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USPS LR-J-68

Dropship Cost Avoidances for Standard Mail and Periodicals

Spreadsheets Underlying Testimony of USPS-T-23, Virginia Mayes

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Library Reference USPS LR-J-68

Description

Library reference USPS LR-J-68 is a category 2 library reference sponsored by witness Mayes (USPS-T-23) and is incorporated by reference into her testimony. This library reference contains both hard copies and electronic copies of the cost studies supporting her testimony. The cost studies contained in this library reference include the calculation of the transportation and non-transportation components of Standard Mail dropship cost avoidances, and the non-transportation component of Periodicals dropship cost avoidances.

A. Standard Mail Dropship Cost Avoidances

Appendices A through E contain the spreadsheets used to model the Standard Mail dropship cost avoidances. These cost avoidances are relied upon by witnesses Hope (USPS-T-31) and Moeller (USPS-T-32) to develop their proposed Standard Mail rates. Appendix A contains the Standard Mail entry profile and the descriptions of the mail flows. The electronic version of Appendix A is contained in EXCEL file AppenA.xls. Appendix B contains the calculation of the Standard Mail transportation savings. The electronic version of Appendix B is contained in EXCEL file AppenB.xls. Appendix C contains the spreadsheets calculating the Standard Mail non-transportation cost avoidances. The EXCEL file AppenC.xls contains the electronic version of Appendix C. The MTM productivity mail flow models for the different facility and container scenarios used to compute the Standard Mail dropship cost avoidances are contained in Appendix D, the electronic version of which is in the EXCEL file AppenD.xls. Appendix E, the electronic version of which appears in the EXCEL file AppenE.xls, contains the inputs for the container scenarios.

B. Periodicals Dropship Cost Avoidances

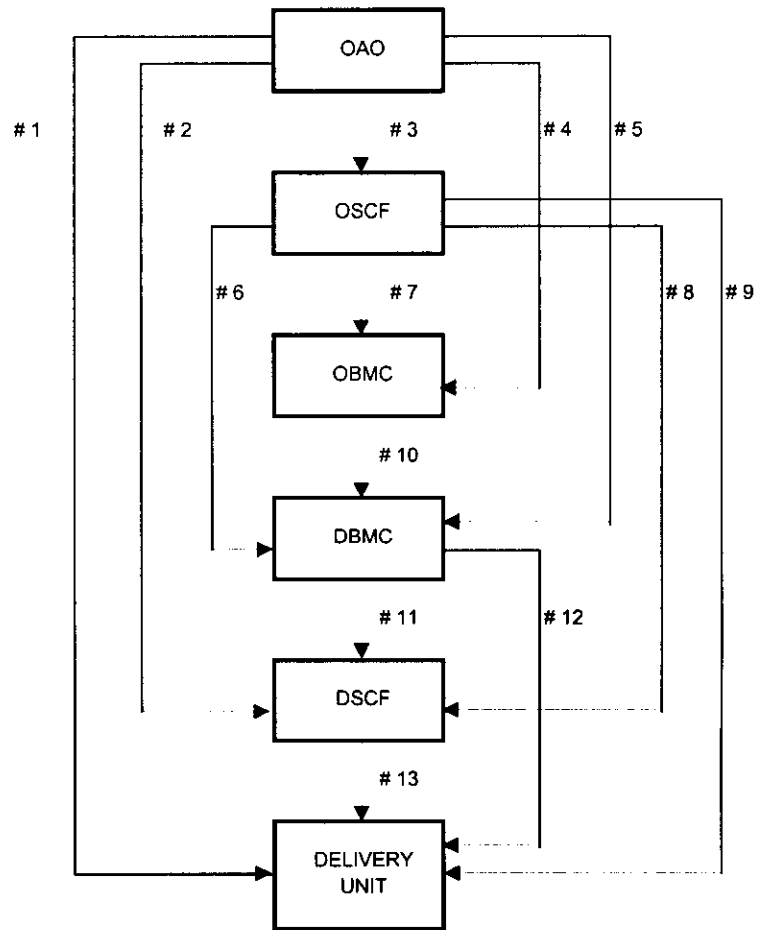
Appendix F, the electronic version of which is in the EXCEL file AppenF.xls, contains the spreadsheets used to calculate the crossdocking costs avoided when Periodicals mail is dropshipped. The results of this analysis are used by witness Taufique (USPS-T-34) to develop rates for dropshipped Periodicals.

Appendix A, Table 1
FY 2000 Entry Profile For Standard Mail in Pounds

Point of Deposit		Percent Dropshipped	Percent Plantloaded	Total
Originating AO	(OAO)	2.82%	0.41%	3.23%
Originating SCF	(OSCF)	7.93%	0.50%	8.43%
Originating BMC	(OBMC)	1.85%	10.57%	12.41%
Destinating BMC	(DBMC)	21.08%	0.63%	21.71%
Destinating SCF	(DSCF)	39.66%	0.43%	40.09%
Destinating DU	(DDU)	<u>14.13%</u>	<u>0.00%</u>	<u>14.13%</u>
Totals		87.47%	12.53%	100.00%

Source: Appendix C, Table 9

Appendix A, Table 2
Flowpaths in Standard Mail (A) Postal Transportation System



Source: Docket No. MC95-1, Exhibit USPS-T-9B

Appendix A, Table 3 Development of Mail Flow Proportions

Flowpath Proportions

OA0 Originating Mail			
Percent Transported to BMC	22.60%		1/
% to both OBMC and DBMC (keyed twice)		57.31%	2/
% to DBMC only (keyed once)		42.69%	3/
Percent Transported to SCF	77.40%		4/
% Transported to OSCF		49.60%	5/
% Transported to DSCF		50.40%	6/
% Delivered Directly From DSCF		3.14%	7/
% that Continues to Another Facility		96.86%	8/
SCF and BMC Originating Mail			
Percent Transported to SCF	76.11%		9/
% Transported to DSCF		42.69%	10/
% Transported to DDU		57.31%	11/
Percent Transported to BMC	23.89%		12/
% Transported to OBMC		96.86%	13/
% Transported to DBMC		3.14%	14/

Flow Number	Origin of the Flow	Description of the Flow	% From Origin 15/
1	OA0	OA0 - DDU	1.22% 16/
2	OA0	OA0 - DSCF	37.78% 17/
3	OA0	OA0 - OSCF	38.39% 18/
4	OA0	OA0 - OBMC	12.95% 19/
5	OA0	OA0 - DBMC	9.65% 20/
			100.00% 21/
6	OSCF	OSCF - DBMC	32.49% 22/
7	OSCF	OSCF - OBMC	43.62% 23/
8	OSCF	OSCF - DSCF	23.14% 24/
9	OSCF	OSCF - DDU	0.75% 25/
			100.00% 26/
10	OBMC	OBMC - DBMC	100.00% 27/
11	DBMC	DBMC - DSCF	96.86% 28/
12	DBMC	DBMC - DDU	3.14% 29/
			100.00% 30/
13	DSCF	DSCF - DDU	100.00% 31/

1/ - 15/ See Docket No. R97-1, LR-H-111.

16/ Equals Row 4/ * Row 6/ * Row 7/

17/ Equals Row 4/ * Row 6/ * Row 8/

18/ Equals Row 4/ * Row 5/

19/ Equals Row 1/ * Row 2/

20/ Equals Row 1/ * Row 3/

21/ Equals the sum of Rows 16/ through 20/. This figure equals 100%, accounting for all mail that originates at the OA0.

22/ Equals Row 9/ * Row 10/

23/ Equals Row 9/ * Row 11/

24/ Equals Row 12/ * Row 13/

25/ Equals Row 12/ * Row 14/

26/ Equals the sum of Rows 22/ through 25/. This figure equals 100%, accounting for all mail that originates at the OSCF.

27/ 100% of all mail that originates at an OBMC destines at a DBMC.

28/ Equals Row 13/

29/ Equals Row 14/

30/ Equals the sum of Rows 28/ through 29/. This figure equals 100%, accounting for all mail that originates at the DBMC.

31/ 100% of all mail that originates at a DSCF destines at a DDU.

Appendix B, Table 1 Total Test Year Standard Mail Pounds Transported on Each Mail Flow

(all figures are in thousands)

Total Test Year Pounds			12,062,816		1/									
[2]	[3]	[4]	[5]	[6]	[12]	[13]	[14]	[15]						
Flow Number	Origin	Percent of Volume Entered at Origin	Pounds Entered at Origin	Additional Pounds from Combining Flows	Pounds Processed	Type of Transportation	Proportion of Volume from the Origin	Total Pounds Transported on Each Flow						
1	OAD	3.23%	389,388	0	389,388	Intra-SCF	1.22%	4,770	(a)					
2	OAD	3.23%	389,388	0	389,388	Intra-SCF	37.78%	147,111	(b)					
3	OAD	3.23%	389,388	0	389,388	Intra-SCF	38.39%	149,486	(b)					
4	OAD	3.23%	389,388	0	389,388	Intra-BM	12.95%	50,426	(c)					
5	OAD	3.23%	389,388	0	389,388	Intra-BM	9.65%	37,576	(d)					
6	OSCF	8.43%	1,017,034	149,486	1,166,520	Intra-BM	32.49%	379,002	(e)					
7	OSCF	8.43%	1,017,034	149,486	1,166,520	Intra-BM	43.62%	508,836	(f)					
8	OSCF	8.43%	1,017,034	149,486	1,166,520	Intra-SCF	23.14%	269,933	(g)					
9	OSCF	8.43%	1,017,034	149,486	1,166,520	Intra-SCF	0.75%	8,749	(h)					
10	OBMC	12.41%	1,497,300	559,262	2,056,562	Intra-BM	100.00%	2,056,562	(h)					
11	DBMC	21.71%	2,619,022	2,473,140	5,092,162	Intra-BM	96.86%	4,932,268	(i)					
12	DBMC	21.71%	2,619,022	2,473,140	5,092,162	Intra-BM	3.14%	159,894	(i)					
13	DSCF	40.09%	4,835,664	5,349,312	10,184,976	Intra-SCF	100.00%	10,184,976	(i)					

Row 1/ From Table 2 of Appendix B.

Column [2] See Appendix A, Table 2.

Column [3] Origin of each flow. See Appendix A, Table 2 for details of each flow.

Column [4] See Appendix A, Table 1.

Column [5] Equals Column [4] * Row 1/.

Column [6] When flows merge, all pounds from previous flows must be accounted for. This column adds pounds from previous flows that merge into the current flow.

Row 7/ The OAO is the first point from which flows can originate. Therefore, no pounds are added from previous flows, because there are no previous flows.

Row 8/ In Flows 6 - 9, the OSCF-originating flows, the Total Pounds Transported on Flow 3 (Column 15, row (b)) must be added, since they flow into the OSCF.

