capital have any impact on your volume variability conclusions?

A I guess I am a little bit unclear about the question you are asking. Are you asking whether or not I think that the Postal Service's expenditures on capital

would influence the results of running a model of the sort for example that Witness Bradley estimated, using MODS data?

Q To the extent that the Postal Service expends investment dollars on mail processing equipment, do you believe that would impact the conclusions you have reached on volume variability?

A Let's be clear here. The estimates that I produced, those are the ones that you are asking about?

Q Yes.

A Or you are asking about Bradley's?

Q No, about you.

A Well, first of all, the results that I produced, which were for the most part having to do with with running tests, variations of essentially same model using the same data, those data were all from the past and so could not have been influenced by a future program in capital spending some time over the next five years I think is what you said.

Q Yes.

A So strictly speaking, that wouldn't be possible.

Q I see.

A Right. However, I think that perhaps if what you are asking is in a more general sense do I think that the capital expenditures, the net changes to capital by the Postal Service, would that influence in general estimates of the type that were produced in these, in this regard, I

would say sure.

Q What is your feeling as to whether it would affect the outcome of the model that Dr. Bradley uses?

A I think that the results that Dr. Bradley obtained by estimating his model embodied the current state of the Postal Service's capital stock.

I am not sure -- are you asking me to sort of hypothetically change the capital stock from what it actually is? Is that --

Q Well, yes. To that extent, yes -- as there is additional investment in capital mail equipment used for mail processing, do you agree that that would affect the type of model that Dr. Bradley has proposed in his recent rebuttal testimony?

A Witness Bradley has looked at a number of models in his rebuttal testimony. I don't know if you want to be more specific, but the net level of capital expenditure, additions to capital, change the relationship between costs or hours and piece handlings, so to that extent they certainly do influence the results. Yes.

Q Would you think he should take into account capital equipment in his model?

A Do you mean beyond the extent to which he has already done so?

Q Yes. Yes.

A No, I don't.

Q On page 15 of your testimony, lines 6 to 8, you indicate that technological change is measured by including time trends in the model on the assumption that technical advances occur over time. Do you see that?

A Lines? Sorry.

Q Lines 6 through 8.

A Yes. What I say here is that -- yeah, sure, 6 through 8.

Q Now given that the analysis is at the activity level, how is technological change physically manifested?

A I'm sorry, could you restate the question?

Q Yes. Given that the analysis is at the activity level, how is technological change physically manifested within an activity?

A By changes in the relationship of hours to piece handlings.

Q How is it reflected in the model?

A How is technological change --

Q Yes.

A Reflected in the model?

Q Yes.

A I think a better way to -- I may be making too fine a point of this here, but I think that a better way to phrase it than to reflect it in the model would be to

control for it in the model.

The purpose of Witness Bradley's model and his direct testimony as I understand it was not to do an in-depth study of technological change but rather to look at scale economies, volume variability. And the need there would be to essentially allow for some changes in technology in that relationship. They are time varying, but not volume related.

Q Thank you.

A So that's -- okay?

Q On page 22, your equation 3 on line 15 --

A Yes, sir.

Q Are there terms associated with the manual ratio in that equation? And if so, where are they in that equation?

A They are not directly included in there. This is a fairly high-level, general expression, equation 3. All three of these equations on this page are. But I guess if you were searching for it, you might argue that since an element of that is time varying, you might find some of it in the lambda T, but it's not in there.

Q It's not in there. Thank you.

Now do you have a study to show that the vector of input prices can be decomposed into time varying and cross-sectional components?

A No, but I would point out that it's sort of a truism or a tautology. Just about anything that varies with time and cross-sectionally can be so decomposed. That said, though, I haven't done a special study.

Q And on page 22, line 2, the same page --

A Yes.

Q We referred to previously, you refer to a long-run function. And is it your assertion that Witness Bradley's cost equation is long-run, as you apparently assert there?

A No. And in fact I think my testimony makes explicit the fact that I don't think it's long-term, nor would it be appropriate for it to be long-term.

Q Thank you.

MR. RICHARDSON: That's all I have, Mr. Chairman.

CHAIRMAN GLEIMAN: Mr. McKeever?

MR. McKEEVER: Yes, Mr. Chairman.

CROSS EXAMINATION

BY MR. McKEEVER:

Q Mr. Higgins?

A Hello, sir.

Q Could you turn to page 17 of your testimony, please?

A Sure, give me a moment. I have it.

Q There you state on lines six to seven that Dr. Neels proposes, and that's the word I want to emphasize, an

altogether different model, the between model, estimated by Witness Bradley. Do you see that?

A Yes, I do.

Q You don't mean to suggest there, Mr. Higgins, do you, that Dr. Neels recommends to the Commission that Dr. Bradley's between model is such that the Commission should adopt its results in this case?

A I believe that we had a little exchange about that, between you and the previous witness. My understanding of the way -- both Dr. Neels' testimony and also the consensus that came out of that discussion just now -- was that Witness Neels' suggested there be no econometric volume variability applied at all in this case and we simply assume 100 percent, but if he were to recommend an econometric specification, that he would recommend a slightly modified version of Witness Bradley's between model.

Q Even if an econometric estimate of volume variability were to be adopted, he still doesn't recommend Dr. Bradley's between model, is that correct?

A Yes, a slight modification thereof is what he recommended.

Q Could you turn to page 23 of your testimony, please?

A Certainly. I have it.

Q There you state at lines two to three that Witness Neels' opposition to any data cleaning, no matter how careful and reasonable, is inexplicable. Do you see that?

A Yes, I do.

Q You say the same thing at page 26 of your rebuttal testimony at lines one and two. There you indicate that Witness Neels argues that no data cleaning is permissible even when independent information is available that could improve the quality of the data. Do you see that?

A Yes.

Q Is it really your testimony that Dr. Neels opposes any data cleaning, no matter how careful and reasonable, even when independent information is available?

A It would certainly be my testimony that Dr. Neels found not a single data cleaning with the particular case in mind that we are looking at here, and that indicates to me a rather -- if he's not opposed to anything at all, then certainly he has set the bar rather high.

Q But you do agree that Dr. Neels does not oppose any data cleaning, no matter how careful and reasonable; is that correct?

A That's correct, and in fact, I noted elsewhere that Dr. Neels seems to prefer a more subjective method of cleaning data, which involves him using his own judgment to a much greater extent than Witness Bradley proposed in these

hearings.

Q What makes you say that? Can you point to something in Dr. Neels' testimony that suggests that?

A Yes. If you'd like, I can quote you chapter and verse, although it might take a few minutes for me to find. I think he would probably agree with the general characterization of that section of his testimony, that he felt that extensive investigation of each and every point that seemed to be at all anomalous, was the method that he would prefer, to try to understand the method by which error may have crept in, and then to make the decision -- this is not his term but mine -- make the decision somewhat subjectively on that basis, whether or not to keep it.

Q It's the subjective part that I'm focusing on. I would like you to quote me chapter and verse and take a few minutes to show me where or what in Dr. Neels' testimony suggests that he would adopt a more subjective approach than Dr. Bradley.

A All right. Sir, I think that I may have misspoken and I think the sections that I was -- the statements that I was referring to probably occurred sometime during Witness Neels' oral cross examination.
I think it might take me a few minutes to locate them, but I would be happy to do that.

Q Take your time.

A Okay. I am looking at the hearing transcript of February 27, 1998, starting at page 15799, continuing on from there. For example, I believe this is Mr. McBride questioning Witness Neels. He's asking him about data scrubs.

He asks why do economists scrub data, in general, and the witness answered, well, the stated reason is to eliminate errors, and is that fairly routine practice in econometrics, McBride goes on, and the answer is "It's not routine in my applications. I mean I can't speak for all people. It's very common for people to look at the data and to look for problems. I think that the scrubbing process of the sort that Professor Bradley subjected the MODS data to -- I wouldn't say that is a common practice."

Here we go. Bottom of that page and continuing onto page 15800, he was asked, "If one were to look at data that seemed to make no sense, I take it that you would expect that good econometric work would call that data into question and make it a candidate for scrubbing."

Answer: "Well, I think that the right way to do this, as I understand is, if the data looked questionable, looked odd, one then needs to ask questions about the process that generated the data," and this is where I'm talking about trying to get inside that data-generating process and try and see if you can imagine how that might

have -- how an error might have crept in.

Q And you object to that?

A Pardon?

Q And you object to that?

A I think the point was well brought up by Witness Shew of Dow Jones that it really is a mistake to think that you can eyeball data after the fact and catch most of them.

Q Does Dr. Neels say that?

A I think it's implied in there, yes, that he's going to be able to look at the data, suss out the points that he thinks look a little strange, and then understand the process by which they came be unusual, yes. I would say that that's -- that would be my characterization of that.

Q But it is your characterization, then. That's your understanding.

A Of what I just read you, yes.

Q Okay.

Let me ask you to turn to page 33 of Dr. Neels' testimony -- his direct testimony. Do yo have that?

A Yes, I do. Just a moment. I'm sorry. Thirty-three?

Q Yes, page 33. That's transcript page 15619.

A I'm at page 133.

Q Page 33?

A I'm sorry. Page 33, yes, sir.

Q And lines 14 to 16?

A Yes.

Q Doesn't Dr. Neels there say "Decisions to discard data whose implications are this significant require greater and more objective empirical and conceptual justification than Bradley has provided"?

A It does say that, yes, sir.

Q But nevertheless, you think he advocates a more subjective process.

A Certainly.

Q And it's more subjective because he urges that the analyst look at the process that generated the data?

A He implies that it's possible to look at and understand not merely the process that generated the data but that generated the errors in the data --

Q And you don't --

A -- and I don't think --

Q Go ahead. I'm sorry.

A I think that's -- I mean it may be possible at times. I think, in general, my own experience is that that really is difficult to do, and one often ends up having to make subjective judgements, yes, sir.

Q Well, it may be that, after you look at the data, you have to make a subjective judgement, but do you think looking at the data is not the thing to do?

A No, sir.

Q You do think one should look at the data and try to determine how it was generated?

A Sure.

Q And you think that's a subjective process.

A Are we talking about looking at the data or are we talking about trying to explain errors or suspected errors in the data, sir?

Q Trying to find the cause of -- trying to find whether data is in error or not.

A I think certain subjectivity would always enter into it, sure.

Q Would always enter into it no matter what process you use. Is that right?

A The subjectivity that I was referring to, I think, was the decision about which data points, in particular, to toss out.

If one -- I mean, look, I think the elephant sitting here at the other end of the room that no one's talking about right now is the alternative which Professor Bradley -- that his technique illustrates, which is to set up a completely impersonal screen, and you may -- you know, you can argue about, you know, should it be 1 percent, should it be half-a-percent, should it be 2-percent tails, but at least with regard to the productivity scrub, that's

about as objective and impersonal as you can get, because your judgement, once you've set what those cutoffs are, really doesn't enter into it.

Q Suppose it were -- Dr. Bradley had chosen 10 percent. That's objective, isn't it?

A Uh-huh. Yes, sir.

Q And if he had chosen 40 percent, that's objective, under your definition?

A Yes, sir.

Q And it be arbitrary, as well, wouldn't it?

A I wouldn't disagree with that.

Q So, objective doesn't necessarily mean not arbitrary, does it?

A It wouldn't be the only criterion to use, certainly.

Q Objective doesn't mean not arbitrary, does it?

A I don't think the two have a whole lot to do with one another.

Q Okay. Thank you.

Mr. Higgins, could you turn to page -- well, I guess we're on page 26 of your testimony, aren't we?

A I'm at page 23.

Q Okay. Let's go to page 26, then.

A Okay. I have it.

Q And let's start at lines 28 and 29 and go to page

27, lines 1 to 2, if you could take a moment to read that, please.

A Yes.

Q There you state that "Witness Bradley's first scrub merely eliminates observations with missing values from the data set. This is not properly termed a scrub at all, but is rather a computational necessity if econometric estimates are to be obtained."

Do you see that?

A Yes, I do.

Q Is it your contention that Dr. Neels objected to eliminating observations with missing values from the data set?

A Not that I know of, no.

Q Okay, so Dr. Neels did not object to that, is that correct?

A No, in fact I think that his runs where he ran -- I think he called it using all available or usable observations -- is really the same thing.

Q Okay, so those two sentences are not meant to be a criticism of Dr. Neels' -- is that correct?

A No, merely a clarification of -- actually Witness Bradley was the one who used the terms scrubs in sort of an umbrella that included that one.

Q And you disagree with Mr. Bradley's use of -- Dr.

Bradley's use of it?

A It's a semantic issue but yes, I wouldn't have called that a scrub.

Q Okay. Now could you stay on page 27 of your testimony and go to lines 6 and 7.

A Yes.

Q And there you say "The productivity scrub is eminently reasonable since it eliminates values that are physically impossible" -- do you see that?

A Yes, I do.

Q And you cite Dr. Bradley's response to a question on cross examination in support of your statement, is that right?

A I don't have that transcript in front of me. I cite a transcript page.

Q Okay. Well, let me represent to you that it is a response of Dr. Bradley to a question on cross examination. I do have it here. Let me furnish it to you.

A I think it was a written interrogatory -- would you stipulate that?

Q Yes. Let me give -- so there is no confusion, let me give you the particular transcript.

A All right.

MR. McKEEVER: Mr. Chairman, if I may provide that to the witness?

CHAIRMAN GLEIMAN: Certainly.

THE WITNESS: Yes, I have it here. It was in response to a written interrogatory and he answered, "The eliminated observations clearly contain some extreme values, in some cases beyond what is considered to be physically possible."

BY MR. McKEEVER:

Q Now is that relying -- is what you are relying on to make your statement that the productivity scrub eliminates values that are physically impossible?

A That is one of the things, yes.

Q What else do you rely on?

A I looked at some of the implicit productivities that are in the MODS data. I mean you can take that data set and form pieces per hour in any of the activities and look at them, rank them from top to bottom, and you know, when you see 30,000 pieces per hour being sorted by someone in a manual case -- I mean I am not an expert on mail processing but that would be pretty fast, sir. I don't think that would be physically possible.

Q Is that a particular observation that you recall -- 30,000 pieces being --

A I can show you if you like.

Q Yes. You did not provide the data with your rebuttal testimony.

A Well, the data is part of Witness Bradley's Library Reference that provided the data. Anyone could have done that calculation but --

Q But you didn't' cite anybody to that data, did you?

You have only cited Dr. Bradley's interrogatory response.

A Fair enough. Here is a case of a particular facility in FY '91, AP-12 manual letters had a productivity of nearly 31,000 pieces per hour.

Q And is that someone casing the manual letters?

A That is in the manual letters -- that is the total manual letters operation, sir.

Q So it's not an individual casing letter, is it?

A The data didn't come by individual worker, no. It came --

Q That is a machine sorting letters, is that right?

A Manual letters, sir?

Q Oh, it's not a machine -- okay, it's manual letter sorting activity.

A It says manual letters.

MR. McKEEVER: Mr. Chairman, I would like to request that the particular pages relied on by Mr. Higgins be provided to the parties at some point.

As a matter of fact, I would like to take a few

minutes now to take a look at them.

CHAIRMAN GLEIMAN: The parties have Mr. Higgins --

MR. McBRIDE: I'd be more than happy to share it, counsel.

BY MR. McKEEVER:

Q Do you know the time period that that observation is for?

A This particular one in the manual letters operation --

Q Yes.

A -- was FY '91, AP-12.

Q For an entire accounting period, is that right?

A These are in pieces per minute -- sorry, per hour.

Q These figures are pieces per hour?

A Yes sir.

Q Okay, and how do you know that?

A I mean the units in which they are reported were taken into account when this -- I mean this is essentially a ratio here that was formed by taking the pieces and the hours that were reported for that facility in that AP and fiscal year.

You do the division. You simply keep in mind what those units are and cancel or add zeroes as appropriate.

Q Do you know what is physically possible to sort in this operation?

A Precisely? No.

Q Do you have some general range or idea?

A I can only use introspection.

Q Do you know where on these lists of observations Dr. Bradley's one percent cutoff point is?

A Do you mean sort of could I draw you the line with a pencil?

Q Yes.

A It would take me some time. I would have to sit there and count and I don't think --

Q You don't know offhand?

A No, I don't, sir.

Q Isn't it possible that Dr. Bradley's scrub, productivity scrub, eliminated many values that are not physically impossible?

A That is possible.

Q As a matter of fact, it is almost by definition, since he just picked one percent, isn't that correct?

A No. I wouldn't stipulate that at all, sir.

Q No? But you don't know one way or the other how many physically impossible values were omitted by the scrub and how many physically possible values were also deleted from the data set as a result of the scrub, et cetera, is that right?

A That's right.

Q You have no idea of the relationship between those two numbers?

A It would be speculative, I guess.

Q Okay. Thank you. Did you do a similar analysis for the OCR activity?

A I did for all of them, sir, but I didn't bring them all.

Q Okay.

A I didn't realize that it would become an issue. Otherwise I would have --

Q Did you -- go ahead.

A I'm done.

Q Did you determine what the maximum throughput of an OCR machine is?

A No, sir; I didn't.

Q At any point?

A No.

Q You never asked anybody for that information.

A I asked around, and I didn't get what I thought was a firm answer, so I don't have an answer to that.

Q Who did you ask?

A I asked -- well, for one thing, I asked Dr. Bradley what he thought when I had an opportunity.

Q And he didn't give you a --

A No, in fact --

Q Firm answer.

A No. No, he didn't, I don't think -- I don't think he felt that he had a precise value, either. You can ask him that, sir, if you want.

Q Did you try to obtain the maximum throughput on an LSM?

A No.

Q How about on an SPBS?

A No. Sir, I've already answered your question, I think. I did not make a deep study of this. I didn't go out and make a special study. I simply took the data that were available that were provided by Dr. Bradley in his library reference containing the MODS data, and I formed these ratios and I looked at them, and I did notice that there were some that were very large, many standard deviations above the mean, and then I noted his response to that interrogatory where he said that he had had conversations with postal operations experts and they had informed him that some of them were physically impossible.

Q Some of them?

A Yes, sir.

Q And no quantification of what "some" means.

A Well, we just read the response to the interrogatory and --

Q No. I'm sorry, was your answer no?

A That's right.

Q Okay. Can you turn to pages 29 and 30 of your testimony, please?

A Which page?

Q Pages 29 and 30.

A Okay.

Q Am I correct that there you argue that the effect of measurement error on the log TPH coefficient will be offset to an extent by the effect of measurement error in the square of the log TPH coefficient?

A I think that what you're asking -- I think that what you meant to ask was the effect of the attenuation on the coefficient.

Q Okay. Go ahead.

A Yes. I mean, whenever -- if you make the argument that the TPH variable was measured with error, and then go on to assert that at least asymptotically that there is attenuation bias downward in the linear term, the coefficient on the linear term, then as long as the coefficient on the quadratic term in log TPH is of the opposite sign, they will be offsetting to some extent.

Since the degree of attenuation is unobserved, however, I can't tell you precisely which one dominates.

Q Do you have Dr. Bradley's direct testimony with you?

A Yes, I do. Give me a second, and I'll go look for it.

Q Could you turn to page 36, please?

A Yes, sir.

Q Just take a look at that page and let me know when you're done.

A Yes.

Q Now, on lines 11 and 12, Dr. Bradley states, under this transformation, the cost elasticity or variability is just the first order term on TPH; is that correct?

A That's what it says.

Q Doesn't that mean that under Dr. Bradley's transformation, the square of the log TPH coefficient does not enter into the calculation of the variability?

A It doesn't enter into his calculation of it, but it does enter into the calculation -- let me start over again. I think there may have been a little confusion on this in the record. The artifice of estimating the elasticities -- excuse me -- estimating the cost equations in deviations from means form is purely a -- it's a convenience. It's using the mathematical equivalence of the cost equation when it's estimated in levels, and the cost equation -- the elasticity of the cost equation in levels with the coefficient on the linear term when it's estimated in deviations from means to avoid having to go through all

the effort of taking your output from your regression and physically punching in the numbers in a spreadsheet or in a calculator.

The fact remains though that the elasticity that Dr. Bradley produced and which appears somewhat later in his tables, is the same number that you would get if you ran the regression on data in levels, and then computed the elasticity values at the means of the data.

It's correct to say that what Dr. Bradley did to obtain his elasticity estimate was to simply read the coefficient off that linear term in current piece handlings and actually the one in lagged piece handlings, but conceptually, that's not what he did. What he did was estimate the elasticity, evaluate it at the mean level. It does contain implicitly the coefficient on the quadratic term as well.

Q Does the square of the log TPH coefficient enter into the calculation of Dr. Bradley's variability?

A Yes, it does.

Q It does? That's your testimony?

A Yes, it does. He's essentially having -- by transforming his data as he does, he's using the regression essentially as his calculator. He's making it do its work for him or his work for him.

Q Did Dr. Bradley run his equation in levels?

A No, he didn't. He may have done some in levels. I think there was some -- he talked a little bit perhaps in some of his rebuttal testimony about runs, but no, he did his in deviations from means.

Q He did not run it in levels?

A That's correct. I should say that when I first read Dr. Bradley's testimony stating that this was possible, I didn't believe it. I had never seen it before so I actually went through the exercise of writing down the equation, which you asked me to look at here on page 36, his econometric specification, and I plugged in the data and deviations for means form and calculated the elasticity and lo and behold, after a lot of canceling, I convinced myself that this was true.

In effect what he did was calculate the elasticity in levels. He got the same answer as if he had calculated it in levels and then evaluated those coefficients, the coefficients on all of the terms -- you are familiar with how you calculate an elasticity, right?

Q Well --

A You take the derivative --

Q Unfortunately, for you, Mr. Higgins, I ask the questions and you give the answers, and fortunately for me.

A I'm sorry.

Q But --

A I don't mean to be interrogating you, sir. I just want to point this out, and then I promise I'll stop. But implicitly, all of the terms that involve TPH or lagged TPH in this equation here on the bottom of page 36 are included in his calculated elasticities.

Q Yes. But let me make sure, because you gave me one answer, and then I thought you took it back in your long explanation. Did Dr. Bradley run his equation in levels? I thought you said no to that, and then you said --

A That is correct.

Q Okay. So, he didn't do it.

A That's correct.

Q Okay. Did you run the equation in levels?

A No, sir.

Q Okay.

A But I didn't contradict myself.

Q Well, no, I didn't suggest that. I just thought you said something in the midst of that long answer that indicated that Dr. Bradley did run it in levels or, in effect, ran it in levels or something like that.

A That last phrase is actually what I did intend to say, yes.

Q Okay. He didn't do it, but he, in effect, did it?

A He had the computer do it for him.

Q Oh, I see. So, he does have an equation that he

presents that is run in levels.

A That would be the equation that you're looking at on the bottom of page 36 of his direct testimony, yes.

Q Okay. Is that the one he relies on for his variability results?

A Yes.

Q Do you know?

A Well, yes, sir. I mean that is what his -- that his testimony here. This is the specification of his econometric model. I'm worried that my main point is getting lost here in the confusion.

Estimating an equation like this in deviations from means form is simply a convenient way of getting the regression package to do some of the calculations that you would have had to do yourself if you had run it in levels, but it really does give you the answer to the question, what is the elasticity of hours with respect to total piece handlings and lagged piece handlings from this equation, evaluated at the means of the data.

Q Are you finished?

A Yes, sir.

Q And I think you did testify that, under Dr. Bradley's transformation, the square of the log TPH coefficient does, in fact, enter into the calculation of the variability. Is that correct?

A Yes, sir.

MR. McKEEVER: Okay.

That's all I have, Mr. Chairman.

CHAIRMAN GLEIMAN: Ms. Duchek?

MS. DUCHEK: Mr. Chairman, I just had one question that's actually a follow-up on a discussion --

CHAIRMAN GLEIMAN: Fire away.

MS. DUCHEK: -- Mr. Higgins had, I believe, with counsel for the OCA.

CROSS EXAMINATION

BY MS. DUCHEK:

Q Mr. Higgins, you were discussing with counsel for the OCA $17 billion in capital, if you recall that discussion, and I just have one question on that.

If the $17 billion in capital consists of additional deployment of existing equipment like BCSs or FSMs, would you expect that Dr. Bradley's estimated BCS and FSM variabilities would change or simply that there would be a shift of handlings among pools?

A Let me see if I understand the question you're asking me.

You're asking me, if I could project the data that we have here in MODS, the data that was used to estimate these models, into the future for the period of time that the OCA counselor mentioned, which I believe was five years,

and during that time there were substantial increases in existing machinery of the sort that is currently in existence --

Q Yes.

A -- would I then expect -- could you sort of complete the question for me?

Q Yes. Would you then expect that Dr. Bradley's estimated variabilities -- and I mentioned BCS and FSM because that was the example I used in terms of equipment deployment -- would you expect that Dr. Bradley's estimated variabilities for BCS and FSM would change or simply that there would be a shift of handlings among pools?

A It's difficult to say. I mean if you're saying -- if there's a ceterus paribus on the end of that question -- that is, if it's really exactly the same type of equipment -- then, no, not necessarily. It wouldn't necessarily change.

If, on the other hand -- I don't know -- in five years, it's possible there could be a fantastic breakthrough in technology, in which case they might change, but --

MS. DUCHEK: That's fine. Thank you.

CHAIRMAN GLEIMAN: Is there any further follow-up?

[No response.]

CHAIRMAN GLEIMAN: I don't believe there are any questions from the bench.

That brings us to redirect. Mr. Cregan, would you like some time with your witness?

MR. CREGAN: Two minutes.

CHAIRMAN GLEIMAN: Certainly.

[Recess.]

CHAIRMAN GLEIMAN: Mr. Cregan.

MR. CREGAN: No redirect.

CHAIRMAN GLEIMAN: Well, if that is the case, Mr. Higgins, we appreciate your appearance here today and your contributions to the record. And if there is nothing further, you are excused, and you and Mr. Cregan may head off wherever you wish to head off to.

THE WITNESS: Thank you, sir.

[Witness excused.]

CHAIRMAN GLEIMAN: Unfortunately, though, Mr. McBride, it appears, has to stay around because he is listed to cross-examine the next witness.

Our next witness is J. Edward Smith appearing on behalf of the Office of the Consumer Advocate. Mr. Smith is already under oath. So, Mr. Richardson, if you would introduce your witness and enter his rebuttal testimony, we can move right along.

Whereupon,

J. EDWARD SMITH, JR.,

a rebuttal witness, was called for examination by counsel

for the Office of Consumer Advocate and, having been previously duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. RICHARDSON:

Q Dr. Smith, do you have before you copies of your Rebuttal Testimony of J. Edward Smith, Jr., filed on behalf of the Office of Consumer Advocate on March 9th, 1998, in this proceeding?

A I do.

Q Do you have any additions or corrections to that testimony?

A I do not.

Q And if you were the same questions as contained therein, would your answers be the same as you have answered there?

A Yes.

MR. RICHARDSON: Mr. Chairman, I would move for admission into the record, the Rebuttal Testimony of J. Edward Smith, Jr. on behalf of the Office of Consumer Advocate, OCA-RT-1000.

CHAIRMAN GLEIMAN: Are there any objections?

[No response.]

CHAIRMAN GLEIMAN: Hearing none, Mr. Smith's testimony and exhibits are received into evidence and I

direct that they be transcribed into the record at this point.

[Rebuttal Testimony and Exhibits of J. Edward Smith, Jr., OCA-RT-1000, was received into evidence and transcribed into the record.]

OCA-RT-1000
Docket No. R97-1

REBUTTAL TESTIMONY OF

J. EDWARD SMITH, JR.

ON BEHALF OF

THE OFFICE OF THE CONSUMER ADVOCATE

March 9, 1998

TABLE OF CONTENTS

REBUTTAL TESTIMONY OF

J. EDWARD SMITH, JR.
STATEMENT OF QUALIFICATIONS

My name is J. Edward Smith, Jr., and I am a consultant appearing on behalf of the Office of Consumer Advocate. I previously filed prepared direct testimony in this proceeding as OCA-T-600 together with attached exhibits OCA 601, OCA-602 and OCA-603. That testimony and the accompanying exhibits appear at Tr. 28/15818-15896. I also prepared and sponsored Library References OCA-LR-8 and OCA-LR-9.

My qualifications are included in my direct testimony and exhibit OCA 601 in this docket.

I. PURPOSE AND SCOPE OF TESTIMONY

The purpose of my rebuttal testimony is to comment on the direct testimony of Dow Jones & Company, Inc. witness Shew, DJ-T-1 at Tr. 28/15501 *et seq.* My comments on witness Shew's testimony focuses on witness Shew's statements that the data relied upon by Postal Service witness Bradley constitutes a large rich body of data and witness Shew's failure to recognize witness Bradley's study lacks an adequate cost function.

II. WITNESS SHEW FAILS TO RECOGNIZE WITNESS BRADLEY'S INADEQUATE DATA AND THE LACK OF A SOUND COST FUNCTION

This testimony rebuts selected aspects of the direct testimony of witness Shew. At page 12 of his prepared testimony, witness Shew states in commenting on witness Bradley's testimony, "The opportunity to draw upon a large, rich body of data is of considerable value in estimating cost variability."[1]

Witness Shew fails to note that witness Bradley actually has only two truly exogenous variables in his study with data specifically drawn from the postal system: (1) TPH, and (2) labor hours. These variables are inadequate for the analysis. As stated in interrogatory USPS/OCA-T600-6, the variables which should be included in a cost function consist of a measure of output, a vector of prices of inputs, and "t" denoting time to allow for the analysis of technological change. Sources referenced for the correctness of this include Dr. Greene and Dr. Ferguson.

---

[1] Tr. 28/15514, lines 5-6.

In fact, witness Bradley's data set is missing a vector of prices of inputs, and the cost function contains a variety of terms that are theoretically unsupportable (for example, all terms with MANR in them) and which are irrelevant in the estimation of a translog cost function. Accordingly, witness Bradley's data set is not a "rich body of data," for it lacks the necessary factor input prices.

On page 14 of his prepared testimony, witness Shew states, "But the practical impact of measuring labor costs in hours instead of compensation is probably small, if compensation rates for clerks and mail handlers do not vary over a wide range."[2]

As has been discussed by both witness Neels and myself, there are significant doubts about the accuracy of witness Bradley's data. For example, the mix of labor hours may very well vary from site to site in terms of direct versus overtime, by craft, and in terms of management versus labor hours. Accordingly, there is reason to believe that the use of labor hours may be a significant problem. In addition, the Postal Service has questioned the reliability of the data that do exist.

On page 16 of his prepared testimony, witness Shew notes, "But even the relatively simple formulation used by Professor Bradley yields some interesting conclusions about labor productivity trends."[3]

---

[2] Tr. 28/15516, lines 1-3.

[3] Tr. 28/15518, lines 1-2.

Recognizing that a conclusion should involve some type of explanation about a phenomenon, witness Shew does not reach a conclusion about productivity to explain why on an activity basis it makes any sense to have two trends in place of one trend, nor why productivity increases and subsequently decreases. It is not clear whether the change in productivity is an estimating problem or an actual trend.

On page 18 of his prepared testimony witness Shew state that, "All in all, there can be little doubt that this study of cost variability constitutes a major step forward in improving understanding of the factors driving Postal Service costs."[4]

In fact, both witness Neels and myself have shown there are very significant doubts. The conclusions are based on witness Bradley's lack of a production/cost function analysis, the seemingly unexplained trend in technical change, the focus on a short run cost analysis instead of a longer term cost analysis over the time period in which rates will be in effect, data issues as to whether hours and TPH are meaningful numbers, data scrubbing which has eliminated significant amounts of data, and the desirability of using a cross-sectional analysis rather than a short-term, two-period time series analysis.

---

[4] Tr. 28/15520, lines 5-7.

VI. CONCLUSIONS

I do not believe that witness Shew has substantiated his conclusions about witness Bradley's testimony concerning volume variability. He fails to recognize the inadequate data relied upon by witness Bradley, nor does he offer any other alternative data to support his conclusions. Witness Shew also fails to notice that witness Bradley's study is not based upon a sound cost function. For the reasons stated above and in my direct testimony, I believe witness Shew's testimony incorrectly concludes witness Bradley's study is a step forward in determining the factors driving Postal Service costs. In addition to analyzing labor hours, some consideration of investment costs is necessary. Also, additional variables should be considered in the study. Witness Bradley's focus on monthly short-term costing needs to be extended to a longer term. A proper analysis with appropriate data scrubbing would in all likelihood lead to substantially altered conclusions. Therefore, witness Shew's conclusions are not supportable and therefore should not be relied upon as support for the use of witness Bradley's analysis as a basis for establishing the attribution levels of mail processing labor costs.

CERTIFICATE OF SERVICE

I hereby certify that I have this date served the foregoing document upon all participants of record in this proceeding in accordance with section 12 the rules of practice.

KENNETH E. RICHARDSON
Attorney

Washington, D.C. 20268-0001
March 9, 1998

CHAIRMAN GLEIMAN: Two participants have requested oral cross-examination, Dow Jones and Company and the United States Postal Service.

Does any other party wish to cross-examine Witness Smith?