Row 9/ In Flow 10, the OBMC-originating flow, the Total Pounds Transported on Flows 4 and 7 (Column 15, rows (c) and (f)) must be added, since they flow into the OBMC.

Row 10/ In Flows 11 and 12, the DBMC-originating flows, the Total Pounds Transported on Flows 5, 6, and 10 (Column 15, rows (d), (e), and (h)) must be added, since they flow into the DBMC.

Row 11/ In Flow 13, the DSCF-originating flow, the Total Pounds Transported on Flows 2, 8, and 11 (Column 15, rows (a), (g), and (i)) must be added, since they flow into the DSCF.

Column [12] Equals Column [5] + Column [6].

Column [13] See Docket No. MC95-1, USPS-T-9 Table 2, page 8.

Column [14] See Table 3 of Appendix A.

Column [15] Equals Column [12] * Column [14].

Appendix B, Table 2
Derivation of Average Standard Mail Transportation Cost per Pound

Calculation of Test Year Standard Mail Transportation Costs

Transportation Costs

Other	\$278,080,886	1/
Intra-BMC	\$98,202,094	2/
Intra-SCF	\$280,081,526	3/
Total	\$656,364,506	4/

Step 1: Calculation of Base Year Standard Mail Pieces per Pound

Base Year Pieces		Base Year Pounds		Base Year Pieces per Pound	
90,057,147,000	5/	11,142,647,000	6/	8.082204	7/

Step 2: Calculation of Test Year Standard Mail Pounds

Test Year Pieces		Base Year Pieces per Pound		Total Test Year Pounds	
97,494,142,876	8/	8.082204	9/	12,062,816,276	10/

Step 3: Calculation of Average Test Year Cost per Pound

\$0.0544 11/

Row 1/ See Table 8 of this Appendix.

Row 2/ See Table 8 of this Appendix.

Row 3/ See Table 8 of this Appendix.

Row 4/ Total Test Year transportation costs equal the sum of Rows 1/, 2/ and 3/.

Row 5/ LR-J-2, FY 2000 Cost and Revenue Analysis Report

Row 6/ LR-J-2, FY 2000 Cost and Revenue Analysis Report

Row 7/ Base Year pieces divided by Base Year pounds (Row 5/ divided by Row 6/).

Row 8/ USPS-T-6.

Row 9/ From Row 7/.

Row 10/ Test Year pieces divided by Base Year pieces per pound (Row 8/ divided by Row 9/).

Row 11/ Total Test Year transportation costs divided by total Test Year pounds (Row 4/ divided by Row 10/).

Appendix B, Table 3
Summary of Total Standard Mail Pounds in Each Transportation Category

Total Standard Mail Pounds per Transportation Category

(all figures are in thousands)

Inter-Facility Transportation Category	Total Pounds in Each Category	
Intra-SCF	10,486,343	1/
Intra-BMC	6,068,002	2/
Other	2,335,243	3/
Total	18,889,588	4/

- Row 1/ See Table 1 of Appendix B. Flows 1-3 and Flow 13 constitute Intra-SCF Transportation.
Row 2/ See Table 1 of Appendix B. Flows 4-7 and Flows 11-12 constitute Intra-BMC Transportation.
Row 3/ See Table 1 of Appendix B. Flows 8 and 9 constitute Inter-SCF Transportation, and Flow 10 constitutes Inter-BMC Transportation
Row 4/ Equals the sum of Rows 1/ through 3/.

Appendix B, Table 4
Standard Mail Cost per Pound per Transportation Category

Inter-Facility Transportation Category	[1] Total Pounds (000)	[2] Total Costs (000)	[3] Cost/Pound
Other	2,335,243	\$278,081	\$0.1191
Intra-BMC	6,068,002	\$98,202	\$0.0162
Intra-SCF	10,486,343	\$280,082	\$0.0267

Column [1] See Table 3 of this Appendix.

Column [2] See Table 8 of this Appendix.

Column [3] Equals Column [2] divided by Column [1]

Appendix B, Table 5
Projection of Base Year Standard Mail Purchased Transportation Costs into Test Year Costs

	[1]	[2]	[3]
Account	Base Year Costs (000)	Test Year Costs (000)	Projection Factor
Domestic Airmail	\$32,452	\$27,276	0.8405
Highway Service	\$345,099	\$414,668	1.2016
Railroad Service	\$77,939	\$77,040	0.9885
Domestic Water	\$9,796	\$11,357	1.1594

Column [1] USPS-T-11 (WP.B).

Column [2] USPS-T-12 (WP F, Table D)

Column [3] Equals Column [2] divided by Column [1].

Appendix B, Table 6
Projection of Standard Mail Base Year Transportation Costs into Test Year Costs

Account	[1] Base Year Costs (000)	[2] Projection Factor	[3] Test Year Costs (000)
Domestic Airmail			
Passenger Air	\$18,466	0.8405	\$15,520
Intra-Alaska preferential	\$3,402	0.8405	\$2,859
Intra-Alaska non-preferential	\$1,170	0.8405	\$984
Intra-Hawaii	\$1,247	0.8405	\$1,048
Network	\$6,979	0.8405	\$5,866
Western air	\$293	0.8405	\$246
Air taxi	\$1,721	0.8405	\$1,446
Highway Service			
Intra-SCF	\$115,530	1.2016	\$138,820
Intra-BMC	\$70,031	1.2016	\$84,149
Inter-SCF	\$40,739	1.2016	\$48,952
Inter-BMC	\$93,147	1.2016	\$111,925
Plant loaded	\$11,606	1.2016	\$13,946
Contract term van damage	\$1,099	1.2016	\$1,320
Area bus	\$0	1.2016	\$0
Empty equipment	\$9,233	1.2016	\$11,095
Alaskan highway service	\$3,175	1.2016	\$3,815
Railroad Service			
Passenger rail	\$1,760	0.9885	\$1,740
Road-railers	\$102		
Freight rail	\$67,216	0.9885	\$66,441
Plant loaded	\$6,429	0.9885	\$6,355
Damage and Empty equipment	\$2,321	0.9885	\$2,294
Domestic Water			
Inland	\$1,225	1.1594	\$1,420
Offshore	\$8,570	1.1594	\$9,936
	\$9,796		
POV (Highway)	<u>TY Costs 4/</u>	<u>PB Factor 5/</u>	
Postal-Owned Vehicle Costs (Cost Segment 8)	\$129,801	1.545	\$200,543

Column [1] USPS-T-11 (WP.B).

Column [2] See Table 5 of this Appendix.

Column [3] Equals Column [1] multiplied by Column [2].

4/ USPS-T-12 (WP F, Table D).

5/ Test Year Piggyback Factor for Vehicle Service Drivers, Standard Mail; LR-J-52, Attachment 10

Appendix B, Table 7
Adjustments to Standard Mail Test Year Intra-SCF and POV Highway Transportation Costs

Calculation of Revised Intra-SCF and Postal-Owned Vehicle Highway Costs

	[1] Test Year Costs (000)	[2] Adjustment Factor	[3] Adjusted Test Year Costs (000)
Intra-SCF	\$138,820	0.8357	\$116,012
POV	\$200,543	0.8357	\$167,593

Column [1] See Table 6 of this Appendix.
Column [2] Docket No. R2000-1, USPS-T-27, Attachment K, Table 4, Footnote 6.
Column [3] Column [1] multiplied by Column [2].

Appendix B, Table 8
Division of Standard Mail Adjusted Test Year Transportation Costs
Into Inter-Facility Transportation Categories

(all figures are in thousands)

	[1] Adjusted Test Year Costs	[4] Intra-BMC	[5] Intra-SCF	[6] Other
Domestic Airmail				
Passenger Air	\$15,520			\$15,520
Intra-Alaska Preferential	\$2,859			\$2,859
Intra-Alaska Non-preferential	\$984			\$984
Intra-Hawaii	\$1,048			\$1,048
Network	\$5,866			\$5,866
Western Air	\$246			\$246
Air Taxi	\$1,446			\$1,446
Total Domestic Airmail	\$27,971	\$0	\$0	\$27,971
Highway Service				
Intra-SCF	\$116,012 2/		\$116,012	
Intra-BMC	\$84,149	\$84,149		
Inter-SCF	\$48,952			\$48,952
Inter-BMC	\$111,925			\$111,925
Postal-Owned Vehicle Costs	\$167,593 3/		\$167,593	
Plant-loaded	\$13,946			\$13,946
Alaskan Highway Service	\$3,815	\$3,815		
Contract Terminal and Van Damage	\$1,320	\$296	\$408	\$615
Empty Equipment	\$11,095	\$2,576	\$3,398	\$5,121
Total Highway Service	\$558,806	\$90,836	\$287,412	\$180,559
Contract Terminal and Van Damage	\$374,984	22.44%	30.94%	46.62%
Empty Equipment	\$380,118	23.22%	30.63%	46.15%
Railroad Service				
Passenger Rail	\$1,740			\$1,740
Freight Rail	\$66,441			\$66,441
Plant-loaded	\$6,355			\$6,355
Damage and Empty Equipment	\$2,294			\$2,294
Total Railroad Service	\$76,829	\$0	\$0	\$76,829
Domestic Water				
Offshore	\$9,936	\$9,936		
Total Domestic Water	\$9,936	\$9,936	\$0	\$0
Total - All Modes	\$673,543	\$100,772	\$287,412	\$285,359
	\$17,178 Z/			
	\$656,365	\$98,202	\$280,082	\$278,081
	97.4%			

- Column [1] Unless otherwise annotated, these costs are from Table 6 of this Appendix, in the "Test Year Costs" column.
Row 2/ See Table 7 of this Appendix for adjustments.
Row 3/ Ibid.
Column [4] Costs from Column [1] that qualify as Intra-BMC transportation.
Column [5] Costs from Column [1] that qualify as Intra-SCF transportation.
Column [6] Costs from Column [1] that qualify as Inter-BMC or Inter-SCF transportation.
Row Z/ USPS-T-25, Attachment I, Page 16, Standard Mail Final Adjustments for Cost Segments 8 and 14

Appendix B, Table 9
Standard Mail Transportation Cost Avoidances by Point of Dropshipment

Transportation Equation: $(Y^{origin} \cdot X^{origin}) + (Y^{DBMC} \cdot X^{DBMC}) + (Y^{DSCF} \cdot X^{DSCF}) = Z^T$ 1/

- Y^{origin} : Percentage of mail that is dropshipped to non-destination facilities or plantloaded to all facilities.
 X^{origin} : Unit cost to the Postal Service of transporting Y^{origin} to the destination delivery unit.
- Y^{DBMC} : Percentage of mail that is dropshipped to a destination BMC.
 X^{DBMC} : Unit cost to the Postal Service of transporting Y^{DBMC} to the destination delivery unit.
- Y^{DSCF} : Percentage of mail that is dropshipped to a destination SCF.
 X^{DSCF} : Unit cost to the Postal Service of transporting Y^{DSCF} to the destination delivery unit.
- Z^T : Unit cost to the Postal Service of transporting all Standard Mail (A) to the destination delivery unit.