[No response.]

CHAIRMAN GLEIMAN: If not, Mr. McBride, whenever you are ready.

MR. McBRIDE: Thank you, Mr. Chairman.

CROSS-EXAMINATION

BY MR. McBRIDE:

Q Good evening, Mr. Smith.

A Good evening.

Q Or is it Dr. Smith? Mr. Smith?

A Well, it is Dr. Smith, but either will be find.

Q Dr. Smith. Excuse me. I was not here when you last testified, so I take it you are the same J. Edward Smith, Jr. who testified on behalf of OCA in testimony submitted on December 30, 1997, is that correct?

A Yes, sir, I am.

Q And did you make any corrections to that testimony when it was submitted for the record, sir?

A There were several revised pages when it was submitted.

Q Was the version that was put in the transcript

corrected, do you recall?

A Yes, it was.

Q All right, sir. Do you have that in front of you?

A No, I don't. Let me see if I can find it.

Q All right.

A Okay. I have a copy of the testimony that I filed with the revisions.

Q Very good. Would you please put in front of you transcript page 15851.

A I do not have that.

Q Oh, I'm sorry.

MR. McBRIDE: May I approach?

CHAIRMAN GLEIMAN: Certainly.

BY MR. McBRIDE:

Q Now I understand your previous testimony, Dr. Smith, the version that we have in front of us and that I've now put in front of you at transcript page 15851 is your testimony as corrected. Is that correct?

A Yes.

Q All right. And the testimony that has just been received into evidence you said there were no corrections. Isn't that correct?

A That's correct.

Q All right, sir. Now would you please then put that also in front of you, turning to page 3.

A Got it.

Q Would you please read into the record first your testimony at page 3, lines 19 to 21, the sentence that begins "As stated."

A As stated in Interrogatory USPS/OCA-T-600-6, the variables which should be included in a cost function consist of a measure of output, a vector of prices of inputs and T, denoting time, to allow for the analysis of technological change.

Q Were those all the variables that you thought should be included in such a cost function?

A Those are the variables that would be included in a cost function according to Dr. Green, Dr. Ferguson, and the general theory of cost functions. You'll notice in the testimony at various places there is also a discussion of cost equations. Dr. Bradley has advocated using other variables. And so that is also on the record.

See, it's kind of hard to tell. If you're talking about a cost function under economic theory, page 3 is correct. However, if you're talking about a cost equation, you'll find in the record references to the inclusion of other variables. It does seem to be a bit confusing till you read the record on that.

Q Well, I'm now going to direct your attention, if I may, to lines 2 through 6 of page transcript 15851 that I

had you turn to there, and ask you if you did identify the same variables the last time you referred to this subject.

A I beg your pardon? Would you repeat that?

Q The sentence that begins "These variables." Perhaps you could read that into the record.

A Sure. Let me go to the previous sentence so we take this in context:

Witness Bradley needs to investigate additional variables affecting mail processing labor expense. These variables include the age of the facility, the magnitude of the facility support costs, the size of the facility (square feet of space and/or number of people employed, the space utilization, the number of processing activities, the types of mail processing equipment, the value of the equipment located within a facility, and the quality of the work force.

Q Are the variables you identified in the sentence you just read into the record the same as the variables that you identify in your rebuttal testimony at pages 3, lines 19 to 21?

A No, nor are they used in the same context. I'm talking about two different approaches.

Q Which is the approach, if either, that you're recommending?

A You could use either, depending upon what you're

attempting to estimate. As an economist I would certainly advocate that which an economist would advocate, which is on page 3 of my testimony filed March 9. On the other hand, Dr. Bradley has chosen to use an approach more akin or analogous to page 31 in page 15851, and that would also be an approach.

Q Well, at page 3, lines 19 to 21, you indicated an economist would use a measure of output, price of inputs, and a T for time function, correct?

A I'm quoting Dr. Green and Dr. Ferguson.

Q But you just said that that's what an economist would recommend. Isn't that correct?

A Yes, exactly.

Q Well --

A For -- in the context of developing a cost function as an economist would develop it. That is not, apparently, the cost equation approach that Dr. Bradley is pursuing.

Q Well, is the size of the facility a vector of the price of input?

A We're talking about two separate pieces of paper with two separate pieces -- two separate approaches, and the variables which are on the economist's side of the street, so to speak, are quite clear on page 3, and the answer to your question is no.

Q Why would Witness Bradley need to investigate additional variables that your rebuttal testimony does not identify as necessary?

A He is not -- as far as I can tell -- not exactly estimating a cost function. He's estimating a cost equation, in which case it would be quite appropriate for him to investigate these variables.

For example, to make this very, very clear, you would not find the variable MANR manual ratio in a cost function, in a cost function as on page 3, lines whatever, but Witness Bradley very definitely uses it.

Q Well, are you advocating one set of variables or the other to the Commission?

A I think there is so much that needs to be explored in this study, which I think is incomplete and insufficient, that I would urge that everything be considered. If I were going to -- well, I think that's as far as I care to -- I think that's as far as I need to go to say that there is enough inadequacy here that these issues do need to be considered.

Q Do you know how Witness Degen formed his MODS cost pools?

A Haven't the slightest idea.

Q Did you --

A I did read something about MODS cost pools, but I

don't understand it, and it's not necessary for me to understand it to look at Witness Bradley's testimony.

Q Do you understand that MODS cost pools include labor hour data?

A I do not understand that. It may very well be the case, and I may very well have read it, but as I said, I'm not prepared to testify on Witness Degen or on any -- or on any reading of Witness Degen's.

I have read Witness Degen but only in a very cursory manner, mostly focused on picking out stuff related to Witness Bradley.

Q But I take it, whatever views or the lack thereof you may have on Witness Degen's testimony, you believe that the use of labor hours may be a significant problem in determining the Postal Service's costs here.

A Yes. And we've already heard quite a bit about that, but it relates -- well, we've already had that, and I can certainly repeat it if you'd like.

Q No, that's all right. But that's what you say at page 4, line 14 of your rebuttal testimony. Isn't that correct?

A I believe there are problems with using the labor hours as such, yes. Let me check page -- what page did you say?

Q Page 4, line 14.

A Yes, that's -- that's what I said.

Q What does the next line mean, "In addition, the Postal Service has questioned the reliability of the data that do exist."

A I believe there is a report by an inspector general. I have not read the report, but I have read accounts of the report that call the data system into question.

Q Now, on page 5, you talked about Dr. Neal's testimony and the subject of data scrubbing, I believe; isn't that correct?

A Data scrubbing is mentioned, yes.

Q Yes. Do you believe in data scrubbing?

A Would you please define data scrubbing?

Q Do you believe that data should be scrubbed if it appears to contain errors?

A Having worked as a market researcher for approximately seven years, not the last seven years but the last eight years, seven of which were as a market researcher, I was faced with the problem of data scrubbing on many occasions. One of the functions that I had reporting to me was market research, among others, and where we would find an outline variable or a variable that we called into question, we found that it was necessary to actually physically examine the variable to see in the case

of non-response error what the situation was.

Rather than just blindly throw it in or blindly throw it out at some assumed percent, you actually go out and market research where you're faced with data scrubbing on a daily basis and you actually poll the non-respondents to find out why they non-responded and then you use statistical techniques to extrapolate to the population.

So do I believe in data scrubbing? Yes, I believe in data scrubbing of that nature where you actually physically examine the data.

Q Were you here earlier when Professor Bradley testified?

A Yes, sir.

Q Obviously I don't have a transcript in front of me, but I seem to recall hearing him say that he attempted to determine what was the maximum possible output of a letter sorting machine. He couldn't get a precise answer to that, so he didn't draw the line at that point, but rather used his 1 percent outlier, 1 percent tail analysis. Is that about what you heard?

A Roughly.

Q So do you understand that he did look at the data and attempt to match it up against some criterion by which the machine may be capable of performing?

A I would not regard that as adequate data

scrubbing, but he did testify that he did that. What he should have done was to take a select number of those on a statistically random sample basis and have physically examined in the field what the situation was so that the accuracy of the data could be examined on a site-by-site, point-by-point basis.

Q Well, you were here when Mr. Higgins just testified, were you not?

A Yes, sir.

Q Do you recall his testimony about data that he looked at to determine whether that data was physically possible?

A Yes. It was very similar to, I believe, what Witness Bradley said.

Q Well, I have the data in front of me, it's from Library Reference 148, it's Witness Bradley's data set, and in the interest of time, I'm just going to start with the first line, and it indicates that for facility 164, fiscal year 1990, AP9, 29,233 pieces per hour, which, by my computation, is almost 500 pieces per minute, and I've got another set of data which is over 30,000 per hour, which would be more than 500 pieces per minute.

Is it your testimony that you believe that a letter sorter could sort over 500 pieces of mail per minute?

A I would --

MR. McKEEVER: Mr. Chairman, may I ask for clarification of the question? The question is in terms of one single letter sorter rather than all the employees in the facility?

THE COURT: There is going to be a follow-up question, so I think clarification might be in order.

MR. McBRIDE: Fine.

THE COURT: A possible follow-up question.

BY MR. McBRIDE:

Q Do you believe it's possible for either an individual or, on average, for people to sort 500 pieces of mail per minute?

A Well, it would, I think, depend upon whether there were 500 people or one person, or maybe something in between.

Q Well, do you know whether this data is per employee or for everyone there?

A I don't have this in front of me, and so obviously I don't know anything about it.

Q Okay.

A Now, if it is per person, I would suggest very strongly that that site be investigated and examined, not because we would believe that somebody could sort 30,000 pieces of data in an hour or a minute or whatever, but because when we get such strange responses, we need to do a

little more than just, at central headquarters, so to speak, throw them out.

Q I'm advised, and you can take this subject to check, Dr. Smith, that this was done in total piece handlings divided by total hours for that facility. Would you accept that subject to check?

A Sure.

Q And now I will ask the question again. Do you believe that number is possible?

A Five-hundred pieces per hour?

Q Yes. Per labor hour.

A Well, 500 --

Q Per minute. Excuse me. Five-hundred per minute is 30,000 per hour.

A With manual sorting?

Q Yes.

A If what you are telling me is that we are under the impression from this that somebody is sorting 500 -- what did you say? Five-hundred pieces a minute?

Q Yes.

A I would suggest that this data system is certainly rather bizarre and needs additional examination, but obviously nobody is going to sort 500 letters in a minute, if that's your question.

Q Now, let me ask you one other question. You said

that one would go back and look at the data, and I would ask you whether, given this data, one bit of which I just reported to you as from 1990 and the other from 1991, it's possible for anybody to go back and determine whether the data is accurate?

A Well, there may be some records at the facility. Alternatively, there may be some people at the facility who could explain how the reading came to be derived. Those would be two possible sources, and there may be additional ones.

It is good research practice, though, when you get data that looks strange, to follow up. To give you an example, when you're phoning people, in the case of questions where you phone the public and say, "What do you think of," a lot of people will refuse to answer.

One of the key issues in that type of market research is to contact the non-respondents, which is itself a challenge, to find out what's really going on. You just don't assume since they refuse to answer that they don't have an opinion.

Q Now, it's routine, is it not, in econometrics, for statisticians to throw out data at the extremes?

A It's frequently done.

Q Did anyone in this record attempt to show that what Professor Bradley thought were physically impossible

data actually were possible?

A I don't think so.

Q And I take it you would not urge the Commission to rely on erroneous data, would you?

A No, I would not urge the Commission to rely on erroneous data.

MR. McBRIDE: Thank you. I have no further questions.

THE WITNESS: Thank you.

CHAIRMAN GLEIMAN: Counsel, could you help me out? I know that this document has been referred to at least twice tonight. Could you please identify it for me with some specificity? And it has nothing to do with this proceeding per se, but as some people in the room may know, we're involved, along with the Postal Service and the General Accounting Office, in a study of Postal Service data collection which has been troublesome to many of us, including the publications community, over the years, and I would be interested in knowing this more specifically so that we could maybe present it as an example of something to this study group.

MR. McBRIDE: I would be happy to identify it for the record, Mr. Chairman. I got this from our experts; I didn't walk down the hall and get the library reference, but I am reliably advised it is Postal Service Library Reference

148. It is Witness Bradley's data set and the numbers that I was reading from are the top line on page 1. It's entitled Query One on One and Manual Letter Productivity by Record on the Other, and in both cases, it's for manual sorting.

CHAIRMAN GLEIMAN: Thank you.

MR. McKEEVER: Mr. Chairman, because there has been so much discussion of the document, I would like to request that it either be moved into evidence because it appears as if certain parties are relying upon it, or at least transcribed into the record so we can see what the document does, in fact, say.

CHAIRMAN GLEIMAN: Perhaps Postal Service counsel can help us. There are a number of library references which are already in evidence. I don't know whether this is one of them.

MR. KOETTING: My understanding, Mr. Chairman, is that what this is is analysis based on the raw data in the library reference. The library reference for each AP would have hours and TPH, and analysts took the data right out of the library reference and expressed that as a ratio, and that's where these numbers come from. It's TPH for hours for an AP for a particular facility.

CHAIRMAN GLEIMAN: I understand that, but do we know whether the library reference is in evidence?

MR. KOETTING: The library reference itself is not in evidence. There was an OCA motion regarding this which was withdrawn. It was the foundation of Dr. Bradley's testimony, it's a foundational library reference and was treated as such in compliance with Rule 31K.

CHAIRMAN GLEIMAN: Mr. McKeever, does it satisfy you to have it identified thusly, or would -- if you would like to make your motion?

MR. McKEEVER: Mr. Chairman, two remarks. First of all, I understand that the document is not, in fact, the library reference itself, but rather is an analysis based on the library reference. I would like to inquire, Mr. Chairman, if my understanding is correct.

CHAIRMAN GLEIMAN: I understood it to be the library reference from the way it was identified.

MR. KOETTING: Again, it's my understanding as well that these are not pages from Library Reference 148; these are -- this is a division of one number from Library Reference 148 by another number from Library Reference 148.

MR. McBRIDE: I'm sorry, Mr. Chairman, I think I confused you, and I apologize for that.

CHAIRMAN GLEIMAN: It's very easy for people to confuse me.

[Laughter.]

MR. McBRIDE: I was clearly told, but it's getting

late, that this was -- the source of this was Library Reference 148. But what these numbers are is simply the computation that counsel for the Postal Service just described, a simple arithmetic division of one set of numbers by another.

CHAIRMAN GLEIMAN: But, just for my own understanding -- I don't want to belabor this at this point, but the manual processing that took place at a facility where it is reported that 30,000 pieces were processed manually by someone or somebodies in an hour is a Postal Service data collected number.

Is that correct or is that some computation you all made, or somebody made?

MR. McBRIDE: I am told that it is total piece handlings divided by total labor hours for that AP.

MR. McKEEVER: So, Mr. Chairman -- Mr. Chairman, I take it again from that statement, we don't know how many people did that sorting. If it's just total pieces divided by total hours, it could have been done by 500 people, or 20 people.

CHAIRMAN GLEIMAN: I was under the impression during the cross-examination that there was some magnificent keystroke person out there working on an MPLSM popping through 30,000 pieces an hour, which, as it turns out, is more like the throughput of an OCR and that is why I was

kind of curious as to whether it could have been just some transcription error or transmission error from the field on a piece of equipment.

But now you tell me that the 500 pieces per minute, or 30,000 pieces per hour has to do with something that happened over an entire accounting period at a facility. We don't know whether it is one machine or many machines, so it could have been a whole bank of MPLSMs, and maybe an LSM thrown in there on the side.

MR. McBRIDE: I am told that it is all manual, all the data that I read from is manual.

CHAIRMAN GLEIMAN: I understand. But is it a whole bunch -- is it an LSM or is it a Multi-Position Letter Sorting Machine? It is somebody casing mail, one person casing mail.

MR. McBRIDE: No, it is not one person. It is total pieces divided by total labor hours, but in manual operations.

CHAIRMAN GLEIMAN: Okay.

MR. KOETTING: At a particular facility for a given AP.

CHAIRMAN GLEIMAN: Okay. So we now have established that this is people casing mail. Okay. Not sorting, using mechanical devices, as opposed to electronic devices. Okay. But we -- and we do know that it is the

average per hour for that facility, per work hour, so that, in theory, you could extrapolate and say that for that facility, for an accounting period, people were casing 500 pieces per hour.

MR. McBRIDE: Minute.

CHAIRMAN GLEIMAN: Per minute.

MR. McBRIDE: Thirty-thousand.

CHAIRMAN GLEIMAN: Thirty-thousand per single work hour.

MR. McKEEVER: But not, we do not know how many employees were working during that work hour.

MR. McBRIDE: It doesn't matter.