Solving the Equation:

Y^{origin} :	25.13%	2/
X^{origin} :	Solve for this variable.	3/
Y^{DBMC} :	21.08%	4/
X^{DBMC} :	\$0.0421	5/
Y^{DSCF} :	39.66%	6/
X^{DSCF} :	\$0.0267	7/
Z^T :	\$0.0544	8/
	X^{origin} :	\$0.1391 9/

Cost Avoidances:

Point of Dropshipment	Cost Savings Per Pound
DDU	\$0.1391 10/
DSCF	\$0.1124 11/
DBMC	\$0.0970 12/

- Row 1/ For a more detailed explanation of the transportation equation, see Docket No. MC95-1, USPS-T-9, page 3.
- Row 2/ This figure is equal to the percentage of mail that is dropshipped to non-destination facilities, plus the percentage of mail that is plantloaded to all facilities. See Table 1 of Appendix A.
- Row 3/ This variable is unknown. The equation will be solved to find X^{origin} .
- Row 4/ Equals the percentage of mail that is dropshipped to all DBMCs. See Table 1 of Appendix A.
- Row 5/ Equals cost per pound of the Intra-BMC leg, plus 96.86% of cost per pound of the Intra-SCF leg. See Table 4 of this Appendix. This is because 3.14% of mail is assumed to travel directly to the DDU from the DBMC. See Table 3 of Appendix A. See also Docket No. MC95-1, USPS-T-9, page 12.
- Row 6/ Equals the percentage of mail that is dropshipped to all DSCFs. See Table 1 of Appendix A.
- Row 7/ Equals cost per pound of the Inter-SCF leg. See Table 4 of this Appendix.
- Row 8/ Z^T is the unit cost to the Postal Service of transporting all Standard Mail (A) to the DDU. See Table 2 of this Appendix.
- Row 9/ In solving the equation, X^{origin} is equal to this figure.
- Row 10/ Equals Row 9/.
- Row 11/ Equals Row 9/ minus Row 7/. This is the cost avoidance for dropshipping to a DSCF.
- Row 12/ Equals Row 9/ minus Row 5/. This is the cost avoidance for dropshipping to a DBMC.

Appendix C, Table 1
Standard Mail Aggregate Nontransportation Equation and Results

Nontransportation Equation: $(Y^{origin} \cdot X^{origin}) + (Y^{DBMC} \cdot X^{DBMC}) + (Y^{DSCF} \cdot X^{DSCF}) = Z^T$ 1/

- Y^{origin} : Percentage of mail that is dropshipped or plantloaded to non-destination facilities.
 X^{origin} : Unit cost to the Postal Service of crossdocking Y^{origin} before it reaches the destination delivery unit.
- Y^{DBMC} : Percentage of mail that is dropshipped or plantloaded to a destination BMC.
 X^{DBMC} : Unit cost to the Postal Service of crossdocking Y^{DBMC} before it reaches the destination delivery unit.
- Y^{DSCF} : Percentage of mail that is dropshipped or plantloaded to a destination SCF.
 X^{DSCF} : Unit cost to the Postal Service of crossdocking Y^{DSCF} before it reaches the destination delivery unit.
- Z^T : Unit cost to the Postal Service of crossdocking all Standard Mail before it reaches the destination delivery unit.

Solving the Equation:

Y^{origin} :	24.07%	<u>2/</u>
X^{origin} :	Solve for this variable.	<u>3/</u>
Y^{DBMC} :	21.71%	<u>4/</u>
X^{DBMC} :	\$0.0254	<u>5/</u>
Y^{DSCF} :	40.09%	<u>6/</u>
X^{DSCF} :	\$0.0109	<u>7/</u>
Z^T :	\$0.0209	<u>8/</u>
	X^{origin} :	\$0.0457 <u>9/</u>

Cost Avoidances:

Point of Dropshipment	Cost Savings Per Pound
DDU	\$0.0457 <u>10/</u>
DSCF	\$0.0348 <u>11/</u>
DBMC	\$0.0204 <u>12/</u>

1/ For a more detailed explanation of the nontransportation equation, see Docket No. MC95-1, USPS-T-9. (Originally in Docket No. R90-1, USPS-T-12.)

2/ This figure is equal to the percentage of mail that is dropshipped to non-destination facilities, plus the percentage of mail that is plantloaded to non-destination facilities. See Appendix A, Table 1.

3/ This variable is unknown. The equation will be solved to find X^{origin} .

4/ This figure is equal to the percentage of mail that is dropshipped or plantloaded at DBMCs. See Appendix A, Table 1.

5/ This figure is equal to cost per pound of crossdocking DBMC-entered mail before it reaches the DDU.

See Appendix B, Table 9, Row 5 for explanation, and Appendix C, Table 7 for costs.

6/ This figure is equal to the percentage of mail that is dropshipped or plantloaded at DSCFs. See Appendix A, Table 1.

7/ This figure is the crossdocking cost per pound of DSCF mail before it reaches the DDU. See Appendix C, Table 7.

8/ Z^T is the unit cost to the Postal Service of handling all Standard Mail at the DDU. See Appendix C, Table 4.

9/ In solving the equation, X^{origin} is equal to this figure.

10/ Equals 9/.

11/ 9/ minus 7/ gives the estimated cost avoidance for dropshipping to a DSCF.

12/ 9/ minus 5/ gives the estimated cost avoidance for dropshipping to a DBMC.

Appendix C, Table 2
Test Year Cost per Pound to Handle Containerized Standard Mail at Various Facilities

<u>Facility Type</u>	<u>Cost per Pound (cents)</u>
Origin AO, Station, or Branch	0.09
Origin SCF	1.92
Origin BMC	2.08
Destinating BMC	1.48
Destinating SCF	1.09

Source: Appendix C, Table 7

Appendix C, Table 3
Calculation of Total Standard Mail Handling Costs on all Flow Paths

<u>Flow Number</u>	<u>Number of Pounds on Flowpath (000s)¹</u>	<u>Facility Where Mail is Crossdocked</u>	<u>Cost of Crossdocking²</u>	<u>Total Handling Costs (000s)³</u>
1	4,770	OA0	\$0.0009	\$4
2	147,111	OA0	\$0.0009	\$130
3	149,486	OA0	\$0.0009	\$132
4	50,426	OA0	\$0.0009	\$45
5	37,576	OA0	\$0.0009	\$33
6	379,002	OSCF	\$0.0192	\$7,283
7	508,836	OSCF	\$0.0192	\$9,778
8	269,933	OSCF	\$0.0192	\$5,187
9	8,749	OSCF	\$0.0192	\$168
10	2,056,562	OBMC	\$0.0208	\$42,802
11	4,932,268	DBMC	\$0.0148	\$73,001
12	159,894	DBMC	\$0.0148	\$2,367
13	10,184,976	DSCF	\$0.0109	\$110,938
TOTAL				\$251,868

1. Appendix B, Table 1.
2. Appendix C, Table 2 divided by 100.
3. Number of pounds per flowpath multiplied by the cost of crossdocking.

Appendix C, Table 4
Calculation of Standard Mail Nontransportation Unit Costs

Total TY Pieces	97,494,142,876 ¹
Total BY Standard Mail Pieces	90,057,147,000 ²
Total BY Standard Mail Pounds	11,142,647,000 ³
BY Standard Mail Pieces per Pound	8.082204 ⁴
Total TY Standard Mail Pounds	12,062,816,276 ⁵
TY Standard Mail Handling Costs	\$251,868,477 ⁶
Average TY Standard Mail Non-Transportation Cost per Pound	0.0209 ⁷

1. USPS-T-7.
2. LR-J-2, FY 2000 Cost and Revenue Analysis Report
3. LR-J-2, FY 2000 Cost and Revenue Analysis Report
4. Base Year Pieces (2) divided by Base Year Pounds (3).
5. Test Year Pieces (1) divided by Base Year Pieces per Pound (4).
6. Appendix C, Table 3.
7. Test Year Handling Costs (6) divided by Total Test Year Pounds (5).

Appendix C, Tables 5-7
Calculation of Standard Mail Nontransportation Costs
By Container Type and By Facility

For the purposes of this study, there are fifteen possible facility/container combinations for which costs need to be estimated. Appendix D of this document contains 15 mail flow models, one for each of the facility/container scenarios. The models show the operations needed to process a container from the point that it is unloaded at the incoming dock to the point that it is loaded onto an outgoing vehicle. A total time to process a particular container through a specific facility is arrived at by weight-averaging the time needed to perform each required operation on the basis of such factors as the source of the mail at the facility's unloading dock, the likelihood that a container will be sorted on a sack sorting machine, and the proportion of volume that will receive a direct runout onto a vehicle as opposed to a sort in a sawtooth operation prior to being loaded. Because engineering standards were used to estimate the time needed for each operation, the following factors were multiplied by the weight-averaged time (and thus cost) per container/facility to align the result with postal costs as determined by the CRA: a Personal Needs, Fatigue, & Delay factor of 1.15, a mail processing overhead factor, an appropriate piggyback factor, a BMC realization factor (.9713) for application to BMC costs only, and a Base Year 2000 clerk/mailhandler average hourly wage rate that is multiplied by a premium pay factor and divided by 60 (the minutes in an hour). Finally, the resulting cost per container is divided by the average weight of that container to obtain an overall cost per pound for each container/facility combination. The following costs per pound were generated from Appendix D of this document:

TABLE 5 -- COSTS PER POUND

	SACK	TRAY	PALLET
Originating AO	\$0.0002	\$0.0017	\$0.0024
Originating SCF	\$0.0064	\$0.0414	\$0.0079
Originating BMC	\$0.0155	\$0.0378	\$0.0109
Destinating BMC	\$0.0215	\$0.0342	\$0.0096
Destinating SCF	\$0.0210	\$0.0634	\$0.0060

The above costs must be weight-averaged in order to obtain an overall cost per facility. Table 6 below provides the requisite proportions for weighting the container costs for each facility type. The pound volumes shown in Table 6 were derived from Table 8 of this Appendix.

TABLE 6 -- POUNDS

	SACK	TRAY	PALLET	TOTAL
Originating AO	204,160 56.76%	145,813 40.54%	9,712 2.70%	359,685
Originating SCF	415,061 44.18%	336,442 35.81%	187,950 20.01%	939,453
Originating BMC	419,795 30.35%	438,776 31.72%	524,513 37.92%	1,383,084
Destinating BMC	354,738 14.66%	340,785 14.09%	1,723,717 71.25%	2,419,239
Destinating SCF	251,774 5.64%	315,072 7.05%	3,899,946 87.31%	4,466,793

The results of weight-averaging, by facility, the costs per container shown in Table 5 by the appropriate proportions in Table 6 are shown below in column (a).

TABLE 7 -- COSTS PER CONTAINER

	(a)		(b)
Originating AO	0.000883	or	0.09 cents
Originating SCF	0.019217	or	1.92 cents
Originating BMC	0.020813	or	2.08 cents
Destinating BMC	0.014801	or	1.48 cents
Destinating SCF	0.010892	or	1.09 cents

Appendix C, Table 8

Breakout of Base Year Standard Mail Pounds By Container Type and By Facility (000)

	PIECES			POUNDS		
	SACK	TRAY	PALLET	SACK	TRAY	PALLET
ORIGINATING DU	609,764	3,157,980	210,187	204,160	145,813	9,712
ORIGINATING SCF	1,768,454	7,636,530	1,464,272	415,061	336,442	187,950
ORIGINATING BMC	2,340,002	7,509,269	5,188,357	419,795	438,776	524,513
DESTINATING BMC	2,014,374	4,220,697	14,992,599	354,738	340,785	1,723,717
DESTINATING SCF	1,403,839	6,191,156	22,939,042	251,774	315,072	3,899,946
DESTINATING DU	1,106,762	1,086,953	6,216,910	212,623	47,700	1,314,070
TOTALS	9,243,196	29,802,585	51,011,367	1,858,151	1,624,589	7,659,907

Source: Appendix C, Table 9

Appendix C, Table 9
Standard Mail Base Year Mail Entry Profile

Pieces (Thousands)

Entry Type	Trays on Pallets		Loose Trays		Bundles or Sacks on Pallets		Loose Sacks		Total
	DS	PL	DS	PL	DS	PL	DS	PL	
ODU	189,895	-	2,416,709	741,271	132	20,160	582,865	26,899	3,977,932
OSCF	377,936	58,794	7,283,052	353,478	974,147	53,395	1,650,665	117,789	10,869,257
OBMC	1,565,554	2,275,785	1,104,379	6,404,890	215,209	1,131,809	408,542	1,931,460	15,037,627
DBMC	8,615,240	240,128	3,920,608	300,088	6,058,071	79,160	1,925,607	88,768	21,227,670
DSCF	6,668,356	59,872	6,070,786	120,370	15,790,846	419,968	1,402,355	1,483	30,534,037
DDU	254,258	-	1,085,469	1,483	5,962,652	-	1,106,762	-	8,410,624
									90,057,147

Pounds (Thousands)

Entry Type	Trays on Pallets		Loose Trays		Bundles or Sacks on Pallets		Loose Sacks		Total
	DS	PL	DS	PL	DS	PL	DS	PL	
ODU	7,828	-	104,878	40,935	19	1,865	201,765	2,395	359,685
OSCF	14,127	2,444	320,862	15,580	165,464	5,915	383,374	31,687	939,453
OBMC	65,999	95,318	36,309	402,467	44,027	319,169	59,432	360,363	1,383,084
DBMC	355,697	13,956	323,327	17,457	1,335,587	18,476	333,888	20,850	2,419,239
DSCF	314,220	2,518	313,186	1,887	3,540,339	42,869	251,602	172	4,466,793
DDU	3,394	-	47,625	76	1,310,676	-	212,623	-	1,574,393
									11,142,647

Source: USPS LR-J-112.

Appendix D, Table 1
MTM Productivity Mail Flow Models for Facility/Container Scenarios

Orig AO Sacks

Source	Operation	(1) Probability	(2) MTM Minutes Per Sack	(3) Col 1 * Col 2	(4) P, F, and D	(5) Mail Proc Overhead	(6) Piggyback	(7) Col 3*Col 4* Col 5*Col 6
Mailer	Mailer unload sacks onto APC	100.00%	0.0000	0.0000	1.15	1.000	0.000	0.0000
	Transport APC to van and load	100.00%	0.0114	0.0114	1.15	1.217	1.473	0.0236
MTM Minutes per Sack: 0.0114 Total Minutes per Sack: 0.0236 Pieces per Pound 2.9867 ¹ Cost per Pound: \$ 0.0002								

Column (1) Probability that the container receives the operation - Appendix E, Tables 1 and 4.

Column (2) MTM minutes per container - Appendix E, Table 5.

Column (3) Column 1 multiplied by Column 2.

Column (4) Personal Needs, Fatigue and Delay Factor - Appendix D, Table 16

Column (5) Mail Processing operation specific overhead factors - Appendix D, Table 16

Column (6) Operation specific piggyback factors - Appendix D, Table 16

¹ Pieces per Pound from Appendix C, Table 8.

Appendix D, Table 2 MTM Productivity Mail Flow Models for Facility/Container Scenarios

Orig SCF Sacks

Source	Operation	(1) Probability	(2) MTM Minutes Per Sack	(3) Col 1 * Col 2	(4) P, F, and D	(5) Mail Proc Overhead	(6) Piggyback	(7) Col 3*Col 4* Col 5*Col 6
Mailer	Mailer unload sacks, move APC to staging	77.69%	0.0000	0.0000	1.15	0.000	0.000	0.0000
	Move APC to dock	77.69%	0.0708	0.0550	1.15	1.485	1.655	0.1555
	Load APC on van	77.69%	0.0174	0.0135	1.15	1.485	1.655	0.0381
Service Area:	MHs unload APC to staging	22.31%	0.0159	0.0036	1.15	1.485	1.655	0.0100
	Move APC to sort area	22.31%	0.0355	0.0079	1.15	1.485	1.655	0.0224
	Sort sacks into rolling containers	22.31%	0.2624	0.0585	1.15	1.528	1.593	0.1639
	Move APC to dock (stage)	22.31%	0.0355	0.0079	1.15	1.485	1.655	0.0224
	Load APC on van	22.31%	0.0174	0.0039	1.15	1.485	1.655	0.0109
				MTM Minutes per Sack:		0.1503		
				Total Minutes per Sack:		0.4232		
				Pieces per Pound		4.2607 ¹		
				Cost per Pound:		\$ 0.0064		

Column (1) Probability that the container receives the operation - Appendix E, Tables 1 and 4.

Column (2) MTM minutes per container - Appendix E, Table 5.

Column (3) Column 1 multiplied by Column 2.

Column (4) Personal Needs, Fatigue and Delay Factor - Appendix D, Table 16

Column (5) Mail Processing operation specific overhead factors - Appendix D, Table 16

Column (6) Operation specific piggyback factors - Appendix D, Table 16

¹ Pieces per Pound from Appendix C, Table 8.

Appendix D, Table 3
MTM Productivity Mail Flow Models for Facility/Container Scenarios

Orig BMC Sacks

Source	Operation	(1) Probability	(2) MTM Minutes Per Sack	(3) Col 1 * Col 2	(4) P, F, and D	(5) Mail Proc Overhead	(6) Piggyback	(7) Col 3*Col 4* Col 5*Col 6
Mailer-Orig:	Mailer unload to conveyor (50% USPS assistance)	8.98%	0.1519	0.0136	1.15	1.453	1.784	0.0407
Plantload:	USPS unload to conveyor	54.48%	0.1519	0.0828	1.15	1.453	1.784	0.2467
Service Area:	USPS unload APC to staging	36.54%	0.0183	0.0067	1.15	1.453	1.784	0.0200
	Move APC to SSM induction	36.54%	0.0374	0.0137	1.15	1.453	1.482	0.0339
	Manually dump sack to SSM	3.65%	0.1726	0.0063	1.15	1.453	1.482	0.0156
	Key sack at SSM	100.00%	0.0787	0.0787	1.15	1.362	2.075	0.2557
	Direct runoff to Postal Pak	100.00%	0.0000	0.0000	0.00	0.000	0.000	0.0000
	Load Postal Pak onto van from staging	100.00%	0.0657	0.0657	1.15	1.453	1.784	0.1958
							MTM Minutes per Sack:	0.2675
							Total Minutes per Sack:	0.8083
							Pieces per Pound	5.5742 ¹
							Cost per Pound:	\$ 0.0155

Column (1) Probability that the container receives the operation - Appendix E, Tables 1 and 4.

Column (2) MTM minutes per container - Appendix E, Table 5.

Column (3) Column 1 multiplied by Column 2.

Column (4) Personal Needs, Fatigue and Delay Factor - Appendix D, Table 16

Column (5) Mail Processing operation specific overhead factors - Appendix D, Table 16

Column (6) Operation specific piggyback factors - Appendix D, Table 16

¹ Pieces per Pound from Appendix C, Table 8.

Appendix D, Table 4
MTM Productivity Mail Flow Models for Facility/Container Scenarios

Dest BMC Sacks

Source	Operation	(1) Probability	(2) MTM Minutes Per Sack	(3) Col 1 *	(4) P, F, and D	(5) Mail Proc Overhead	(6) Piggyback	(7) Col 3*Col 4* Col 5*Col 6
Mailer-Dest:	Mailer unload to conveyor (50% USPS assistance)	13.72%	0.1519	0.0208	1.15	1.453	1.784	0.0621
Plantload:	USPS unload to conveyor	1.71%	0.1519	0.0026	1.15	1.453	1.784	0.0078
OBMC:	Unload Postal Pak to staging Dump Postal Pak	54.35% 54.35%	0.0709 0.0093	0.0385 0.0050	1.15 1.15	1.453 1.453	1.784 1.482	0.1149 0.0125
Service Area:	USPS unload APC to staging Move APC to SSM induction Manually dump sack to SSM	16.50% 16.50% 1.65%	0.0183 0.0374 0.1726	0.0030 0.0062 0.0028	1.15 1.15 1.15	1.453 1.453 1.453	1.784 1.482 1.482	0.0090 0.0153 0.0071
	Key sack at SSM	100.00%	0.0787	0.0787	1.15	1.362	2.075	0.2557
	Direct runoff to van	71.77%	0.0000	0.0000	0.00	0.000	0.000	0.0000
	Bedload sacks from conveyor	71.77%	0.1758	0.1262	1.15	1.453	1.784	0.3762
	Direct runoff to container	1.75%	0.0000	0.0000	0.00	0.000	0.000	0.0000
	Sort at sawtooth to APCs	26.48%	0.3058	0.0810	1.15	1.453	1.482	0.2005
	Move APC to dock staging	28.23%	0.0374	0.0106	1.15	1.453	1.482	0.0262
	Load APC on van	28.23%	0.0183	0.0052	1.15	1.453	1.784	0.0154
				MTM Minutes per Sack:		0.3371		
				Total Minutes per Sack:		1.1026		
				Pieces per Pound		5.6785 ¹		
				Cost per Pound:		\$ 0.0215		

Column (1) Probability that the container receives the operation - Appendix E, Tables 1 and 4.

Column (2) MTM minutes per container - Appendix E, Table 5.

Column (3) Column 1 multiplied by Column 2.