MR. McKEEVER: Okay. Mr. Chairman, let me just ask that it be transcribed into the record so that we have it in front of us, the document. I do not -- I, obviously, am not in a position to move it into evidence, but I would like to have the entire document transcribed into evidence, because Mr. Higgins relied on it. Transcribed -- excuse me -- into the transcript.

CHAIRMAN GLEIMAN: Would anyone object, so that we could at least have -- I mean I have never seen a copy of it. I have seen it walked back and forth across the hearing room. And if you show me a copy right now, I am not sure that it would be very helpful

MR. McBRIDE: I just -- I want to show you for one

reason, if I may approach the bench. And that is --

CHAIRMAN GLEIMAN: It looks like many other documents. There are columns and rows of numbers, I have seen lots of those.

MR. McBRIDE: The only reason I was approaching the bench was to point out that the only copy I have, I have written on. But I am more than happy to give it to you. It doesn't contain anything privileged.

CHAIRMAN GLEIMAN: Well, if you would permit us to have one of those copies that you have in your hand, we will endeavor to find a copying machine around here that is still functioning and, even though you say that the markings don't have any great meaning to anyone other than yourself, we will attempt to scrub them.

[Laughter.]

MR. McBRIDE: Now, we are getting somewhere.

CHAIRMAN GLEIMAN: Whatever that word means. And then we will provide copies to the reporter to be transcribed into the record. And still it makes a wonderful example for that study team of data collection from the field and what it is they are looking at our there, and why they are collecting things like that.

[Data Collection Document was received into evidence and transcribed into the record.]

Manual Flats

Manual ~~Letter~~ Productivity by Record

3/17/98

Facility	FY	AP	Manual ~~Flat~~ Productivity
164	90	9	29,233
913	92	1	29,120
4843	91	12	27,471
4017	91	1	24,377
3084	92	3	15,841
4671	94	2	13,395
8153	91	13	12,094
3645	92	10	11,346
7178	93	9	9,946
4671	92	4	8,351
7178	94	5	7,948
6971	93	12	6,114
336	91	10	5,571
7178	93	12	4,590
3084	91	3	4,554
2752	96	1	4,388
7178	94	9	4,260
7178	94	10	4,259
7178	94	6	4,240
7178	94	1	3,997
7463	90	5	3,986
1225	91	11	3,967
5096	95	9	3,705
3084	91	2	3,576
3645	91	10	3,449
6971	93	13	3,248
4017	93	6	2,988
7178	94	3	2,915
7178	94	2	2,873
6563	91	3	2,856
4671	94	3	2,811
4671	93	3	2,800
3931	94	5	2,791
6563	91	8	2,785
6563	91	13	2,754
6563	91	6	2,719
6563	91	12	2,707
7450	93	7	2,676
6563	91	7	2,672
7178	94	8	2,657
6563	91	9	2,640
7178	93	11	2,638
6563	91	4	2,574
4278	93	10	2,547
6563	91	2	2,523
6563	91	5	2,497
4017	93	7	2,489

pieces per hour

Data collection From The Field Document

Source: LR-148 for All data elements which is Bradley's data set

Manual Letter Productivity by Record

3/17/98

Facility	FY	AP	Manual Flat Productivity
7178	94	7	2,424
7178	93	13	2,385
8208	91	8	2,332
5201	91	11	2,303
6563	91	10	2,302
9913	94	12	2,275
7178	94	4	2,188
6563	91	11	2,136
7178	93	10	2,111
8004	96	13	1,970
9653	93	7	1,936
8145	91	8	1,931
1320	91	5	1,909
9653	94	2	1,907
9653	94	1	1,905
8303	91	1	1,887
4891	91	11	1,881
6961	91	4	1,877
82	91	6	1,854
1320	91	6	1,836
9653	93	8	1,832
7512	96	9	1,825
5395	91	2	1,798
7178	94	13	1,785
9653	94	3	1,784
4671	94	9	1,762
9653	93	6	1,753
2454	91	1	1,741
1320	91	12	1,733
1320	91	4	1,732
6550	91	1	1,727
1320	92	5	1,722
5395	91	1	1,711
336	92	12	1,706
1320	91	7	1,700
1320	91	3	1,684
6961	91	5	1,682
1320	91	1	1,672
1320	91	13	1,667
9653	93	13	1,665
5014	92	2	1,665
9698	91	3	1,646
1320	93	7	1,639
3931	95	2	1,632
4891	92	9	1,625
1320	92	1	1,623
9913	94	9	1,612

Manual Letter Productivity by Record 3/17/98

Facility	FY	AP	Manual Flat Productivity
9091	91	1	1,611
9653	93	4	1,608
4891	92	7	1,607
9263	91	4	1,607
1320	93	10	1,602
1320	92	7	1,602
4891	92	6	1,602
1320	93	5	1,599
9653	93	5	1,592
9775	91	1	1,592
6676	95	12	1,591
9749	91	5	1,589
1320	91	8	1,585
1320	91	2	1,584
5395	91	7	1,584
1320	91	9	1,583
1320	92	6	1,582
336	92	13	1,576
8208	91	4	1,575
7512	95	8	1,570
8208	91	9	1,567
8208	91	13	1,564
4284	92	1	1,555
4891	92	10	1,551
1320	92	2	1,551
4671	92	2	1,550
3547	93	12	1,547
2752	96	2	1,541
5395	93	5	1,539
9698	94	13	1,539
5395	91	6	1,534
5395	92	5	1,534
4385	93	3	1,530
336	92	11	1,527
19	95	13	1,526
3931	94	11	1,525
1320	93	13	1,520
1320	92	8	1,519
1320	93	6	1,517
336	93	1	1,517
4284	91	13	1,515
1320	91	10	1,515
9653	93	10	1,514
8208	91	6	1,514
4017	93	5	1,513
9653	93	11	1,511
19	94	5	1,508

Manual Letter Productivity by Record

3/17/98

Facility	FY	AP	Manual Flat Productivity
9653	93	3	1,507
8208	91	7	1,506
5395	91	5	1,504
8208	91	12	1,504
7884	91	2	1,503
4017	93	1	1,500
7512	96	8	1,497
9653	94	13	1,494
9653	95	1	1,492
1320	91	11	1,492
5395	91	13	1,490
6961	91	3	1,487
6676	94	3	1,485
4385	96	13	1,484
5395	92	6	1,482
4891	92	1	1,480
1320	93	8	1,479
4385	96	2	1,478
8208	91	3	1,467
8208	91	5	1,467
5066	95	2	1,466
2752	93	7	1,465
1320	92	9	1,460
6676	94	1	1,460
4017	93	13	1,456
1320	92	3	1,456
5014	91	12	1,455
1320	92	4	1,455
8208	91	11	1,454
659	95	7	1,454
9562	96	10	1,454
9698	91	5	1,451
4891	92	13	1,449
5395	92	1	1,447
5395	92	10	1,446
336	91	12	1,446
9698	92	10	1,445
9653	94	12	1,443
6676	95	10	1,440
4017	93	2	1,438
829	91	2	1,438
5395	91	3	1,433
5395	91	8	1,431
6676	95	11	1,430
336	93	12	1,428
4891	91	13	1,427
5395	93	2	1,427

Manual Letter Productivity by Record 3/17/98

Facility	FY	AP	Manual Flat Productivity
5395	92	12	1,425
9653	93	9	1,423
5395	91	12	1,423
336	93	11	1,422
4284	91	12	1,421
9653	95	2	1,421
1320	93	9	1,419
19	95	7	1,418
3547	93	10	1,416
5014	91	11	1,415
5395	92	8	1,415
4385	96	5	1,413
5395	92	11	1,413
7512	95	7	1,410
4891	92	12	1,409
5395	92	2	1,408
8004	96	2	1,408
7512	95	13	1,406
5814	93	10	1,406
8208	91	2	1,403
9562	96	6	1,402
7444	96	5	1,402
5395	93	4	1,401
4017	93	8	1,401
7637	94	4	1,400
5395	92	7	1,397
9653	94	6	1,395
9653	93	12	1,395
4671	91	11	1,395
5066	96	2	1,394
19	94	6	1,392
4385	96	6	1,391
6676	95	3	1,391
4891	92	8	1,390
659	95	8	1,389
8941	93	9	1,388
4385	96	12	1,388
1320	93	2	1,386
336	92	9	1,386
336	92	4	1,385
336	93	2	1,385
4385	94	2	1,384
2467	93	9	1,384
3931	96	13	1,384
4891	92	5	1,382
7666	91	3	1,382
4671	91	7	1,382

Manual Letter Productivity by Record 3/17/98

Facility	FY	AP	Manual Flat Productivity
659	96	3	1,380
5395	93	6	1,379
4891	92	2	1,379
5014	91	13	1,376
1320	93	1	1,376
5014	92	1	1,376
659	95	6	1,375
6676	94	5	1,375
5395	92	3	1,374
336	92	5	1,374
3547	93	9	1,374
4694	91	7	1,373
336	92	10	1,372
6063	91	1	1,370
3547	93	13	1,370
841	91	1	1,370
9698	91	2	1,365
8941	93	10	1,365
4144	91	13	1,365
4017	93	12	1,363
4694	91	6	1,363
8004	95	12	1,362
336	92	3	1,361
8303	92	5	1,361
5604	95	13	1,359
5066	96	5	1,358
5014	92	5	1,357
3547	93	11	1,356
5014	92	3	1,356
9811	92	1	1,356
4017	93	11	1,355
6676	94	4	1,355
7884	91	1	1,354
3547	93	8	1,354
9653	94	5	1,354
8004	96	12	1,353
4671	92	7	1,352
9863	92	12	1,352
8004	96	7	1,352
1320	92	13	1,351
4671	92	5	1,350
6557	96	12	1,350
5395	92	9	1,349
19	94	4	1,348
5395	91	10	1,346
336	92	6	1,346
7975	93	3	1,346

Manual Letter Productivity by Record

3/17/98

Facility	FY	AP	Manual Flat Productivity
1320	93	11	1,345
1320	93	12	1,344
9653	94	11	1,342
8004	96	3	1,342
5066	96	6	1,341
336	93	10	1,340
4891	91	12	1,338
5066	94	6	1,336
4694	91	9	1,336
7975	93	13	1,335
659	96	1	1,335
7512	96	7	1,334
7884	91	3	1,332
336	92	8	1,331
9865	91	4	1,330
5395	93	3	1,330
4694	91	5	1,330
4284	91	11	1,329
5395	91	11	1,329
1225	93	2	1,325
9698	91	7	1,323
1320	93	4	1,323
7512	95	9	1,323
4694	91	8	1,321
5395	91	9	1,321
5395	92	13	1,320
4891	91	10	1,320
19	94	3	1,318
5563	94	7	1,317
5814	93	11	1,316
1225	93	5	1,316
4385	96	11	1,315
7512	93	3	1,315
4385	94	1	1,314
9562	96	13	1,312
4671	92	9	1,311
4891	92	4	1,311
4144	91	5	1,310
7512	96	1	1,309
336	92	7	1,309
8208	91	10	1,307
2806	91	5	1,306
659	95	12	1,305
3821	92	1	1,305
336	91	9	1,304
5395	92	4	1,303
5525	96	11	1,302

Manual Letter Productivity by Record

3/17/98

Facility	FY	AP	Manual Flat Productivity
8004	96	4	1,301
5395	91	4	1,301
4671	91	12	1,301
9698	92	2	1,300
4017	93	4	1,300
4385	95	7	1,299
4144	92	1	1,299
4278	91	1	1,298
9811	91	4	1,297
9811	92	4	1,296
9698	91	12	1,296
7512	93	12	1,295
8004	95	11	1,295
8004	95	13	1,293
8112	96	6	1,293
5525	95	13	1,293
4017	93	9	1,293
4385	94	9	1,292
4144	91	4	1,292
659	96	2	1,291
9811	91	6	1,291
336	93	9	1,291
7512	96	5	1,290
8145	92	3	1,290
336	91	13	1,289
9653	94	4	1,289
4017	93	10	1,289
7512	96	11	1,288
7512	94	1	1,288
8004	96	11	1,288
4385	96	10	1,288
9091	91	3	1,287
5604	96	6	1,287
7100	91	1	1,287
4385	95	6	1,287
9811	91	8	1,286
6551	96	11	1,286
5014	91	8	1,285
6676	94	2	1,285
9863	94	9	1,285
5683	91	6	1,285
1320	93	3	1,285
5395	93	1	1,283
4017	92	13	1,282
4694	91	4	1,282
336	93	13	1,282
8208	91	1	1,281

Manual Letter Productivity by Record 3/17/98

Facility	FY	AP	Manual Flat Productivity
6551	91	5	1,281
6551	91	7	1,280
5563	94	9	1,280
1450	91	1	1,278
9653	94	7	1,278
4694	91	11	1,277
5683	91	7	1,277
4144	91	12	1,276
6792	94	1	1,276
9270	95	10	1,276
5066	95	13	1,275
4385	95	1	1,271
7512	95	6	1,270
659	95	10	1,270
4385	96	7	1,270
8112	96	7	1,268
4694	91	13	1,268
4385	95	13	1,267
3579	92	6	1,267
6551	91	1	1,267
5604	96	8	1,267
5525	96	1	1,266
1320	92	12	1,266
9562	96	12	1,266
5113	95	12	1,265
6551	91	10	1,265
5066	96	7	1,265
9443	93	6	1,265
4144	92	9	1,265
4017	92	11	1,265
8004	96	6	1,264
659	95	5	1,263
336	93	4	1,263
9811	91	7	1,262
5604	96	1	1,262
6551	96	8	1,262
7512	96	10	1,261
9112	93	1	1,261
3931	94	10	1,260
2806	93	13	1,260
4671	92	6	1,260
6557	96	13	1,260
3579	93	7	1,260
9811	92	5	1,259
4256	93	9	1,259
5395	93	13	1,258
8303	92	6	1,257

Manual Letter Productivity by Record

3/17/98

Facility	FY	AP	Manual Flat Productivity
7097	94	13	1,257
5525	96	2	1,257
6551	95	4	1,257
4017	93	3	1,257
4144	91	1	1,254
8004	95	9	1,254
4671	91	5	1,254
5395	93	8	1,253
6551	96	10	1,253
2806	93	2	1,253
5525	96	13	1,253
9270	95	8	1,252
659	95	9	1,251
6676	95	5	1,251
5604	96	9	1,250
6551	95	7	1,250
1320	92	10	1,250
3346	96	2	1,249
6048	92	9	1,248
6676	94	9	1,248
6551	96	7	1,247
8145	92	2	1,246
3579	93	3	1,246
5525	95	12	1,245
8941	93	8	1,245
4671	96	7	1,245
6550	96	2	1,245
9091	91	2	1,244
4385	96	9	1,243
4385	94	11	1,243
9863	92	13	1,243
4891	92	11	1,243
9698	91	6	1,242
7512	96	4	1,241
659	95	4	1,240
8004	96	1	1,239
3931	95	6	1,239
4694	91	12	1,237
2648	91	1	1,237
5395	93	7	1,236
9913	94	13	1,235
3579	93	5	1,235
6550	95	13	1,235
5563	94	8	1,234
5604	96	7	1,234
336	91	6	1,233
6551	92	7	1,233

Manual Letter Productivity by Record 3/17/98

Facility	FY	AP	Manual Flat Productivity
3579	93	2	1,232
4144	91	8	1,232
7512	95	3	1,232
336	91	5	1,231
9698	91	9	1,231
8004	96	5	1,231
5563	94	10	1,230
9698	93	1	1,229
6551	91	11	1,229
5525	96	5	1,228
8941	93	1	1,228
6551	96	6	1,226
336	92	1	1,226
3579	93	1	1,226
4385	96	1	1,226
2390	93	10	1,225
336	93	8	1,225
7512	96	6	1,225
7975	93	8	1,225
336	92	2	1,225
9698	91	1	1,224
8004	94	6	1,224
3931	94	7	1,223
4385	94	10	1,223
4965	93	2	1,223
8004	95	8	1,222
3931	95	5	1,221
4256	95	13	1,221
7512	96	3	1,219
4144	93	8	1,219
9562	96	11	1,219
8941	93	12	1,219
7512	93	5	1,219
9698	91	8	1,219
9653	95	7	1,218
8004	95	10	1,218
8004	96	9	1,218
7512	93	4	1,217
4144	93	6	1,216
7178	94	11	1,215
7178	93	5	1,215
7097	96	3	1,214
4385	96	3	1,214
4385	94	13	1,213
7637	94	7	1,213
336	91	11	1,213
9605	91	3	1,213