Column (4) Personal Needs, Fatigue and Delay Factor - Appendix D, Table 16

Column (5) Mail Processing operation specific overhead factors - Appendix D, Table 16

Column (6) Operation specific piggyback factors - Appendix D, Table 16

¹ Pieces per Pound from Appendix C, Table 8.

Appendix D, Table 5
MTM Productivity Mail Flow Models for Facility/Container Scenarios

Dest SCF Sacks

Source	Operation	(1) Probability	(2) MTM Minutes Per Sack	(3) Col 1 *	(4) P, F, and D	(5) Mail Proc Overhead	(6) Piggyback	(7) Col 3*Col 4* Col 5*Col 6
Mailer:	Mailer unload APC to staging (50% USPS assistance)	7.86%	0.0159	0.0013	1.15	1.485	1.655	0.0035
Service Area:	USPS unload APC to staging	11.94%	0.0159	0.0019	1.15	1.485	1.655	0.0054
BMC (APC) & PL:	USPS unload APC to staging	51.93%	0.0174	0.0090	1.15	1.485	1.655	0.0255
BMC (bedload):	Move APC on/off van	20.42%	0.0174	0.0035	1.15	1.485	1.655	0.0100
	Load sacks on APC	20.42%	0.1060	0.0217	1.15	1.485	1.655	0.0612
	Move APC to SSM induction	11.13%	0.0355	0.0039	1.15	1.485	1.655	0.0112
	Manually induct sack into SSM	11.13%	0.1635	0.0182	1.15	1.485	1.545	0.0480
	Key sack at SSM	11.13%	0.0917	0.0102	1.15	1.550	1.844	0.0335
	Direct runoff to container	8.18%	0.0000	0.0000	1.15	0.000	0.000	0.0000
	Move APC to dock, staging	8.18%	0.0355	0.0029	1.15	1.485	1.655	0.0082
	Load APC on van	8.18%	0.0159	0.0013	1.15	1.485	1.655	0.0037
	Sort at sawtooth to APCs	2.95%	0.2933	0.0086	1.15	1.528	1.593	0.0242
	Move APC to dock staging	2.95%	0.0355	0.0010	1.15	1.485	1.655	0.0030
	Load APC on van	2.95%	0.0159	0.0005	1.15	1.485	1.655	0.0013
	Move APC to NMO roller	88.87%	0.0355	0.0315	1.15	1.485	1.655	0.0891
	Unload APC, sort sacks	88.87%	0.2624	0.2332	1.15	1.528	1.593	0.6529
	Move APC to dock, staging	88.87%	0.0174	0.0154	1.15	1.485	1.655	0.0436
	Load APC on van	88.87%	0.0159	0.0142	1.15	1.485	1.655	0.0400
				MTM Minutes per Sack:		0.3784		
				Total Minutes per Sack:		1.0642		
				Pieces per Pound		5.5758 ¹		
				Cost per Pound:		\$ 0.0210		

Column (1) Probability that the container receives the operation - Appendix E, Tables 1 and 4.

Column (2) MTM minutes per container - Appendix E, Table 5.

Column (3) Column 1 multiplied by Column 2.

Column (4) Personal Needs, Fatigue and Delay Factor - Appendix D, Table 16

Column (5) Mail Processing operation specific overhead factors - Appendix D, Table 16

Column (6) Operation specific piggyback factors - Appendix D, Table 16

¹ Pieces per Pound from Appendix C, Table 8.

Appendix D, Table 6
MTM Productivity Mail Flow Models for Facility/Container Scenarios

Orig AO Trays

Source	Operation	(1) Probability	(2) MTM Minutes Per Tray	(3) Col 1 * Col 2	(4) P, F, and D	(5) Mail Proc Overhead	(6) Piggyback	(7) Col 3*Col 4* Col 5*Col 6
Mailer:	Mailer load trays on APC	100.00%	0.0000	0.0000		0.000	0.000	0.0000
	Transport APC to van and Load	100.00%	0.0141	0.0141	1.15	1.217	1.473	0.0291
MTM Minutes per Tray : 0.0141 Total Minutes per Tray: 0.0291 Pieces per Pound 21.6577¹ Cost per Pound: \$ 0.0017								

Column (1) Probability that the container receives the operation - Appendix E, Tables 2 and 4.
Column (2) MTM minutes per container - Appendix E, Table 6.

Column (3) Column 1 multiplied by Column 2.

Column (4) Personal Needs, Fatigue and Delay Factor - Appendix D, Table 16

Column (5) Mail Processing operation specific overhead factors - Appendix D, Table 16

Column (6) Operation specific piggyback factors - Appendix D, Table 16

¹ Pieces per Pound from Appendix C, Table 8.

Appendix D, Table 7 MTM Productivity Mail Flow Models for Facility/Container Scenarios

Orig SCF Trays

Source	Operation	(1) Probability	(2) MTM Minutes Per Tray	(3) Col 1 * Col 2	(4) P, F, and D	(5) Mail Proc Overhead	(6) Piggyback	(7) Col 3*Col 4* Col 5*Col 6
Mailer	Mailer unload trays to APC to staging	81.77%	0.0000	0.0000	0.00	0.000	0.000	0.0000
	Move APC to dock (stage)	24.55%	0.0878	0.0216	1.15	1.485	1.655	0.0609
	Move APC to sort/band area	57.21%	0.0439	0.0251	1.15	1.485	1.655	0.0710
	Band the trays	57.21%	0.1307	0.0748	1.15	1.397	1.598	0.1920
	Move APC to dock (stage)	57.21%	0.0439	0.0251	1.15	1.485	1.655	0.0710
	Load APC on van	81.77%	0.0215	0.0176	1.15	1.485	1.655	0.0497
Service Area:	MHs unload APC to staging	18.23%	0.0197	0.0036	1.15	1.485	1.655	0.0102
	Move APC to sort area	18.23%	0.0439	0.0080	1.15	1.485	1.655	0.0226
	Sort trays into rolling containers	18.23%	0.2624	0.0479	1.15	1.485	1.655	0.1352
	Band the trays	12.76%	0.1307	0.0167	1.15	1.397	1.598	0.0428
	Move APC to dock (stage)	18.23%	0.0439	0.0080	1.15	1.485	1.655	0.0226
	Load APC on van	18.23%	0.0215	0.0039	1.15	1.485	1.655	0.0111

MTM Minutes per Tray : 0.2522
Total Minutes per Tray: 0.6892
Pieces per Pound 22.6979¹
Cost per Pound: \$ 0.0414

Column (1) Probability that the container receives the operation - Appendix E, Tables 2 and 4.
Column (2) MTM minutes per container - Appendix E, Table 6.
Column (3) Column 1 multiplied by Column 2.
Column (4) Personal Needs, Fatigue and Delay Factor - Appendix D, Table 16
Column (5) Mail Processing operation specific overhead factors - Appendix D, Table 16
Column (6) Operation specific piggyback factors - Appendix D, Table 16

¹ Pieces per Pound from Appendix C, Table 8.

Appendix D, Table 8
MTM Productivity Mail Flow Models for Facility/Container Scenarios

Orig BMC Trays

Source	Operation	(1) Probability	(2) MTM Minutes Per Tray	(3) Col 1 *	(4) P, F, and D	(5) Mail Proc Overhead	(6) Piggyback	(7) Col 3*Col 4* Col 5*Col 6
Mailer & Plantload:	USPS unload pallet	69.78%	0.0244	0.0170	1.15	1.453	1.784	0.0508
	Move pallet to SSM induction	55.12%	0.0213	0.0117	1.15	1.453	1.482	0.0290
	Manually dump tray to SSM	27.56%	0.1569	0.0432	1.15	1.453	1.482	0.1071
	Key tray at SSM	55.12%	0.0787	0.0434	1.15	1.362	2.075	0.1409
	Direct runoff to Postal Pak	55.12%	0.0000	0.0000	1.15	0.000	0.000	0.0000
	Load Postal Pak onto van from staging	55.12%	0.0888	0.0490	1.15	1.453	1.784	0.1459
	Move pallet to NMO roller	14.66%	0.0141	0.0021	1.15	1.453	1.482	0.0051
	Unload pallet, sort trays	14.66%	0.2736	0.0401	1.15	1.453	1.784	0.1196
	Move pallet to dock	14.66%	0.0213	0.0031	1.15	1.453	1.482	0.0077
	Load pallet on van	14.66%	0.0244	0.0036	1.15	1.453	1.784	0.0107
	USPS unload APC to staging	30.22%	0.0227	0.0069	1.15	1.453	1.784	0.0205
	Move APC to SSM induction	23.87%	0.0464	0.0111	1.15	1.453	1.482	0.0274
Service Area:	Manually dump tray to SSM	2.39%	0.1341	0.0032	1.15	1.453	1.482	0.0079
	Key tray at SSM	23.87%	0.0787	0.0188	1.15	1.362	2.075	0.0610
	Direct runoff to Postal Pak	23.87%	0.0917	0.0219	1.15	0.000	0.000	0.0000
	Load Postal Pak onto van from staging	23.87%	0.0876	0.0209	1.15	1.453	1.784	0.0623
	Move pallet to NMO roller	6.35%	0.0213	0.0014	1.15	1.453	1.482	0.0033
	Unload pallet, sort trays	6.35%	0.2736	0.0174	1.15	1.453	1.784	0.0518
	Move pallet to dock, staging	6.35%	0.0213	0.0014	1.15	1.453	1.482	0.0033
	Load pallet on van	6.35%	0.0244	0.0016	1.15	1.453	1.784	0.0046
MTM Minutes per Tray :							0.3176	
Total Minutes per Tray:							0.8591	
Pieces per Pound							17.1141 ¹	
Cost per Pound:							\$ 0.0378	

Column (1) Probability that the container receives the operation - Appendix E, Tables 2 and 4.

Column (2) MTM minutes per container - Appendix E, Table 6.

Column (3) Column 1 multiplied by Column 2.

Column (4) Personal Needs, Fatigue and Delay Factor - Appendix D, Table 16

Column (5) Mail Processing operation specific overhead factors - Appendix D, Table 16

Column (6) Operation specific piggyback factors - Appendix D, Table 16

¹ Pieces per Pound from Appendix C, Table 8.

Appendix D, Table 9 MTM Productivity Mail Flow Models for Facility/Container Scenarios

Dest BMC Trays

Source	Operation	(1) Probability	(2) MTM Minutes Per Tray	(3) Col 1 *	(4) P.F. and D.	(5) Mail Proc Overhead	(6) Piggyback	(7) Col 3*Col 4* Col 5*Col 6
OBMC Postal Pak:	Unload Postal Pak to staging	28.55%	0.0244	0.0070	1.15	1.453	1.784	0.0208
	Dump trays to conveyor	28.55%	0.1005	0.0287	1.15	1.453	1.482	0.0711
	Conveyor to SSM	28.55%	0.0000	0.0000	0.00	0.000	0.000	0.0000
	Key trays at SSM	28.55%	0.0787	0.0225	1.15	1.362	2.075	0.0730
	Direct runoff to van	20.49%	0.0000	0.0000	0.00	0.000	0.000	0.0000
	Bedload trays from conveyor	20.49%	0.1374	0.0281	1.15	1.453	1.784	0.0839
	Direct runoff to container	0.50%	0.0000	0.0000	0.00	0.000	0.000	0.0000
	Sort at sawtooth to APCs	7.56%	0.2901	0.0219	1.15	1.528	1.482	0.0571
	Move APC to dock staging	8.06%	0.0464	0.0037	1.15	1.453	1.482	0.0093
	Load APC on van	8.06%	0.0227	0.0018	1.15	1.453	1.784	0.0055
Mailer, PL, OBMC pallet:	USPS unload pallet	27.18%	0.0244	0.0066	1.15	1.453	1.784	0.0198
	Move pallet to SSM induction	21.47%	0.0213	0.0046	1.15	1.453	1.482	0.0113
	Manually dump tray to SSM	10.73%	0.1569	0.0168	1.15	1.453	1.482	0.0417
	Key tray at SSM	21.47%	0.0787	0.0169	1.15	1.362	2.075	0.0549
	Direct runoff to van	15.41%	0.0000	0.0000	1.15	0.000	0.000	0.0000
	Bedload trays from conveyor	15.41%	0.1374	0.0212	1.15	1.453	1.784	0.0631
	Direct runoff to container	0.38%	0.0000	0.0000	1.15	0.000	0.000	0.0000
	Sort at sawtooth to APCs	5.68%	0.2901	0.0165	1.15	1.528	1.482	0.0429
	Move APC to dock staging	6.06%	0.0464	0.0028	1.15	1.453	1.482	0.0070
	Load APC on van	6.06%	0.0227	0.0014	1.15	1.453	1.784	0.0041
	Move pallet to NMO roller	5.71%	0.0141	0.0008	1.15	1.453	1.482	0.0020
	Unload pallet, sort trays	5.71%	0.2736	0.0156	1.15	1.528	1.482	0.0407
	Move APC to dock	5.71%	0.0464	0.0026	1.15	1.453	1.482	0.0066
	Load APC on van	5.71%	0.0227	0.0013	1.15	1.453	1.784	0.0039
	USPS unload APC to staging	44.28%	0.0227	0.0101	1.15	1.453	1.784	0.0300
Service Area:	Move APC to SSM induction	34.97%	0.0464	0.0162	1.15	1.453	1.482	0.0401
	Manually dump tray to SSM	3.50%	0.1341	0.0047	1.15	1.453	1.482	0.0116
	Key tray at SSM	34.97%	0.0787	0.0275	1.15	1.362	2.075	0.0894
	Direct runoff to van	25.10%	0.0000	0.0000	1.15	0.000	0.000	0.0000
	Bedload trays from conveyor	25.10%	0.1374	0.0345	1.15	1.453	1.784	0.1028
	Direct runoff to container	0.61%	0.0000	0.0000	1.15	0.000	0.000	0.0000
	Sort at sawtooth to APCs	9.26%	0.2901	0.0269	1.15	1.528	1.482	0.0700
	Move APC to dock staging	9.87%	0.0464	0.0046	1.15	1.453	1.482	0.0113
	Load APC on van	9.87%	0.0227	0.0022	1.15	1.453	1.784	0.0067
	Move APC to NMO roller	9.30%	0.0464	0.0043	1.15	1.453	1.482	0.0107
	Unload APC, sort trays	9.30%	0.2736	0.0255	1.15	1.528	1.482	0.0663
	Move APC to dock, staging	9.30%	0.0464	0.0043	1.15	1.453	1.482	0.0107
	Load APC on van	9.30%	0.0227	0.0021	1.15	1.453	1.784	0.0063

MTM Minutes per Tray : 0.3838
Total Minutes per Tray : 1.0743
Pieces per Pound : 12.3852¹
Cost per Pound : \$ 0.0342

Column (1) Probability that the container receives the operation - Appendix E, Tables 2 and 4.
Column (2) MTM minutes per container - Appendix E, Table 6.
Column (3) Column 1 multiplied by Column 2.
Column (4) Personal Needs, Fatigue and Delay Factor - Appendix D, Table 16
Column (5) Mail Processing operation specific overhead factors - Appendix D, Table 16
Column (6) Operation specific piggyback factors - Appendix D, Table 16
¹ Pieces per Pound from Appendix C, Table 8.

Appendix D, Table 10
MTM Productivity Mail Flow Models for Facility/Container Scenarios

Dest SCF Trays

Source	Operation	(1) Probability	(2) MTM Minutes Per Tray	(3) Col 1 * Col 2	(4) P, F, and D	(5) Mail Proc Overhead	(6) Piggyback	(7) Col 3*Col 4* Col 5*Col 6
Mailer:	Mailier unload APC to staging (50% USPS assistance)	20.37%	0.0197	0.0040	1.15	1.485	1.655	0.0113
Service Area:	USPS unload APC to staging	9.49%	0.0197	0.0019	1.15	1.485	1.655	0.0053
BMC(APC) & PL:	USPS unload APC to staging	27.37%	0.0215	0.0059	1.15	1.485	1.655	0.0166
BMC (bedload):	Load/Unload APC on/off van to staging Load trays on APC	42.76% 42.76%	0.0215 0.0922	0.0092 0.0394	1.15 1.15	1.485 1.485	1.655 1.655	0.0260 0.1113
	Move APC to SSM induction	4.93%	0.0439	0.0022	1.15	1.485	1.655	0.0061
	Manually dump sack to SSM	4.93%	0.1271	0.0063	1.15	1.550	1.844	0.0206
	Key tray at SSM	4.93%	0.0917	0.0045	1.15	1.550	1.844	0.0149
	Direct runoff to container	3.62%	0.0000	0.0000	1.15	0.000	0.000	0.0000
	Move APC to dock staging	3.62%	0.0439	0.0016	1.15	1.485	1.655	0.0045
	Load APC on van	3.62%	0.0197	0.0007	1.15	1.485	1.655	0.0020
	Sort at sawtooth to APCs	1.31%	0.2782	0.0036	1.15	1.528	1.598	0.0102
	Move APC to dock staging	1.31%	0.0439	0.0006	1.15	1.485	1.655	0.0016
	Load APC on van	1.31%	0.0197	0.0003	1.15	1.485	1.655	0.0007
	Move APC to NMO roller	95.07%	0.0439	0.0418	1.15	1.485	1.655	0.1180
	Unload APC, sort trays	95.07%	0.2624	0.2495	1.15	1.528	1.598	0.7006
	Move APC to dock	95.07%	0.0439	0.0418	1.15	1.485	1.655	0.1180
	Load APC on van	95.07%	0.0197	0.0187	1.15	1.485	1.655	0.0530
MTM Minutes per Tray :								0.4319
Total Minutes per Tray:								1.2208
Pieces per Pound								19.6499 ¹
Cost per Pound:								\$ 0.0634

Column (1) Probability that the container receives the operation - Appendix E, Tables 2 and 4.

Column (2) MTM minutes per container - Appendix E, Table 6.

Column (3) Column 1 multiplied by Column 2.

Column (4) Personal Needs, Fatigue and Delay Factor - Appendix D, Table 16

Column (5) Mail Processing operation specific overhead factors - Appendix D, Table 16

Column (6) Operation specific piggyback factors - Appendix D, Table 16

¹ Pieces per Pound from Appendix C, Table 8.

Appendix D, Table 11
MTM Productivity Mail Flow Models for Facility/Container Scenarios

Orig AO Pallets

Source	Operation	(1) Probability	(2) MTM Minutes Per Pallet	(3) Col 1 * Col 2	(4) P, F, and D	(5) Mail Proc Overhead	(6) Piggyback	(7) Col 3*Col 4* Col 5*Col 6
Mailer	Mailer Unload to staging	100.00%	0.0000	0.0000	0.00	0.000	0.000	0.0000
	USPS load with pallet jack	100.00%	0.5976	0.5976	1.15	1.217	1.473	1.2316
					MTM Minutes per Pallet:		0.5976	
					Total Minutes per Pallet:		1.2316	
					Pieces per Pound		22.7871 ¹	
					Cost per Pound:		\$ 0.0024	

Column (1) Probability that the container receives the operation - 100% palletized mail.

Column (2) MTM minutes per container - Appendix E, Table 7.

Column (3) Column 1 multiplied by Column 2.

Column (4) Personal Needs, Fatigue and Delay Factor - Appendix D, Table 16

Column (5) Mail Processing operation specific overhead factors - Appendix D, Table 16

Column (6) Operation specific piggyback factors - Appendix D, Table 16

¹ Pieces per Pound from Appendix C, Table 8.

Appendix D, Table 12
MTM Productivity Mail Flow Models for Facility/Container Scenarios

Orig SCF Pallets

Source	Operation	(1) Probability	(2) MTM Minutes Per Pallet	(3) Col 1 * Col 2	(4) P, F, and D	(5) Mail Proc Overhead	(6) Piggyback	(7) Col 3*Col 4* Col 5*Col 6
All:	Unload	100.00%	1.2489	1.2489	1.15	1.485	1.655	3.5293
	Crossdock	100.00%	1.7734	1.7734	1.15	1.485	1.655	5.0113
	Load	100.00%	1.1567	1.1567	1.15	1.485	1.655	3.2686
MTM Minutes per Pallet: 4.1790								
Total Minutes per Pallet: 11.8092								
Pieces per Pound 7.7908¹								
Cost per Pound: \$ 0.0079								

Column (1) Probability that the container receives the operation - 100% palletized mail.

Column (2) MTM minutes per container - Appendix E, Table 7.

Column (3) Column 1 multiplied by Column 2.

Column (4) Personal Needs, Fatigue and Delay Factor - Appendix D, Table 16

Column (5) Mail Processing operation specific overhead factors - Appendix D, Table 16

Column (6) Operation specific piggyback factors - Appendix D, Table 16

¹ Pieces per Pound from Appendix C, Table 8.

Appendix D, Table 13
MTM Productivity Mail Flow Models for Facility/Container Scenarios

Orig BMC Pallets

Source	Operation	(1) Probability	(2) MTM Minutes Per Pallet	(3) Col 1 *	(4) P, F, and D	(5) Mail Proc Overhead	(6) Piggyback	(7) Col 3*Col 4* Col 5*Col 6
All:	Unload	100.00%	1.3183	1.3183	1.15	1.453	1.784	3.9297
	Crossdock	100.00%	1.8719	1.8719	1.15	1.453	1.784	5.5798
	Load	100.00%	1.2209	1.2209	1.15	1.453	1.784	3.6395
MTM Minutes per Pallet: 4.4111								
Total Minutes per Pallet: 13.1490								
Pieces per Pound 9.8918 ¹								
Cost per Pound: \$ 0.0109								

Column (1) Probability that the container receives the operation - 100% palletized mail.