Manual Letter Productivity by Record 3/17/98

Facility	FY	AP	Manual Flat Productivity
6676	94	7	1,213
7512	95	10	1,213
336	91	8	1,212
8145	92	1	1,212
9112	93	2	1,211
8941	93	7	1,211
7512	96	2	1,211
3931	96	4	1,211
9698	91	13	1,210
9811	92	3	1,210
1547	91	6	1,210
6551	95	5	1,209
8941	93	5	1,209
7512	95	5	1,209
2806	93	11	1,208
3931	95	1	1,208
4891	92	3	1,207
4385	94	12	1,207
5525	94	1	1,206
5525	95	9	1,206
5525	95	1	1,206
9091	91	4	1,204
1892	91	1	1,204
4284	94	7	1,204
7178	94	12	1,204
336	93	7	1,203
4671	92	1	1,203
9091	91	8	1,202
3653	95	13	1,202
6551	91	6	1,202
4017	92	12	1,201
9698	91	10	1,201
5525	96	9	1,201
6550	96	5	1,201
6551	92	8	1,200
6551	91	9	1,200
6551	91	4	1,200

Manual Letters

Query1

3/17/98

Facility	FY	AP	Manual Letter
4843	91	12	30,967
336	91	10	23,980
8153	91	13	17,742
3084	92	3	13,512
4671	94	2	12,183
2752	96	1	8,266
6971	93	12	7,310
82	94	5	6,214
3593	93	3	6,087
4671	94	3	5,869
2007	96	4	5,339
3346	96	11	5,169
4017	91	1	4,908
6971	93	13	4,099
4546	91	1	3,887
9882	96	12	3,843
82	94	7	3,793
1225	94	10	3,773
2454	91	1	3,756
2666	91	1	3,727
9913	94	12	3,653
8384	93	6	3,486
82	91	6	3,356
82	94	6	3,330
82	91	5	3,276
9917	91	2	3,133
1320	91	4	3,121
3931	92	5	3,058
3931	92	6	2,947
3921	93	10	2,814
3931	92	4	2,813
9091	91	1	2,813
3931	94	5	2,749
82	94	3	2,730
3931	92	11	2,707
6550	91	1	2,699
1320	91	5	2,674
4017	93	7	2,613
1320	91	6	2,562
5395	92	6	2,551
3931	92	3	2,548
7450	93	7	2,548
1547	91	3	2,543
2806	93	2	2,524
5395	91	1	2,514
1547	91	6	2,498
9091	91	3	2,487

Up

Source: LR-148
which is Bradley's data set

Query1

3/17/98

Facility	FY	AP	Manual Letter
1320	91	3	2,470
5395	92	5	2,459
3931	92	7	2,459
1547	91	2	2,458
4017	91	13	2,451
2806	93	11	2,445
1547	91	5	2,441
2806	93	5	2,430
4017	93	6	2,426
2454	91	2	2,418
5395	92	7	2,402
6571	95	3	2,386
1547	91	4	2,384
5395	91	2	2,382
5395	92	9	2,379
1547	92	1	2,371
6063	96	1	2,371
2806	93	13	2,364
2752	96	2	2,363
1547	91	13	2,355
3931	92	13	2,352
2806	93	12	2,348
1547	91	8	2,347
5395	92	11	2,341
5395	91	12	2,339
2454	91	10	2,338
2806	93	7	2,336
5395	92	8	2,335
2806	93	10	2,333
1547	91	7	2,329
5395	91	3	2,325
2454	91	3	2,315
2806	93	6	2,313
1320	91	1	2,309
5395	91	6	2,304
1547	91	11	2,304
1467	93	10	2,300
1547	91	9	2,297
2806	93	9	2,294
5395	92	10	2,291
5395	92	12	2,290
5395	92	1	2,285
4671	93	3	2,283
5395	91	4	2,277
1547	92	2	2,269
5395	91	11	2,265
5395	91	7	2,263

Facility	FY	AP	Manual Letter
5395	91	13	2,263
5395	91	5	2,246
2454	91	12	2,238
336	92	1	2,235
1467	92	12	2,230
1547	91	12	2,229
5395	91	8	2,229
2806	93	8	2,226
5395	91	10	2,222
2696	96	13	2,220
1547	91	10	2,220
5395	92	4	2,218
5395	91	9	2,215
2806	92	2	2,212
3931	92	12	2,206
1467	93	2	2,206
3931	92	2	2,205
2806	91	9	2,204
2454	91	8	2,200
1320	91	2	2,195
2454	92	1	2,193
1547	93	7	2,192
1320	93	10	2,191
5395	92	2	2,185
1547	93	6	2,183
2806	93	3	2,176
1467	93	1	2,176
2454	91	11	2,175
2806	91	3	2,171
2696	91	1	2,171
2806	91	11	2,169
1547	92	3	2,167
5395	92	3	2,163
2806	93	1	2,158
4017	93	1	2,155
1467	93	5	2,152
2806	91	10	2,151
1547	93	5	2,149
2806	93	4	2,147
2454	91	13	2,146
1547	93	10	2,145
1547	93	8	2,144
82	94	2	2,143
2806	91	8	2,140
9091	91	2	2,139
2454	91	9	2,137
336	91	11	2,136

Facility	FY	AP	Manual Letter
1467	93	3	2,129
1467	93	7	2,124
1467	93	6	2,123
2007	93	4	2,115
1547	92	5	2,112
6666	92	5	2,107
2806	91	12	2,106
6063	95	13	2,103
2454	92	2	2,101
1467	92	6	2,100
1320	92	4	2,098
336	94	2	2,096
1547	93	12	2,095
1320	93	2	2,092
1320	91	11	2,091
1547	93	9	2,091
2454	91	6	2,089
1547	92	4	2,089
336	91	13	2,086
1547	92	12	2,085
1467	92	13	2,084
1547	92	6	2,083
2806	91	7	2,082
2454	91	7	2,081
8228	91	8	2,081
8303	92	10	2,079
3931	93	5	2,078
1320	91	12	2,077
1467	93	4	2,075
1467	93	9	2,072
1547	92	7	2,071
1320	92	11	2,070
6666	92	1	2,070
2806	92	4	2,070
1467	92	7	2,069
4017	93	8	2,069
1320	93	9	2,066
1467	92	1	2,064
2806	92	9	2,064
1467	92	4	2,063
1467	93	8	2,063
2806	91	5	2,062
1320	93	7	2,059
1467	91	10	2,059
2806	92	1	2,059
9913	94	9	2,057
2806	92	8	2,054

Facility	FY	AP	Manual Letter
1467	92	8	2,054
6563	91	12	2,052
1467	92	10	2,047
1467	92	9	2,047
336	93	12	2,047
1320	93	8	2,042
6666	93	12	2,041
1467	91	9	2,039
8228	91	7	2,038
1547	93	13	2,037
1467	92	5	2,037
6563	91	13	2,034
754	92	6	2,032
6391	91	7	2,028
5395	92	13	2,027
3931	92	10	2,027
6666	91	13	2,024
336	91	12	2,024
1547	92	9	2,022
1547	93	4	2,020
1467	93	11	2,020
1547	92	13	2,019
2696	96	7	2,018
3931	91	9	2,012
6666	91	10	2,008
1320	92	3	2,008
1320	92	1	2,008
1467	91	11	2,008
2806	92	3	2,007
2454	92	12	2,007
2806	92	7	2,006
2454	91	5	2,005
2696	96	12	2,004
1320	91	10	2,002
6550	96	6	2,001
1547	92	11	2,001
1320	91	13	1,998
6666	93	8	1,996
6666	91	11	1,996
6666	92	6	1,994
2696	96	6	1,994
1547	92	8	1,991
4017	93	9	1,988
4017	93	10	1,987
6961	92	11	1,987
2806	91	6	1,987
2806	91	4	1,985

Facility	FY	AP	Manual Letter
3931	92	8	1,985
336	93	13	1,985
1467	92	11	1,984
1320	93	3	1,983
1320	92	6	1,981
2806	91	1	1,978
1320	93	1	1,978
1467	92	2	1,976
6666	92	3	1,975
4017	93	5	1,975
6666	91	12	1,974
2696	96	9	1,973
3329	91	1	1,973
1320	93	11	1,971
6666	92	4	1,971
6666	92	2	1,970
2696	96	11	1,967
6550	96	11	1,967
2696	96	1	1,965
2696	96	8	1,963
5201	91	11	1,959
2454	92	13	1,958
1320	92	5	1,957
3931	92	1	1,955
1320	92	7	1,954
2454	91	4	1,954
6543	93	1	1,953
1320	93	13	1,951
1547	92	10	1,951
1320	91	9	1,951
1547	93	1	1,950
1320	91	8	1,946
6961	92	12	1,945
6666	91	9	1,944
2806	92	5	1,944
6550	96	7	1,944
1320	93	12	1,942
1320	93	5	1,942
2806	92	10	1,942
336	94	1	1,938
6550	96	10	1,937
4017	93	2	1,937
2806	92	6	1,934
6666	91	8	1,934
1320	91	7	1,933
1467	91	13	1,933
2696	96	10	1,932

Facility	FY	AP	Manual Letter
1320	92	2	1,931
6543	93	8	1,930
6550	96	9	1,930
336	93	11	1,929
6666	93	7	1,928
6550	95	13	1,928
3931	92	9	1,926
2806	92	12	1,925
6550	96	5	1,923
6543	91	3	1,918
1320	92	13	1,917
6550	95	12	1,917
3643	93	8	1,915
6550	96	8	1,913
1467	92	3	1,913
1450	91	1	1,911
4017	93	3	1,910
6563	91	9	1,910
2806	92	13	1,910
9091	91	4	1,910
1547	93	3	1,909
7884	91	1	1,908
6563	91	8	1,907
9091	91	6	1,906
2454	92	11	1,906
1467	91	8	1,900
9091	91	5	1,899
3931	91	13	1,899
1320	92	10	1,898
6666	91	2	1,898
1320	93	6	1,896
4017	93	4	1,894
1547	93	11	1,894
6563	91	7	1,890
5395	93	7	1,887
5395	93	3	1,884
6666	92	8	1,882
336	91	8	1,881
6550	96	1	1,881
1547	93	2	1,880
6666	91	4	1,880
6666	93	1	1,879
9091	91	13	1,879
7480	92	1	1,877
6666	91	3	1,877
6666	93	13	1,875
9705	95	1	1,872

Facility	FY	AP	Manual Letter
6543	93	13	1,871
6666	93	9	1,871
336	92	4	1,868
6961	92	13	1,867
1467	91	12	1,866
6550	91	5	1,865
7884	91	2	1,865
1467	91	1	1,864
5395	93	2	1,864
6550	91	3	1,861
2454	93	1	1,861
1467	91	5	1,859
336	94	3	1,859
1320	93	4	1,859
6666	91	7	1,856
6666	92	7	1,856
7884	91	3	1,854
3329	91	5	1,854
6563	91	6	1,853
2806	91	13	1,853
6666	93	10	1,852
2696	96	2	1,851
1467	93	12	1,851
6550	91	4	1,851
6550	91	13	1,848
6550	96	12	1,846
6543	93	10	1,845
1320	92	9	1,844
6550	91	11	1,842
6550	95	11	1,842
2696	96	5	1,841
6666	92	12	1,839
5395	93	8	1,839
6543	92	5	1,837
1467	91	2	1,837
1467	91	7	1,836
1320	92	12	1,834
3294	91	12	1,831
9917	91	3	1,829
5395	93	6	1,829
6550	91	2	1,829
6666	92	10	1,828
5395	93	5	1,828
6543	92	7	1,827
336	91	4	1,826
6550	95	5	1,823
2454	93	11	1,820

Facility	FY	AP	Manual Letter
3084	91	3	1,818
6666	91	5	1,818
2454	92	3	1,818
9091	91	8	1,818
6543	91	1	1,817
3579	93	8	1,817
6543	92	3	1,816
4256	93	9	1,815
5395	93	4	1,815
2007	95	4	1,814
3643	93	6	1,811
9091	91	11	1,811
3643	93	9	1,810
6666	91	6	1,810
6666	92	9	1,810
9091	91	12	1,809
1467	91	6	1,809
2696	96	4	1,806
2806	92	11	1,805
3329	91	4	1,804
6550	91	12	1,802
2696	95	1	1,802
2454	92	10	1,802
5395	93	11	1,801
5395	93	1	1,799
6971	93	9	1,799
6563	91	5	1,799
3643	91	2	1,799
2696	95	2	1,799
6666	92	13	1,795
3931	91	11	1,795
5395	93	10	1,795
336	91	6	1,795
3579	93	7	1,793
6550	91	6	1,791
2696	91	2	1,791
3579	93	10	1,791
9705	91	1	1,789
1467	91	4	1,787
336	92	6	1,787
4278	91	5	1,785
9863	94	9	1,785
6550	96	2	1,783
4694	91	7	1,783
6550	91	8	1,782
6550	95	7	1,782
6563	91	10	1,782

Facility	FY	AP	Manual Letter
2007	96	3	1,781
2696	94	13	1,780
3579	93	11	1,780
6550	91	10	1,778
8303	92	13	1,777
3643	93	11	1,777
6666	92	11	1,775
6543	94	1	1,775
6543	93	7	1,774
3931	91	8	1,773
6666	93	5	1,773
2454	93	7	1,772
6666	93	2	1,771
2696	95	7	1,769
336	92	3	1,769
3653	94	13	1,768
6550	92	1	1,765
3579	93	6	1,762
2696	96	3	1,761
3643	93	5	1,759
4017	92	12	1,759
8228	91	2	1,758
3643	93	7	1,755
2454	93	10	1,753
3579	93	13	1,751
336	94	5	1,751
1467	91	3	1,750
1320	92	8	1,749
2454	93	9	1,749
4017	93	13	1,749
6550	95	10	1,748
6676	96	5	1,746
5395	93	9	1,746
9091	91	7	1,744
6666	93	6	1,743
3329	91	3	1,741
9913	94	13	1,739
2696	91	5	1,738
9863	94	13	1,738
6550	95	8	1,738
2696	95	13	1,736
6218	95	2	1,736
3643	91	3	1,736
336	91	7	1,734
6550	94	1	1,734
8228	91	3	1,733
4671	94	9	1,731

Facility	FY	AP	Manual Letter
3643	91	9	1,730
4017	92	11	1,729
6550	91	7	1,727
6550	91	9	1,726
3643	91	7	1,726
4017	93	11	1,725
3579	93	9	1,723
336	91	2	1,722
4017	92	1	1,722
4017	93	12	1,721
3712	91	1	1,720
9698	91	3	1,718
2454	92	8	1,716
8228	91	5	1,714
6550	94	9	1,714
6550	95	6	1,713
4694	91	6	1,713
6961	91	7	1,712
2454	92	9	1,711
6543	93	9	1,709
8228	91	4	1,709
3579	93	12	1,709
6961	92	2	1,707
82	94	4	1,706
8228	91	1	1,704
6961	92	9	1,702
6550	95	1	1,701
9091	91	10	1,701
336	92	2	1,699
4017	92	10	1,698
2696	91	3	1,698
336	92	5	1,697
336	91	5	1,696
3294	91	11	1,694
4144	93	11	1,693
2454	93	8	1,693
6543	93	11	1,692
6666	93	11	1,690
6550	95	9	1,688
336	91	3	1,688
6543	91	7	1,688
5395	93	12	1,687
5395	93	13	1,683
2454	93	5	1,683
9863	93	8	1,683
3653	94	12	1,683
9863	94	10	1,683

Facility	FY	AP	Manual Letter
2454	93	6	1,683
82	94	1	1,681
6961	92	7	1,680
9863	94	12	1,680
3643	91	8	1,679
6550	94	7	1,677
2454	92	5	1,677
6543	91	4	1,676
6550	94	8	1,676
6543	92	11	1,675
3643	92	3	1,674
6550	94	13	1,673
336	92	7	1,671
336	91	1	1,671
8153	92	4	1,670
9913	96	6	1,669
4144	93	10	1,668
3329	91	9	1,668
6550	94	12	1,667
3643	91	13	1,666
336	93	10	1,665
3643	91	11	1,665
9698	91	2	1,663
2696	91	4	1,662
2696	95	3	1,662
2454	93	12	1,661
2454	92	7	1,660
6550	93	13	1,660
6550	95	2	1,660
336	91	9	1,660
6961	92	5	1,659
3643	92	2	1,658
6550	94	2	1,657
8942	91	7	1,652
3643	93	4	1,651
3643	91	5	1,651
3643	92	1	1,648
3643	91	10	1,647
3643	91	6	1,646
6543	92	6	1,645
6961	92	1	1,641
3329	91	2	1,640
4694	91	3	1,638
6563	91	2	1,638
6550	92	2	1,636
6550	94	11	1,636
6063	96	2	1,633