Column (2) MTM minutes per container - Appendix E, Table 7.

Column (3) Column 1 multiplied by Column 2.

Column (4) Personal Needs, Fatigue and Delay Factor - Appendix D, Table 16

Column (5) Mail Processing operation specific overhead factors - Appendix D, Table 16

Column (6) Operation specific piggyback factors - Appendix D, Table 16

¹ Pieces per Pound from Appendix C, Table 8.

Appendix D, Table 14 **MTM Productivity Mail Flow Models for Facility/Container Scenarios**

Dest BMC Pallets

Source	Operation	(1) Probability	(2) MTM Minutes Per Pallet	(3) Col 1 * Col 2	(4) P, F, and D	(5) Mail Proc Overhead	(6) Piggyback	(7) Col 3*Col 4* Col 5*Col 6
All:	Unload	100.00%	1.3183	1.3183	1.15	1.453	1.784	3.9297
	Crossdock	100.00%	1.8719	1.8719	1.15	1.453	1.784	5.5798
	Load	100.00%	1.2209	1.2209	1.15	1.453	1.784	3.6395
MTM Minutes per Pallet: 4.4111								
Total Minutes per Pallet: 13.1490								
Pieces per Pound 8.6978 ¹								
Cost per Pound: \$ 0.0096								

Column (1) Probability that the container receives the operation - 100% palletized mail.

Column (2) MTM minutes per container - Appendix E, Table 7.

Column (3) Column 1 multiplied by Column 2.

Column (4) Personal Needs, Fatigue and Delay Factor - Appendix D, Table 16

Column (5) Mail Processing operation specific overhead factors - Appendix D, Table 16

Column (6) Operation specific piggyback factors - Appendix D, Table 16

¹ Pieces per Pound from Appendix C, Table 8.

Appendix D, Table 15
MTM Productivity Mail Flow Models for Facility/Container Scenarios

Dest SCF Pallets

Source	Operation	(1) Probability	(2) MTM Minutes Per Pallet	(3) Col 1 *	(4) P, F, and D	(5) Mail Proc Overhead	(6) Piggyback	(7) Col 3*Col 4* Col 5*Col 6
All:	Unload	100.00%	1.2489	1.2489	1.15	1.485	1.655	3.5293
	Crossdock	100.00%	1.7734	1.7734	1.15	1.485	1.655	5.0113
	Load	100.00%	1.1567	1.1567	1.15	1.485	1.655	3.2686
MTM Minutes per Pallet: 4.1790								
Total Minutes per Pallet:							11.8092	
Pieces per Pound							5.8819	
Cost per Pound:							\$ 0.0060	

Column (1) Probability that the container receives the operation - 100% palletized mail.

Column (2) MTM minutes per container - Appendix E, Table 7.

Column (3) Column 1 multiplied by Column 2.

Column (4) Personal Needs, Fatigue and Delay Factor - Appendix D, Table 16

Column (5) Mail Processing operation specific overhead factors - Appendix D, Table 16

Column (6) Operation specific piggyback factors - Appendix D, Table 16

¹ Pieces per Pound from Appendix C, Table 8.

Appendix D, Table 16 Input Sheet

Personal Needs, Fatigue, and Delay (P, F, and D factor):		1.15 ¹
Overhead Factors:	SCF Platform	1.485 ²
	Manual Sack Sort	1.528 ²
	ACDCS Scanning	1.397 ²
	BMC Platform	1.453 ²
	Sack Sorting Machine BMC	1.362 ²
	Sack Sorting Machine SCF	1.550 ²
	Non-MODS	1.217 ²
Piggyback factors: ³		
Operation	<u>NONMODS</u>	<u>BMC</u> <u>MODS</u>
Opening Units		1.545
Manual Sack Handling		1.593
Pouching		1.598
Platform		1.784
Sack sorting machine		2.075
BMC Other		1.482
Allied	1.473	
TY 2003 Average Hourly Wage Rate for Clerks/Mailhandlers		\$30.767 ⁴
(Other Mail Processing)		
Premium Pay Factor		0.97032 ⁵
BMC Realization Factor		0.9713 ⁶
Pieces per Sack		141 ⁷
Pieces per Tray		188 ⁷
Pieces per Pallet		5763 ⁷

¹ Personal Needs, Fatigue and Delay Factor (Docket No. MC96-2, USPS LR-PRR-7).

² Mail Processing operation specific overhead factors for modeled costs (USPS LR-J-55, Table VII).

³ USPS LR-J-52, Attachment 12.

⁴ USPS LR-J-50, Chapter 9B.

⁵ USPS LR-J-52, Attachment 14.

⁶ Docket No. R94-1, Tr. 8/4006.

⁷ Docket No. R97-1, USPS LR-H-105 and LR-H-195.

Appendix E, Table 1
Computation of Input Percentages for Sack Models

Deposit Points	Pounds Dropshipped ¹		Pounds Plantloaded ¹		Total BY Pounds (000)		Dropshipped		Plantloaded		DS + PL
OAD	201,765	+	2,395	=	204,160		10.86%	+	0.13%	=	10.99%
OSCF	383,374	+	31,687	=	415,061		20.63%	+	1.71%	=	22.34%
OBMC	59,432	+	360,363	=	419,795		3.20%	+	19.39%	=	22.59%
DBMC	333,888	+	20,850	=	354,738		17.97%	+	1.12%	=	19.09%
DSCF	251,602	+	172	=	251,774		13.54%	+	0.01%	=	13.55%
DAO	212,623	+	0	=	212,623		11.44%	+	0.00%	=	11.44%
Totals	1,442,685		415,466		1,858,151		77.64%		22.36%		100.00%

Origin	BY Pounds	% of Origin Lbs		Dest	Flow	Type of Transp
		By Mail Flow ²	BY Pounds			
OAD	204,160	1.22%	2,491	DAO	1	Intra-SCF
		37.78%	77,132	DSCF	2	Intra-SCF
		38.39%	78,377	OSCF	3	Intra-SCF
		12.95%	26,439	OBMC	4	Intra-BMC
		9.65%	19,701	DBMC	5	Intra-BMC
OSCF	493,438	32.49%	160,318	DBMC	6	Intra-BMC
		43.62%	215,238	OBMC	7	Intra-BMC
		23.14%	114,182	DSCF	8	Inter-SCF
		0.75%	3,701	DAO	9	Inter-SCF
OBMC	661,471	100.00%	661,471	DBMC	10	Inter-BMC
DBMC	1,196,228	96.86%	1,158,667	DSCF	11	Intra-BMC
		3.14%	37,562	DAO	12	Intra-BMC
DSCF	1,410,441	100.00%	1,410,441	DAO	13	Intra-SCF
	191,313		191,313	DAO	13	Intra-SCF
DAO	1,858,130					

Deposit Points	Source	Pounds	Percent of Deposit Pt. Lbs.
OSCF	Mailer	383,374	77.69%
	Service Area/PL	110,064	22.31%
	Total	493,438	100.00%
OBMC	Mailer	59,432	8.98%
	Plantload	360,363	54.48%
	Service Area	241,676	36.54%
	Total	661,471	100.00%
DBMC	Mailer	333,888	27.43%
	OBMC/PL	661,471	54.35%
	Plantload	20,850	1.71%
	Service Area	200,869	16.50%
	Total	1,217,078	100.00%
DSCF	Mailer	251,602	15.71%
	Service Area	191,313	11.94%
	DBMC/PL	1,158,839	72.35%
	Total	1,601,754	100.00%

This table assigns BY pounds for each deposit point (Appendix C, Table 9) to the mail flow proportions (Appendix A, Table 3), in order to calculate the probabilities that deposited mail will receive an operation or handling.

¹ Appendix C, Table 9

² Appendix A, Table 3

Appendix E, Table 2
Computation of Input Percentages for Tray Models

Deposit Points	Pounds Dropshipped ¹		Pounds Plantloaded ¹		Total BY Pounds (000)		Dropshipped		Plantloaded		DS + PL
OAD	104,878	+	40,935	=	145,813		6.46%	+	2.52%	=	8.98%
OSCF	320,862	+	15,580	=	336,442		19.75%	+	0.96%	=	20.71%
OBMC	36,309	+	402,467	=	438,776		2.23%	+	24.77%	=	27.01%
DBMC	323,327	+	17,457	=	340,785		19.90%	+	1.07%	=	20.98%
DSCF	313,186	+	1,887	=	315,072		19.28%	+	0.12%	=	19.39%
DAO	47,625	+	76	=	47,700		2.93%	+	0.00%	=	2.94%
Totals	1,146,187		478,401		1,624,589		70.55%		29.45%		100.00%

Origin	BY Pounds	% of Origin Lbs.		Dest	Flow	Type of Transp
		By Mail Flow ²	BY Pounds			
OAD	145,813	1.22%	1,779	DAO	1	Intra-SCF
		37.78%	55,088	DSCF	2	Intra-SCF
		38.39%	55,978	OSCF	3	Intra-SCF
		12.95%	18,883	OBMC	4	Intra-BMC
		9.65%	14,071	DBMC	5	Intra-BMC
OSCF	392,420	32.49%	127,497	DBMC	6	Intra-BMC
		43.62%	171,174	OBMC	7	Intra-BMC
		23.14%	90,806	DSCF	8	Inter-SCF
		0.75%	2,943	DAO	9	Inter-SCF
OBMC	628,832	100.00%	628,832	DBMC	10	Inter-BMC
DBMC	1,111,185	96.86%	1,076,294	DSCF	11	Intra-BMC
		3.14%	34,891	DAO	12	Intra-BMC
DSCF	1,391,366	100.00%	1,391,366	DAO	13	Intra-SCF
	145,894		145,894	DAO	13	Intra-SCF
DAO	1,624,574					

Deposit Points	Source	Pounds	Percent of Deposit Pt Lbs.
OSCF	Mailer	320,862	81.77%
	Service Area/PL	71,558	18.23%
	Total	392,420	100.00%
OBMC	Mailer/PL	438,776	69.78%
	Service Area	190,057	30.22%
	Total	628,832	100.00%
DBMC	Mailer	323,327	18.58%
	Service Area	770,401	44.28%
	OBMC	628,832	36.14%
	PL	17,457	1.00%
	Total	1,740,018	100.00%
DSCF	Mailer	313,186	20.37%
	Service Area	145,894	9.49%
	Plantload	1,887	0.12%
	DBMC	1,076,294	70.01%
	Total	1,537,261	100.00%

This table assigns BY pounds for each deposit point (Appendix C, Table 9) to the mail flow proportions (Appendix A, Table 3), in order to calculate the probabilities that deposited mail will receive an operation or handling.