Facility	FY	AP	Manual Letter
6543	92	13	1,632
6543	95	1	1,631
4017	92	13	1,631
2696	95	6	1,631
6550	92	13	1,630
6961	92	10	1,630
7100	91	1	1,629
2454	92	6	1,629
2454	93	2	1,628
3653	94	8	1,628
6550	96	3	1,627
6961	91	6	1,626
9775	91	1	1,626
2454	92	4	1,624
6563	91	4	1,624
3643	92	9	1,623
6543	91	8	1,622
3653	94	11	1,622
6551	92	11	1,622
6961	92	6	1,620
6550	94	10	1,619
8303	92	6	1,618
6961	92	8	1,618
6098	91	6	1,618
3931	91	12	1,617
3653	95	1	1,617
6218	94	13	1,615
5604	95	10	1,615
6543	95	3	1,614
2696	95	5	1,613
7450	88	10	1,613
6550	93	8	1,612
3643	93	2	1,611
3653	95	9	1,611
4144	93	13	1,610
3643	93	1	1,608
6550	92	3	1,608
9698	91	5	1,606
8303	92	12	1,602
6961	92	3	1,602
3579	92	5	1,601
6543	92	4	1,601
6543	91	2	1,599
3643	92	5	1,597
8303	92	8	1,594
3643	92	13	1,594
4694	91	4	1,594

Facility	FY	AP	Manual Letter
4278	93	10	1,594
82	93	10	1,593
2752	96	4	1,593
3643	91	12	1,590
6550	94	5	1,590
6551	91	9	1,589
3643	91	4	1,589
19	93	8	1,589
2454	93	13	1,588
6551	91	10	1,588
6550	94	6	1,588
336	94	4	1,587
6550	93	9	1,587
1225	91	10	1,587
3653	96	13	1,586
6550	96	13	1,585
6063	91	1	1,585
6961	91	2	1,585
3579	93	5	1,583
7865	93	4	1,583
9091	91	9	1,580
3653	94	10	1,580
9863	93	10	1,579
8303	92	9	1,577
6550	93	12	1,576
754	92	7	1,576
4694	91	5	1,575
6961	91	12	1,574
6563	91	3	1,573
6543	94	10	1,572
5201	91	6	1,571
3329	91	11	1,571
3294	91	10	1,570
3653	96	1	1,569
3329	91	8	1,568
3579	93	1	1,568
6543	93	12	1,567
3294	91	3	1,567
2696	95	9	1,564
2696	95	8	1,562
8303	92	11	1,562
3643	92	8	1,561
7480	91	7	1,561
5814	93	1	1,560
6961	91	8	1,560
4873	93	7	1,559
3653	95	10	1,559

Facility	FY	AP	Manual Letter
3643	92	11	1,558
3653	94	6	1,558
6551	92	1	1,558
9863	94	8	1,558
3643	93	3	1,557
3294	91	9	1,556
3643	92	4	1,555
6961	91	11	1,555
6550	93	11	1,555
6961	91	13	1,553
6551	92	8	1,552
6098	91	7	1,552
6543	93	2	1,551
3653	95	7	1,549
3643	92	12	1,549
3931	91	10	1,548
3653	96	9	1,548
3643	93	10	1,546
3653	94	9	1,545
9863	95	1	1,545
3653	94	7	1,545
3294	91	7	1,544
6551	92	2	1,541
8303	92	5	1,540
3653	95	13	1,539
6551	91	8	1,538
6551	92	9	1,537
6551	91	7	1,536
336	93	5	1,536
9775	91	7	1,536
9913	96	2	1,535
6550	92	7	1,535
6550	94	3	1,535
3643	92	6	1,533
3653	95	8	1,532
3294	91	4	1,532
6551	92	10	1,531
3294	91	6	1,531
6543	92	1	1,531
9863	92	12	1,531
6551	92	5	1,531
2696	95	10	1,530
7865	93	10	1,530
6551	91	11	1,529
6971	94	13	1,529
6551	92	7	1,528
6551	91	5	1,526

Facility	FY	AP	Manual Letter
3653	96	2	1,526
2454	93	3	1,525
6551	92	4	1,525
9863	93	11	1,525
9775	91	11	1,524
3653	95	12	1,524
2696	95	11	1,524
6550	92	10	1,524
6543	94	2	1,523
6551	92	3	1,523
5814	93	7	1,522
3294	91	8	1,522
6543	94	11	1,522
4694	91	8	1,518
2696	95	4	1,518
2594	94	12	1,517
3653	94	5	1,516
8942	91	6	1,516
6563	91	11	1,515
6666	93	3	1,514
9698	91	13	1,513
6543	95	6	1,511
3547	91	1	1,511
9698	91	4	1,508
9863	94	11	1,508
6550	93	1	1,508
6551	91	13	1,507
6551	92	6	1,507
6551	92	12	1,507
6550	93	3	1,507
8145	91	9	1,506
6551	91	12	1,506
9863	93	9	1,505
8228	91	6	1,505
6551	91	6	1,502
6550	92	4	1,502
3653	95	2	1,501
7097	93	10	1,501
8965	92	2	1,500
3294	91	5	1,500
6550	95	3	1,500

MR. McBRIDE: For once, Mr. Chairman, I think I have made my point.

CHAIRMAN GLEIMAN: Well, I am not going to comment on that. I think my point was that my interest goes far beyond these proceedings, and that's why I was interested in the document. And I will wait until I get a chance to see it, and after the evidentiary record closes, maybe I will make some -- have to make some judgment on its value.

Is there any further follow-up? I forget where we were. Postal Service gets to cross? Oh, I thought --

MR. KOETTING: This should be very short, Mr. Chairman.

CROSS-EXAMINATION

BY MR. KOETTING:

Q Good evening, Dr. Smith.

A Good evening, Mr. Koetting.

Q I would like to direct your attention to the last sentence of page 5 of your rebuttal.

A I have the last sentence of page 5.

Q It's a rather long sentence that begins on line 10, I believe.

A Yes, sir, it does.

Q Rather than read it, would it be fair to characterize that as something of a litany of what you believe to be the shortcomings in Dr. Bradley's analysis?

A Those are some of them.

Q Okay. I would like to look at the last two lines, 15 and 16. You refer to the desirability of using a cross-sectional analysis rather than a short-term two period time series analysis. Could you -- is it your testimony that someone in this case has used or proposed to use a short-term two period time series analysis?

A Yes, sir, it is.

Q And who would that be?

A Dr. Bradley.

MR. KOETTING: That's all I have, Mr. Chairman.

CHAIRMAN GLEIMAN: Follow-up? Questions from the bench?

[No response.]

CHAIRMAN GLEIMAN: Would you like some time with your witness for redirect?

MR. RICHARDSON: Just about five minutes or less.

CHAIRMAN GLEIMAN: Certainly.

[Recess.]

CHAIRMAN GLEIMAN: Mr. Richardson.

REDIRECT EXAMINATION

BY MR. RICHARDSON:

Q Dr. Smith, I would like to refer you back to the document that was copied into the record related to Library Reference 148 that counsel just questioned you about. Have

you had an opportunity to see that document?

A No, I haven't.

Q Would you please amplify any additional points you would like to make in your responses to counsel's questions?

A It was my understanding, based on counsel's questions, that they were -- that counsel was asking if you saw a number that didn't look reasonable, would it be good econometric practice to eliminate it through some sort of data scrubbing, and I indicated that it would be appropriate to examine the reason that the numbers seemed to be somewhat strange, and that this is regularly done in market research and other types of research. And then if it looks strange, then it would, of course, be eliminated. But one of the important things is to examine the reason for a number looking strange rather than just to arbitrarily eliminate data that looks strange.

Q And with respect to the question from Postal Service counsel about your testimony on page 5, referring to short-term two period time series analysis, would you please clarify your reference to two period time series?

A Sure. I refer to it as two period, not that it doesn't have data for more than two periods. Obviously, Dr. Bradley includes with 39 or more data points, but rather we have two -- we have the time variable dividing it into a period that I think stops about 92, or whatever the break

is, so we have two sets of data. And the reason I call it short-term is I don't think it adequately considers capital or the interaction of capital on the labor TPH relationship.

MR. RICHARDSON: Those are all the questions on redirect, Mr. Chairman.

CHAIRMAN GLEIMAN: Is there any recross?

MR. KOETTING: No, Mr. Chairman.

CHAIRMAN GLEIMAN: Well, if not, then, Mr. Smith, I want to thank you for your appearance here tonight and for your contributions to our record. If there is nothing further, you are excused.

THE WITNESS: Thank you, Mr. Chairman.

[Witness excused.]

CHAIRMAN GLEIMAN: The last witness for the evening, if I can find my place in the script, is Dr. Ying. Whereupon,

JOHN S. YING,

a rebuttal witness, was called for examination by counsel for the United States Postal Service and, having been first duly sworn, was examined and testified as follows:

THE WITNESS: Is this yours?

MR. KOETTING: It's not mine.

[Laughter.]

CHAIRMAN GLEIMAN: No one wants to claim the transcript volumes.

Counsel, whenever you are ready.

It's late. Everybody is trying to go home.

DIRECT EXAMINATION

BY MR. KOETTING:

Q Could you please state your full name for the record?

A John S. Ying.

Q And what is your title?

A I am Associate Professor of Economics.

Q Dr. Ying, I am handing you a copy of a document entitled USPS-RT-4, which is also labelled as the Rebuttal Testimony of John S. Ying on behalf of the United States Postal Service.

Are you familiar with this document?

A Yes.

Q Was it prepared by you or under your supervision?

A Yes.

Q If you were to testify orally today, would this be your testimony?

A Yes.

MR. KOETTING: Mr. Chairman, the Postal Service would move into evidence the rebuttal testimony of John S. Ying on behalf of the United States Postal Service, designated as USPS-RT-4.

CHAIRMAN GLEIMAN: Are there any objections?

Hearing none, Dr. Ying's testimony and exhibits are received into evidence and I direct that they be transcribed into the record at this point.

[Rebuttal Testimony and Exhibits of John S. Ying, USPS-RT-4, was received into evidence and transcribed into the record.]

USPS-RT-4

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

Postal Rate and Fee Changes, 1997	Docket No. R97-1

REBUTTAL TESTIMONY OF JOHN S. YING ON BEHALF OF THE UNITED STATES POSTAL SERVICE

TABLE OF CONTENTS

AUTOBIOGRAPHICAL SKETCH

My name is John S. Ying. I am Associate Professor of Economics at the University of Delaware in Newark, Delaware. I have taught economics there since 1987, and I have also taught as a visiting assistant professor at the University of British Columbia and the University of California, Irvine. I received a B.S. with high honors in physics from the University of Michigan, and I hold M.A. and Ph.D. degrees in economics from the University of California, Berkeley. My principal areas of teaching and research are industrial organization, regulatory economics, and microeconomic theory. I have published scholarly articles on these subjects in leading economics journals, including the *RAND Journal of Economics*, the *Review of Economics and Statistics*, and the *Journal of Business & Economic Statistics*.[1] My primary areas of specialization are the telecommunications and motor carrier industries. In particular, my research has focused on the econometric estimation of cost functions to analyze regulatory issues. I have consulted for the Regional Bell Operating Companies on their motion to vacate the Decree which broke up the Bell System.

---

[1]A list of relevant publications is appended to this testimony.

PURPOSE AND SCOPE

My testimony is part of the new Postal Service study of mail processing labor costs, conducted by Postal Service witness, Dr. Michael D. Bradley (USPS-T-14). In response to that study, intervenor testimony was submitted on behalf of the Office of the Consumer Advocate by Dr. J. Edward Smith, Jr. (OCA-T-600) and on behalf of United Parcel Service by Dr. Kevin Neels (UPS-T-1). I have been asked to provide rebuttal testimony to the direct testimonies of Dr. Smith and Dr. Neels. Dr. Michael Bradley is also providing rebuttal testimony concerning some of the more detailed aspects of the data, econometrics, and mail processing activities.

Following the filing of these testimonies, the Postal Rate Commission issued Notice of Inquiry No. 4 (NOI No. 4) on the restriction in Dr. Bradley's study that slope coefficients are identical across facilities. I have also been asked to comment on the NOI and the response filed by Dr. Neels (UPS-ST-1).

Briefly, my conclusions are that most of Dr. Smith's testimony lacks credibility. He makes numerous comments which indicate a less than clear understanding of basic economic theory. It is also obvious from his exhibits that econometrics is not one of his strengths. While he makes a few good comments about the data, the essence of his testimony is that 100 percent variabilites should be maintained because many plots of the data appear to him to have a slope of one.

I find Dr. Neels' testimony more credible, as he raises some issues which seem plausible, at least on the surface. However, his concerns about the choice of variables are misguided and those about the data scrub may not be valid. I cannot, moreover, agree

with his extreme position that there should be no data scrub at all. Besides maintaining the existing 100 percent variabilities, the other main recommendation from Dr. Neels is that the "between" cross-sectional model is better than Dr. Bradley's fixed effects model. But his arguments are largely speculative, and there are many well known and valid reasons for preferring panel to cross-sectional data.

Regarding NOI No. 4, I think there is consensus that the statistical tests show that slope coefficients are not identical across sites, a somewhat obvious and expected result. This rejection of Dr. Bradley's fixed effects model carries some tradeoffs however. Site-specific variabilities may be not as reliable and necessarily require some aggregation technique to determine system-wide variabilities. Because of these tradeoffs, I think the results from the fixed effects model are still preferable. Another implication of the NOI is that assuming 100 percent variabilities can clearly be rejected and should be discontinued.

I. APPRAISAL OF DR. SMITH'S TESTIMONY

A. Analytic Economic Framework

For better orientation, my discussion will follow the order of presentation in the direct testimonies. Dr. Smith begins his testimony by claiming that Dr. Bradley's cost equation fails to conform with economic theory because it is not derived from a production function analysis. While he knows that a cost equation has been estimated, Dr. Smith apparently does not know the difference between a cost equation and cost function. As described in the testimony of Dr. John C. Panzar (USPS-T-11), estimation of a Postal Service cost function (or Dr. Bradley's cost equation) only requires the existence of "a reasonably well-defined set of operating procedures which determine the steps taken and resources used to process a given volume of mail."[2] The operating plan need not be optimal nor cost-minimizing, but must be reproducible and relatively stable. A cost equation is not the same as a theoretically derived cost function.

Even if Dr. Bradley were estimating a cost function, the explicit specification of a production function (or analysis) is not necessary. Economists use production functions or input requirement sets to describe a firm's underlying technology or physically possible production plans. The fundamental principle of duality in production states that "the cost function of a firm summarizes all the economically relevant aspects of its technology."[3] It provides the basis for all cost function estimation and the

---

[2]"Direct Testimony of John C. Panzar on Behalf of United States Postal Service " (USPS-T-11), p. 14.

[3]Varian, Hal R., Microeconomic Analysis, Third Edition, W.W. Norton & Company, New York, 1992, p. 84.

correspondence between some underlying production function and a cost function. Dr. Smith's testimony and his response in USPS/OCA-T600-6 (Tr. 28/ 15909-10) indicate a basic lack of understanding of economic theory.

As for the issue of capital, Dr. Smith states his belief that capital should be included in the specification. Here, he seems confused about what constitutes short run and long run. Dr. Bradley's variable cost equation is, in an economic sense, a short-run specification of costs in which some inputs such as capital may be fixed. The "actual cost" concept applied by the Postal Service is intended to reflect changes possible over the rate cycle, a period of only a few years, and is therefore closer to the short-run and not the long-run all-inputs-variable definition used by economists.

In Section II C of his testimony, Dr. Smith claims that Dr. Bradley misuses time trends as measures of technological change because they should only be used in macroeconomic models. Time trends are obviously applicable to microeconomic studies, as later acknowledged in Dr. Smith's response (USPS/OCA-T600-3, Tr. 28/ 15904-06). His original comment is somewhat disturbing and indicates an unfamiliarity with cost estimations, which commonly employ time trends. They are justified if there is a lack of data on specific technological or other dynamic variables, as in this case.

It is true that time trends do lack precision, but the focus of Dr. Bradley's study is on total piece handlings (TPH). The purpose of including the time trends is to control for (not to explain) time-varying factors to eliminate bias in TPH. Given the possible time-varying factors captured by a time trend, it would be difficult to describe any coefficients as questionable. Any sign is possible. Also, why should time trends 1 and 2 agree?

There is reason to think they might differ, which is why Dr. Bradley uses two.

Dr. Smith's last comment in this section concerning the time period of analysis again shows a basic lack of understanding of the theory. The fact that the data observations consist of 13 four-week accounting periods over a year has nothing to do with the "very short run." Whether a cost function is a long-run or short-run function depends on its specification, not the frequency of observation. Does it treat all inputs as variable or are some considered fixed? Clearly, in an economic sense, Dr. Bradley is estimating a short-run cost equation, consistent with the Postal Service's desire to measure "actual costs." Dr. Smith incorrectly associates the four-week data period with a "four-week-run" cost equation. The unimportance of the frequency of data on the results is confirmed in Dr. Bradley's re-estimation using annualized data.

Under oral cross examination, Tr. 28/15963, Dr. Smith cites a book by Dr. Intriligator (although USPS/OCA-T600-6 refers to Greene, 1993)[4] to assert that only outputs, input prices, and a time trend should be in a cost function. Again, he shows his lack of familiarity with the cost function literature. The neoclassical cost function has been extended to include a vector of "technological conditions," such as the route structure of a railroad, and a vector of output qualities or attributes.[5] Such variables are so commonplace these days that one would have to wonder when Dr. Smith has last read a paper on the subject.

---

[4]Greene, W.H., Econometric Analysis, Second Edition, Prentice Hall, 1993.

[5]See for example, Friedlaender, Ann F., and Spady, Richard H., Freight Transport Regulation, The MIT Press, Cambridge, 1980, pp. 204-205.

B. Econometric Issues

In his introduction to Section III A, Dr. Smith correctly summarizes the differences between the pooled, fixed effects, and random effects models, and notes that the pooled model finds variabilities near 100 percent. However, his preference for the pooled model seems based solely on those results. He provides us with his conclusion that the different intercepts in Dr. Bradley's model reflect short-run, monthly facility-specific differences, but fails to explain why. He seems to be arguing that the fixed effects model is a short-run model because of the frequency of the data observations. As I have already pointed out, Dr. Smith's inference about data frequency and the short or long run is flawed. Specification tests clearly support the fixed effects model over the pooled model. The different intercepts reflect site differences, which are not necessarily short-run or monthly.

If Dr. Smith is basing his argument on a visual inspection of plots, I think he is on very shaky ground. Such plots show little or nothing, and are subject to selective interpretation. Under cross-examination and in USPS/OCA-T600-11 (Tr. 28/ 15916), he seems to admit this problem. These data are best analyzed with the sound application of econometric techniques. Failure to include site dummies could grossly bias the estimated variability. The cited figure from Hsiao (1986)[6] warns against precisely the mistake Dr. Smith is making: although the pooled model (incorrectly) suggests a slope of about one, the true common slope is much less. His attempt to use that figure to support his

---

[6]Hsiao, Cheng, Analysis of Panel Data, Cambridge University Press, New York, 1986, p. 7.

contention is so ironic that one might question whether he understands the point being made with the figure.

Dr. Smith's description of the pooled model line as "longer-run expansion path" is nonsense. With respect to costs, the term, expansion path, refers to a curve displaying the long-run cost-minimizing input combinations for various levels of output (at different isoquants). Graphically, it is a curve graphed with inputs on the axes. More importantly, there is no basis for his implicit assumption that facilities would become homogenous (have the same intercept) in the long run. Even if we allow him his contention that the different intercepts in Dr. Bradley's model reflect short-run differences, why is there any reason to presume that the intercepts would be identical in the long run?

C. Data Issues

Given that Dr. Bradley is much more familiar with the postal data, I will limit my comments to those of a more general nature. I agree with Dr. Smith that additional variables would probably improve the specification, but they are apparently not available. Note that many of the suggested additional variables are broadly captured by the facility dummy variables, and some of the less quantifiable variables are probably best accounted for with dummy variables.

Many of the data scrub questions raised by Dr. Smith about, for example, the number of observations dropped and data reliability, are quite reasonable, and a good econometrician should be concerned about the possibility of biasing the sample. In Dr. Bradley's data scrub, however, there are no obvious selection rules which might skew the

results. I think a number of Dr. Smith's questions have already been addressed by Dr. Bradley in his direct testimony. Regarding the application of MODS results to non-MODS facilities, Dr. Smith is probably justified to be concerned, but without non-MODS data, it seems that the MODS results are more likely to be representative than the previously assumed 100 percent variability.

D. Regulatory Standards

In Section V of his testimony, Dr. Smith makes generally unconvincing arguments about the inability of Dr. Bradley's cost study to meet regulatory standards. In particular, he focuses on Bonbright's (1961) criteria. They are nevertheless subjective and I would not presume to tell the Commission whether or not to follow them. Despite being able to select this particular set of criteria, Dr. Smith still finds it difficult to make them fit his criticisms of Dr. Bradley's model. For example, the first criterion concerning aspects of practicality such as simplicity and understandability does not imply Dr. Smith's completeness interpretation or the consideration of all modeling alternatives.

Dr. Smith claims that a second criterion is that a study be free of controversy, but it is hard to avoid when relevant parties' interests diverge. He tries to generate some of his own controversy by appealing to the "common sense" that elasticities are approximately 1, based on the visual plots. But after Dr. Bradley's study, continuing to assume 100 percent variability could be considered controversial as well. Following Dr. Bradley's study need not necessarily affect rate stability. If current rates are grossly misaligned because of untested, past assumptions, any changes could be implemented

gradually. Fairness and efficiency are probably better served by Dr. Bradley's study.

Finally, Dr. Smith refers to rate criteria set forth in the Postal Reorganization Act, which states that rates should be fair and equitable and that each class or type of mail should bear its direct and indirect costs. His argument hinges solely on his belief that Dr. Bradley's study measures mail processing costs incorrectly, which I have already refuted above. Issues of equity and cost-bearing are more relevant in later stages of the regulatory rate process.

II. APPRAISAL OF DR. NEELS' TESTIMONY

A. Data Issues

Dr. Neels begins his testimony by claiming that Dr. Bradley's approach is defective because of inappropriate measures of costs and volume. Because Dr. Bradley has worked closely with the postal data, he will be addressing these issues in his rebuttal testimony. At first glance, some of Dr. Neels' comments seem plausible but as Dr. Bradley clearly shows in his rebuttal testimony, they are misplaced because of Dr. Neels' lack of familiarity with postal activities and costs.

Regarding the reliability of the data, Dr. Neels points out some possibly legitimate concerns. For sites which report sporadically, it may be difficult to determine the cause even after very careful review of the data. But then, data screening procedures such as Dr. Bradley's data scrub are probably the best solution. Fortunately, Dr. Bradley's original and rebuttal analyses of any measurement errors reveal that the problem is not critical. As supposedly an example of attenuation from measurement error, Dr. Neels reports the differences in automatic and manual variabilities, but they may simply be due to the fact that they are just different and not attenuation. His interpretation is at best selective.

The next main concern raised by Dr. Neels is the data scrub procedure. Careful econometric work does require scrutiny of data, and I believe that Dr. Bradley has made a good faith effort in his data scrub. Any scrub might seem subjective, but should remain as objective and reasonable as possible. Because of its subjective nature, a data scrub is an obvious area for possibly unfounded criticism. With thousands of data points, such

rules of thumb or guidelines are necessary to avoid adding nonsensical data to the analysis. My understanding is that deleted "unusual" observations represent extreme, physically impossible situations or obvious data entry errors. I agree that outliers which are still feasible observations should be kept in the data set, but that does not seem to be the case here. Dr. Bradley seems to have maintained objectivity by symmetrically eliminating both high and low outliers.

Requiring a minimum of 39 continuous observations or three years is arbitrary, but does not necessarily bias the sample either. Dr. Neels' re-estimated equations with "complete" data show different results as expected, but they also indicate no systematic bias. Some variabilities are higher and some are lower. In no way do they support the use of 100 percent volume variability. In his rebuttal testimony, Dr. Bradley demonstrates that lowering the continuity standard to 26 observations does not materially affect the estimated variabilities. Despite being open to easy criticism, Dr. Bradley's data scrub does not appear to have biased the results, either in principle or in practice. While some of Dr. Neels' conjectures about the data scrub might seem plausible, they do not appear to have any real impact on the results.

I would also disagree with Dr. Neels' contention that independent replication means reaching precisely the same results and agreeing that each step is appropriate. Perfectly reasonable econometricians may disagree on the exact steps in an analysis and yet conclude that the basic results are correct.

B. Econometric Results

Dr. Neels' comments about the time trends are essentially the same as those of Dr. Smith and my comments there apply. Time trends can capture any dynamic factors, not just technological change or productivity.

C. Long-run Variabilities

Again, as in Dr. Smith's testimony, Dr. Neels seems to equate frequency of data observations with length of the run. Estimating actual volume variabilities caused by a sustained increase in volume (sustained, meaning a few years, as defined by the Postal Service) does not require that data be over that time period. Instead, it depends on the specification of variables in the cost equation. In an economic sense, the cost equation is a short-run cost equation because some inputs are fixed, not because the data covers a four-week accounting period.

D. Cross-sectional Model

As Dr. Bradley has already clearly described in his direct testimony, cross-sectional analysis suffers from several limitations as compared to cross-section, time-series analysis with a panel data set. A well-known reference on the subject is Hsiao (1986), which has been cited frequently in these hearings. At the risk of being redundant, advantages of panel data include a large number of data points (reducing collinearity and producing more efficient estimates), being able to analyze important economic questions which cannot be studied with solely cross-section or time-series data, and mitigating

omitted variable bias. Panel data allows us to make inferences about the dynamics of change from cross-sectional evidence by following given facilities over time.

Dr. Neels' claim that a cross-sectional model provides better long-run results is merely an assertion. When data have been collected cross-sectionally for a given time period, there is still no reason to presume that the facilities are in long-run equilibrium or that relevant long-run variables have been collected.

Dr. Neels also claims that the cross-sectional results from Dr. Bradley's "between" model provide superior results. (The "between" model is used in a Hausman test for correlation and the rejection of the random effects model.) This "between" model is cross-sectional in the sense that all time series observations for a facility are collapsed into one. But this averaging over time periods throws away possibly valuable time series information. He suggests that this averaging will tend to cancel out measurement errors. If any measurement errors are systematic over time by facility, they would not "cancel out" as Dr. Neels claims or hopes. Because his arguments are speculative at best, his preference for the "between" model seems based only on the results of near 100 percent variabilities.

In his recommendations to the Commission, Dr. Neels proposes the rejection of all of Dr. Bradley's data scrubs. He feels all data should be used, even those observations with likely errors. This approach of using error-ridden observations is likely to produce biased estimates. Just because a data scrub procedure involves some judgement does not mean an econometrician should throw up his hands, and ignore data problems altogether. No scrub is probably worse than a less than perfect scrub. Dr. Neels considers possible

biases from Dr. Bradley's scrub but provides no evidence of such bias. Also, what is the point of following his approach when ultimately, he recommends against his own modifications?

E. Traditional Assumed Variability

In concluding his testimony, Dr. Neels' main thrust relies on what he calls, "common sense." Common sense is hard to define in this case. I agree that volumes should affect mail processing labor costs, but an exact relationship of 100 percent volume variability for each activity strikes me as implausible a priori and far from common sense. In his summary of conclusions, he supports his common sense argument with plots of the raw data, which I think are quite questionable. The traditional 100 percent volume variability is simple-minded and easier, but that does not necessarily qualify for common sense. The old rule is arbitrary with little or no economic basis. My opinion is that Dr. Bradley's study has clearly shown that the traditional assumption is not justified. No econometric study is flawless, and clever econometricians can find seemingly reasonable objections to virtually any study. The goal however is to convince most of the skeptics, not all the skeptics.

F. Comments from Oral Cross Examination

Because no other sections are directly related, I would like to comment on some of Dr. Neels' answers from his oral cross examination in this section. Concerning the calculation of the elasticities at the means (Tr. 28/15794-97), he essentially states that

cross terms with TPH and lagged TPH are not used in the calculation. That statement is simply wrong, and brings into question his understanding of the derivative used to calculate the elasticity. For example, the coefficient from the interaction term between TPH and the manual ratio (MANR) is certainly part of the derivative. It drops out in the calculation only when the derivative is evaluated at the mean, in which case the ratio of the inserted mean MANR divided by its mean equals 1 and of course, ln (1) = 0. Away from the mean, this term would not drop out. In either case, it is used in the calculation.

III. APPRAISAL OF NOI NO. 4

A. Comments on NOI No. 4 Itself

NOI No. 4 considers a generalization of Dr. Bradley's model by allowing slope coefficients to vary across facilities and requests a test of this hypothesis. It is certainly a valid request, but both witnesses, Dr. Smith and Dr. Neels, do not even consider it, much less provide any evidence concerning this hypothesis in their testimonies. Dr. Neels and especially Dr. Smith's assertions about plots of the data argue for the pooled model with restrictions on both slope as well as intercept coefficients, not a generalization of Dr. Bradley's fixed effects model. Finding that slopes should be allowed to differ across facilities is not likely to support the (pooled model) plots or 100 percent volume variabilities.

B. Dr. Neels' Response

Notice that despite criticisms in his direct testimony, Dr. Neels uses Dr. Bradley's data scrub in his NOI response. In estimating the site-by-site regressions, he seems to incorrectly use the overall sample mean when he should use site means, if any mean at all. Furthermore, he uses Dr. Bradley's original serial correlation coefficients when they should be updated by site. I would consider Dr. Neels' study to be somewhat sloppy. In any event, for purposes of this NOI, perhaps these deficiencies are not that important since Dr. Bradley also finds that the null hypothesis is rejected.

The implausibility of Dr. Neels' facility-specific variabilities indicates some miscalculation, or a lack of understanding of how to do the calculation, given his oral

cross examination. In his specification, he cannot simply use the first-order coefficients on TPH and lagged TPH or evaluate at the overall sample mean.

C. Implications of the Results

Although also rejecting the null hypothesis that the slope coefficients are identical across sites, Dr. Bradley's NOI response is more credible because it is based on more careful econometric work. He compares the results of the various models over the same set of sites, corrects for serial correlation by site, and accurately calculates the elasticities. Although the statistical tests reject the fixed effects model, they more strongly reject the pooled model. Moreover, the generalization of the fixed effects model with different slopes does not support the use of 100 percent variabilities.

If site-by-site estimations are used, arriving at a system-wide variability would require some aggregation of the site-specific variabilities. It is not obvious how they should be aggregated, and interested parties would undoubtedly have their own ideas on the matter. As Dr. Bradley points out in his NOI response, site-by-site equations involve some other tradeoffs. They may produce less reliable estimates because of multicollinearity, and be less representative of the system when equations for some sites cannot be estimated.

As an example of aggregating the site-specific variabilities, Dr. Bradley simply averages them to produce a single variability. These calculations find overall variabilities which are lower than those from the fixed effects model and significantly lower than the approximately 100 percent variabilities from the pooled model. The results generated

from NOI No. 4 suggest that the traditional 100 percent variabilities should not continue to be used and I think Dr. Bradley makes a compelling case that his fixed effects model is the best overall model.

John S. Ying
Relevant Publications

"Hospital Costs and Excess Bed Capacity: A Statistical Analysis" (with Theodore E. Keeler), Review of Economics and Statistics, Vol. 78, No. 3 (Aug. 1996), pp. 470-481.

"Imposing Linear Homogeneity on Box-Tidwell Flexible Functional Forms," (with Richard T. Shin), Journal of Business & Economic Statistics, Vol. 12, No. 2 (Apr. 1994), pp. 261-265.

"Costly Gains to Breaking Up: LECs and the Baby Bells," (with Richard T. Shin), Review of Economics and Statistics, Vol. 75, No. 2 (May 1993), pp. 357-361.

"On Calculating Cost Elasticities," Logistics and Transportation Review, Vol. 28, No. 3 (Sept. 1992), pp. 231-235.

"Unnatural Monopolies in Local Telephone," (with Richard T. Shin), RAND Journal of Economics, Vol. 23, No. 2 (Summer 1992), pp. 171-183.

"Pricing in a Deregulated Environment: The Motor Carrier Experience," (with Theodore E. Keeler), RAND Journal of Economics, Vol. 22, No. 2 (Summer 1991), pp. 264-273.

"The Inefficiency of Regulating a Competitive Industry: Productivity Gains in Trucking Following Reform," Review of Economics and Statistics, Vol. 72, No. 2 (May 1990), pp. 191-201.

"Regulatory Reform and Technical Change: New Evidence of Scale Economies in Trucking," Southern Economic Journal, Vol. 56, No. 4 (Apr. 1990), pp. 996-1009.

"Measuring the Benefits of a Large Public Investment: The Case of the U.S. Federal-Aid Highway System," (with Theodore E. Keeler), Journal of Public Economics, Vol. 36, No. 1 (June 1988), pp. 69-85.

CHAIRMAN GLEIMAN: Dr. Ying, as you may have noticed, is suffering from a bit of a respiratory problem here, so we expect everybody to be sympathetic and cut back on all the questions that they were going to throw at him.

THE WITNESS: I hope.

[Laughter.]

CHAIRMAN GLEIMAN: Two parties have requested oral cross examination: The OCA and United Parcel Service.

Does any other party wish to cross examine?

If not, Mr. Richardson.

MR. RICHARDSON: Thank you, Mr. Chairman.

CROSS EXAMINATION

BY MR. RICHARDSON:

Q Dr. Ying, would you turn to page 4 of your testimony on lines 11 to 13 I want to refer to --

A Yes.

Q -- where you state that "The operating plan need not be optimal nor cost minimizing but must be reproducible and relatively stable."

A Yes. I am basically still quoting Panzar there.

Q Is it your testimony that you believe Dr. Bradley has estimated a cost function which is not optimal or cost minimizing?

A I don't think that is point of contention here because I think it's understood that it's not a cost

function. In other words, it's not a function that has been found through the cost minimization and optimalization problem.

Q Based on your testimony on page 5, lines 5 through 10, you state, "Dr. Bradley's variable cost equation is a short-run specification of costs in which some inputs such as capital may be fixed."

A Yes.

Q Given the constancy of capital, why does Dr. Bradley attempt to measure technical change?

A Well, he is not necessarily measuring just technical change. He is trying to -- he's dealing with the time trend then, right? He's referring to the time trend variables?

Q Yes.

A So with the time trend variable he is, I think he's being correct in being in some sense safe, trying to be safe in possibly accounting for a technical change if it did occur and the other possible dynamic effects over the time period.

Q And is it your testimony that with constant capital in place that technical change can be measured?

A Technical change from capital presumably will not be changing but you could get productivity changes from other sources.

Q Well --

A Since it's not as if capital is the only input that can induce technical changes or productivity changes.

Q Well, then given the fact that there's major investment programs at the Postal Service, and your view that some inputs such as capital may be fixed, is Dr. Bradley's study even relevant to future postal costs?

A Well, again I am not an expert per se on postal procedures or costs but my understanding is that the study is designed to be relevant over the rate cycle, so in that sense it is presumably measuring actual constants over the relevant time period, yes.

Q On page 5, lines 16 to 17, you indicate in support of the use of time trends that they "are justified if there is a lack of data on specified technological or other dynamic variables as in this case."

A Yes.

Q What other dynamic variables that you reference are missing?

A Well, I think part of the reason why you use time trends is because you don't necessary have specific variables but in this case maybe with the change in -- when Dr. Bradley uses these -- the two trends, he thinks something has happened in the middle so one of the things you might want to try to capture for changes in operations

or administrative changes over the time period.

I am not an expert on what's happened in the Postal Service though. I would be speculating beyond that.

Q On page 5 you indicate that the purpose of including the time trends is to control for, not to explain, time varying factors to eliminate bias in TPH.

Given the possible time varying factors captured by a time trend, it would be difficult to describe any coefficients as questionable. Any sign is possible. Also, why should time trends one and two agree?

That is your testimony on page 5. Do you see that --

A Yes.

Q -- on lines 19-22. And what are the time varying factors which you mention?

A Again, I don't know anything per se. I frankly have not thought about any specific factors. I mean you have time trends and I am interested in it more from of a general econometric point of view why you include time trends, okay?

Q On your testimony on page 7, lines 7 to 8, you state Dr. Smith seems to be arguing that the fixed effects model is a short-run model because of the frequency of the data observation.

A Yes.

Q Do you agree that Dr. Bradley's model is short run?

A I think it is; yes.

Q And then on page 8 of your testimony, on lines 14 to 15, you state I agree with Dr. Smith that additional variables would probably improve the specification, but they are apparently not available.

A Yes.

Q Is it your testimony that studies lacking data should be approved?

A Well, it's all a matter of -- it's all a matter of degree here. Merely if you could add some variables that were available the results may improve. But that's not to say that the existing study is not in some sense close enough.

Q You say the additional variables data is apparently not available.

A That's my understanding.

Q Have you investigated that?

A No.

Q Did you inquire of the Postal Service?

A No, I basically left those details to Dr. Bradley.

Q And he told you that they weren't available?

A No, not specifically. That's just my understanding.

Q On page 9 of your testimony, lines 3 through 5, you state: Regarding the application of MODS results to non-MODS facilities, Dr. Smith is probably justified to be concerned, but without non-MODS data it seems that MODS results are more likely to be representative than the previously assumed 100-percent variability.

A Yes.

Q Do you have a study to substantiate this conclusion?

A No. I think it's clear from the tone of the sentence. I'm just offering you an opinion here.

Q It's clear from the tone of the sentence?

A Yes.

Q On page 12 of your testimony, you state requiring a minimum -- that's page 12, lines 7 to 8 -- requiring a minimum of 39 continuous observations or three years is arbitrary but does not necessarily bias the sample either.

Dr. Ying, do you have a study of the appropriate number of observations for statistical accuracy?

A Could you repeat that?

Q Do you have a study of the appropriate number of observations for statistical accuracy?

A You're talking about like degrees of freedom?

Q The 39 observations.

A You're talking specifically about having 39

continuous observations?

Q Yes.

A As I said, it's arbitrary. So, yes, I have no statistical study to --

Q It's arbitrary by -- an arbitrary decision on your part?

A No, by Dr. Bradley to have 39 continuous observations as a minimum requirements, but I freely see it in the testimony.

Q But you have no independent study as to whether or not that is appropriate or not.

A No. I think, with data scrubs, in general, there is a lot of judgement on the part of the researcher.

Q On page 15 of your testimony, you indicate that, again, on lines 7 through 9, "Common sense is hard to define in this case. I agree that volumes should affect mail processing labor costs, but an exact relationship of 100-percent volume variability for each activity strikes me as implausible a priori and far from common sense." Do you see that?

A Yes.

Q And that's your testimony.

A Yes.

Q Now, assuming that returns to scale are constant -- that is, that a doubling of output results from a

doubling of input -- what would the volume variability be?

A Why would I assume constant returns? When you say you assume constant returns, you're kind of begging the answer then.

Q Under that assumption --

A Constant returns would apply to scale elasticity equal to one, correct.

Q And are constant returns to scale a case of common sense to you?

A No. Why would you call that common sense? Many industries have technologies described by other types of scale economies.

Q Then on page 18 of your testimony, line 19, you indicate, "As an example of aggregating the site-specific variabilities, Dr. Bradley simply averages them to produce a single variability."

A Yes.

Q Do you have a study to show that this is correct?

A No.

Q You have not studied that.

A I think I point out in the testimony as well as Dr. Bradley in his NOI response that the issue of aggregation could become a point of contention, and I'm just stating what Dr. Bradley as an example.

MR. RICHARDSON: Thank you.

I have no more questions, Mr. Chairman.

CHAIRMAN GLEIMAN: Mr. McKeever?

CROSS EXAMINATION

BY MR. McKEEVER:

Q Dr. Ying, did you work with Dr. Bradley in the preparation of his direct testimony?

A No.

Q Have you ever worked with Dr. Bradley in any other project before?

A No.

Q When did you first start working on the project that resulted in your rebuttal testimony in this case?

A Jeff Colvin at the U.S. Postal Service called me and asked me to look at Dr. Bradley's study and see if I'd be interested in providing rebuttal testimony. I think he did that maybe in November.

Q And when did you actually do any work as a result of that phone call?

A I think I skimmed the study to see if I'd be interested in doing it, but I didn't begin, say, seriously reading it until much later.

Q About when did you first seriously start reading it?

A I think it was right around mid-December, maybe even after Christmas.

Q Okay.

Do you have any idea how many hours you spent in working on the work you did that led up to your rebuttal testimony?

A I think about 80 or 90 hours.

Q Okay.

Could you turn to page 11 of your testimony, please?

A Okay.

Q At lines 6 to 8 you state, quote, at first glance, some of Dr. Neels' comments seem plausible, but as Dr. Bradley clearly shows in his rebuttal testimony, they are misplaced because of Dr. Neels' lack of familiarity with postal activities and costs.

Do you see that?

A Yes.

Q Now the only reason you give there for your statement that Dr. Neels' comments are misplaced because of his lack of familiarity is Dr. Bradley's rebuttal testimony. Is that right?

A Right. Right. No, I'm basically just kind of referring to Dr. Bradley's testimony there.

Q And in fact I think you stated a couple of times in response to questions from Mr. Richardson that you're not an expert on postal procedures or costs or on what happens

in the Postal Service. Is that correct?

A Right.

Q Dr. Ying, could you please turn to page 12 of your testimony?

There on lines 2 to 5 you state, quote, my understanding is that the deleted unusual, and you have that in quotes --

A I think I'm referring to quotes that Dr. Neels used.

Q Okay. My understanding is that deleted unusual observations represent extreme physically impossible situations or obvious data entry errors. I agree that outliers which are still feasible observations should be kept in the data set, but that does not seem to be the case here. Is that correct?

A Correct.

Q Now in those two sentences are you referring to all of the data deleted by Dr. Bradley, or only to a certain one of his data scrubs?

A I think -- I think I read that in some maybe other than Dr. Bradley's testimony or maybe in some of his interrogatory answers. So --

Q You mean the physically impossible part --

A Right. So I'm not -- I didn't necessarily match that up with any particular aspect of the data scrub.

Q Okay. But here's my question. When you wrote those two sentences, did you have in mind all of Dr. Bradley's data scrubs, or only a certain one or more of those scrubs?

A I think I was thinking just in general terms.

Q So you were thinking of all of his data scrubs.

A I don't think I meant to say that his data scrubs only consider those cases.

Q I'm sorry, could you repeat that? I apologize.

A I -- the intent here was to just say that some of these so-called unusual observations probably do represent these cases, that unusual observations did represent these physically impossible situations or errors.

Q Okay. The unusual observations you're talking about there -- are they the observations that were eliminated by Dr. Bradley's -- by all of his scrubs, or only ones that were the subject of certain scrubs?

A I'm not in a position to say. I would not know.

Q You don't know. So as far as you were concerned, all of the scrubs represent extreme physically impossible situations or obvious data entry errors?

A My opinion would be that probably not.

Q Probably not. Okay. But you really aren't sure?

A My understanding is that the intent of those scrubs are to eliminate such observations. It's possible

that other perfectly good data were eliminated in the process.

Q Okay. I'll try to obtain clarification one more time. The intent of all of the scrubs was to eliminate physically impossible situations or obvious data entry errors?

A No, I think some -- only some of the scrubs had that intent.

Q Okay. And I think you said you didn't do any investigation or make any determination yourself in that regard. Is that right?

A No.

Q No, you did not investigate?

A No, I did not.

Q Okay, Dr. Ying. I'm going to ask you and the Commission to bear with me for just a few more moments. I'm almost done here. But this is the toughest part.

I'd like you to consider the example of a simple linear regression with a constant term and a single independent variable, okay?

A Yes.

Q And I'd like you to think of two different ways of estimating the coefficients of that regression. In the first, the single independent variable is entered into the regression in natural units. Do you have that in mind?

A What do you mean by natural units?

Q Raw data.

A Okay.

Q In the second, the single independent variable is first transformed by subtracting it from a constant, okay?

A Yes.

Q How would the coefficient estimates for the independent variable produced by these two approaches compare? Would they be identical?

A I think they should be, yes.

Q Would they be equal regardless of the value of the constant that is subtracted from the independent variable?

A If it's just a constant, I don't think it would have much of an effect.

Q Now, I'd like you to consider another case in which there are multiple independent variables in the regression and again consider two different ways of estimating the coefficients of the regression.

The first way involves running the regression with all of the independent variables in natural units -- that is, raw data. The second involves transforming the independent variables by subtracting from each a different constant and then running the regression. Both of the regressions include constant terms.

Do you have that in mind?

A You have different constant terms for each of the independent regressions?

Q Yes, one. No, I'm sorry. Only one constant term per regression, okay?

A So, that one constant term applies to all the independent variables.

Q Yes. How would the sets of independent variable coefficient estimates produced by those two approaches compare? Would they be identical?

A If all you're doing is basically adding constants, it shouldn't affect it again.

Q Okay. And again, they would be identical regardless of the values of the constants subtracted from the independent variables, right?

A I think that's true.

Q Okay.

Dr. Ying, can the trans-log specification used by Dr. Bradley for his cost equation be thought of as a Taylor series approximation of an arbitrary unknown cost function?

A Yes, a second order approximation.

Q When one takes a Taylor series expansion of a function in order to develop an approximation to a function, is it true that one always performs an expansion around the particular point?

A That's true. It's called a base point

approximation, yes.

Q Does it follow, therefore, that one can develop different approximations to the same function by taking expansions at different points?

A You can use different base points, yes.

Q Now, when Dr. Bradley mean centers his data prior to estimating the coefficients of his fixed effects model, does that mean that, prior to running his regression, he subtracts from each of the underlying variables in his model the value of its global sample mean?

A That's what Dr. Bradley is doing, yes, except for the time trend terms.

I should point out that it doesn't matter which base point you use, though, in principle.

MR. McKEEVER: Okay.

Mr. Chairman, with your permission, I'd like to approach the witness and show him from the transcript a regression that is contained in an interrogatory that the Postal Service asked Dr. Neels.

CHAIRMAN GLEIMAN: Certainly. Could you identify the transcript page?

MR. McKEEVER: Yes, Mr. Chairman. I'm going to show the witness Postal Service interrogatory USPS/UPS-ST1-1, and in particular, paragraph E, which contains an equation that appears in the transcript at page

number 15745.

BY MR. McKEEVER:

Q Does the formula shown there in that paragraph (e), Dr. Ying, accurately depict the mathematical formula for the partial derivative of the log of hours with respect to the log of total piece handlings or TPH for Dr. Bradley's model?

A I think so. I'd have to see the original equation to be sure. Before the derivative, that is. Before the derivative is taken. The equation before the derivative is taken. In other words, the original equation.

Q Well, let me ask you to assume that that is the case, okay?

A The derivative has been taken correctly?

Q Yes.

A Yes.

Q Okay. Does the presence of terms such as IN TPH and IN MANR shown there to the right of the equal sign --

A What do you mean by "IN"?

Q Excuse me, LN, LN.

A Natural log. Yes.

Q Yes. Does the presence of terms such as LN TPH and LN MANR to the right of the equals sign indicate that the value one gets for this partial derivative depends upon the point at which you evaluate the function?

A Yes.

Q Now --

A You're going to get different values for that derivative depending on where you evaluate it, yes.

Q Okay. If one were to evaluate this derivative at the point defined by the global sample means, which I gather in this case means at the values defined by the terms in the expression with bars over them -- is that right?

A Yes.

Q Does the derivative reduce to the first two terms to the right of the equals sign? I think they're delta sub 1 plus delta sub 2.

A Yes, at the sample means the natural log of, you know, one would become zero.

Q Okay. Now when Dr. Bradley in his response to the Commission's Notice of Inquiry No. 4 ran his model separately for each facility in order to allow both the intercept and slope coefficients to vary by facility, did he center his data on the global sample mean or on the means of the samples corresponding to each of the separate facilities for which he ran regressions?

A My recollection is that he did not run them with any means.

Q So he centered the data on the means of the individual samples?

A No. He didn't center on any means.

Q He didn't center it on any means.

MR. McKEEVER: That's all I have, Mr. Chairman.

CHAIRMAN GLEIMAN: Is there any follow-up?

[No response.]

CHAIRMAN GLEIMAN: There are no questions from the bench.

That brings us to redirect.

Would you like some time with your witness?

MR. KOETTING: Five minutes, Mr. Chairman.

CHAIRMAN GLEIMAN: Certainly.

[Recess.]

CHAIRMAN GLEIMAN: Mr. Koetting?

MR. KOETTING: I'm very happy to report, Mr. Chairman, we have no redirect.

CHAIRMAN GLEIMAN: Well, because you were so kind in doing that, I'm not going to recall one of the witnesses who I forgot to ask a question of, who's still in the room, Mr. Higgins. We'll let it go.

If that is the case, then, Dr. Ying, we appreciate your appearance here today, this evening, contributions to the record. Hope you're feeling better, and if there's nothing further, you are excused, sir.

THE WITNESS: Thanks.

[Witness excused.]

CHAIRMAN GLEIMAN: That concludes today's hearing. We'll reconvene tomorrow at 9:30 to receive testimony of American Business Press Witness Wendler, United States Postal Services Witnesses Panzar, Christensen, Taufique, and ADVO Witness Crowder.

[Whereupon, at 10:04 p.m., the hearing was recessed, to reconvene at 9:30 a.m., Wednesday, March 18, 1998.]