¹ Appendix C, Table 9

² Appendix A, Table 3

Appendix E, Table 3
Computation of Input Percentages for Pallet Models

Deposit Points	Pounds Dropshipped ¹		Pounds Plantloaded ¹		Total BY Pounds (000)	Dropshipped		Plantloaded		DS + PL
OAO	7,847	+	1,865	=	9,712	0.10%	+	0.02%	=	0.13%
OSCF	179,591	+	8,359	=	187,950	2.34%	+	0.11%	=	2.45%
OBMC	110,026	+	414,487	=	524,513	1.44%	+	5.41%	=	6.85%
DBMC	1,691,285	+	32,432	=	1,723,717	22.08%	+	0.42%	=	22.50%
DSCF	3,854,559	+	45,388	=	3,899,946	50.32%	+	0.59%	=	50.91%
DAO	1,314,070	+	0	=	1,314,070	17.16%	+	0.00%	=	17.16%
Totals	7,157,377		502,531		7,659,907	93.44%		6.56%		100.00%

Origin	BY Pounds	% of Origin Lbs.		BY Pounds	Dest	Flow	Type of Transp
OAO	9,712	By Mail Flow ²		118	DAO	1	Intra-SCF
				37.78%	3,669 DSCF	2	Intra-SCF
				38.39%	3,728 OSCF	3	Intra-SCF
				12.95%	1,258 OBMC	4	Intra-BMC
				9.65%	937 DBMC	5	Intra-BMC
OSCF	191,678			62,276	DBMC	6	Intra-BMC
				43.62%	83,610 OBMC	7	Intra-BMC
				23.14%	44,354 DSCF	8	Inter-SCF
				0.75%	1,438 DAO	9	Inter-SCF
OBMC	609,381	100.00%		609,381	DBMC	10	Inter-BMC
DBMC	2,396,311	96.86%		2,321,067	DSCF	11	Intra-BMC
		3.14%		75,244	DAO	12	Intra-BMC
DSCF	6,221,013 48,024	100.00%		6,221,013	DAO	13	Intra-SCF
				48,024	DAO	13	Intra-SCF
DAO	7,659,906						

Deposit Points	Source	Pounds	Percent of Deposit Pt. Lbs.
OSCF	Mailer	179,591	93.69%
	Service Area	12,088	6.31%
	Total	191,678	100.00%
OBMC	Mailer	110,026	18.06%
	Service Area	499,355	81.94%
	Total	609,381	100.00%
DBMC	Mailer	1,691,285	70.58%
	Service Area	95,645	3.99%
	OBMC	609,381	25.43%
	Total	2,396,311	100.00%
DSCF	Mailer	3,854,559	61.49%
	Service Area	93,411	1.49%
	DBMC	2,321,067	37.02%
	Total	6,269,036	100.00%

This table assigns BY pounds for each deposit point (Appendix C, Table 9) to the mail flow proportions (Appendix A, Table 3), in order to calculate the probabilities that deposited mail will receive an operation or handling.

¹ Appendix C, Table 9

² Appendix A, Table 3

Appendix E, Table 4
Input Percentages for Sack/Tray Models

<u>Facility</u>	<u>Container</u>	<u>Band</u>	Manual Induct <u>APC/QTR</u>	<u>SSM</u>	Roller <u>Table</u>	Manual Induct <u>Pallet</u>	Direct Runout <u>(bedload)</u>	Direct Runout <u>(container)</u>	<u>Sawtooth</u>
OSCF	Tray	69.97%							
OBMC	Sack		10.00%						
	Tray		10.00%	78.99%	21.01%	50.00%			
DBMC	Sack		10.00%				71.77%	1.75%	26.48%
	Tray		10.00%	78.99%	21.01%	50.00%	71.77%	1.75%	26.48%
DSCF	Sack			11.13%	88.87%			73.52%	26.48%
	Tray			4.93%	95.07%			73.52%	26.48%

This table consists of input percentages for different containers and deposit points. The figures are the same as those presented in Docket No. R2000-1, USPS-T-27, Attachment E, Table 4, and first presented in Docket No. R97-1.

Appendix E, Table 5
Productivities and Conversion Factors used in Sack Models

Operations	MTM Productivity¹ (minutes per sack)	BMC Variability²	BMC Productivity (with variability)	SCF Variability²	SCF Productivity (with variability)
Transport APC from incoming staging area to outgoing staging area	0.0787	95%	0.0748	90%	0.0708
Transport APC from staging area on AO dock into small truck	0.0123	93%	0.0114	93%	0.0114
Transport APC out of into small truck to/from staging area at SCF/BMC	0.0177	95%	0.0168	90%	0.0159
Transport APC to/from staging area on SCF/BMC dock out of into van	0.0193	95%	0.0183	90%	0.0174
Move APC to/from sort area to/from staging area	0.0394	95%	0.0374	90%	0.0355
Sort sacks at roller table to rolling containers (APCs)	0.2792	98%	0.2736	94%	0.2624
USPS unload sacks to conveyor	0.1599	95%	0.1519	90%	0.1439
Manually dump sacks into SSM	0.1817	95%	0.1726	90%	0.1635
Key sack at SSM (3 digit)	0.0787	100%	0.0787	100%	0.0787
Key sack at SSM (5 digit)	0.0917	100%	0.0917	100%	0.0917
Bedload sacks from conveyor	0.1851	95%	0.1758	90%	0.1666
Sort sacks at sawtooth to rolling containers (APCs)	0.3120	98%	0.3058	94%	0.2933
Load sacks onto APC	0.1178	95%	0.1119	90%	0.1060

Conversion Factors³

Sacks per APC/OTR	42
Sacks per van	1384

¹The MTM productivities are the same ones used by witness Acheson in Dockets No. MC95-1 and MC96-2, and witness Crum in Appendix E, Table 7 of LR-H-111 in Docket No. R97-1 and LR-I-175 in Docket No. R2000-1.

² Volume variabilities from USPS-T-13, Table 1.

³ Conversion factors are from Docket No. R97-1, LR-H-105 and LR-H-195.

Appendix E, Table 6
Productivities and Conversion Factors used in Tray Models

Operations	MTM Productivity¹ (minutes per tray)	BMC Variability²	BMC Productivity (with variability)	SCF Variability²	SCF Productivity (with variability)
Transport APC from incoming staging area to outgoing staging area	0.0976	95%	0.0927	90%	0.0878
Transport APC from staging area on AO dock into small truck	0.0152	93%	0.0141	93%	0.0141
Transport APC out of/in to small truck to/from staging area at SCF/BMC	0.0219	95%	0.0208	90%	0.0197
Transport APC to/from staging area on SCF/BMC dock out of/in to van	0.0239	95%	0.0227	90%	0.0215
Move APC to/from sort area to/from staging area	0.0488	95%	0.0464	90%	0.0439
Sort trays at roller table to rolling containers (APCs)	0.2792	98%	0.2736	94%	0.2624
USPS unload trays to conveyor	0.1058	95%	0.1005	90%	0.0952
Manually dump trays into SSM from APC	0.1412	95%	0.1341	90%	0.1271
Key tray at SSM (3 digit)	0.0787	100%	0.0787	100%	0.0787
Key tray at SSM (5 digit)	0.0917	100%	0.0917	100%	0.0917
Bedload trays from conveyor	0.1446	95%	0.1374	90%	0.1301
Sort trays at sawtooth to rolling containers (APCs)	0.2960	98%	0.2901	94%	0.2782
Load trays onto APC	0.1024	95%	0.0973	90%	0.0922
Band trays	0.1452	95%	0.1379	90%	0.1307
Transport pallet from van to staging area on SCF/BMC dock	0.0257	95%	0.0244	90%	0.0231
Move pallet to sort area from staging area	0.0224	95%	0.0213	90%	0.0202
Manually dump trays into SSM from pallet	0.1652	95%	0.1569	90%	0.1487

Conversion Factors³

Trays per APC/OTR	34
Trays per pallet	54
Trays per van	1384

¹The MTM productivities are the same ones used by witness Acheson in Dockets No. MC95-1 and MC96-2, and witness Crum in Appendix E, Table 7 of LR-H-111 in Docket No. R97-1 and LR-I-175 in Docket No. R2000-1.

² Volume variabilities from USPS-T-13, Table 1.

³ Conversion factors are from Docket No. R97-1, LR-H-105 and LR-H-195.

Appendix E, Table 7
Productivities and Conversion Factors used in Pallet Models

Operations	MTM Productivity¹ (minutes per pallet)	BMC Variability²	BMC Productivity (with variability)	SCF Variability²	SCF Productivity (with variability)
Transport pallet from incoming staging area to outgoing staging area	1.9704	95%	1.8719	90%	1.7734
Transport pallet from staging area on AO dock into van	0.6426	98%	0.6297	93%	0.5976
Transport pallet out of van to staging area at SCF/BMC	1.3877	95%	1.3183	90%	1.2489
Transport pallet from staging area on SCF/BMC dock into van	1.2852	95%	1.2209	90%	1.1567
Conversion Factors³					
Pallets per van	22				

¹The MTM productivities are the same ones used by witness Acheson in Dockets No. MC95-1 and MC95-2, and witness Crum in Appendix E, Table 7 of LR-H-111 in Docket No. R97-1 and LR-I-175 in Docket No. R2000-1.

² Volume variabilities from USPS-T-13, Table 1.

³ Conversion factors are from Docket No. R97-1, LR-H-105 and LR-H-195.

**Appendix E, Table 8
Input Sheet**

Personal Needs, Fatigue, and Delay (P, F, and D factor): 1.15 ¹

Overhead Factors:	SCF Platform	1.485 ²
	SCF Manual Sack Sort	1.528 ²
	ACDCS Scanning	1.397 ²
	BMC Platform	1.453 ²
	BMC Sack Sorting Machine	1.362 ²
	Non-MODS	1.217 ²

Piggyback factors:

Operation	All Facilities	BMC	Non-BMC
Opening Units	1.545 ³		
Other mail processing	1.405 ³		
Platform		1.784 ³	1.655 ³
Sack sorting maching		2.075 ³	1.844 ³

FY 2003 Average Hourly Wage Rate for Clerks/Mailhandlers \$30.77 ⁴

Premium Pay Factor 0.9703 ⁵

BMC Realization Factor 0.9713 ⁶

Pieces per Sack 141 ⁷

Pieces per Tray 188 ⁷

Pieces per Pallet 5763 ⁷

¹ Personal Needs, Fatigue and Delay Factor (Docket No. MC96-2, USPS LR-PRR-7).

² Mail Processing operation specific overhead factors for modeled costs (USPS LR-J-55, Table VII).

³ USPS LR-J-52, Attachment 12.

⁴ USPS LR-J-50, Chapter 9B.

⁵ USPS LR-J-52, Attachment 14.

⁶ Docket No. R94-1, Tr. 8/4006.

⁷ Docket No. R97-1, USPS LR-H-105 and LR-H-195.

Appendix F, Table 1
Inputs to Periodicals Dropship Models
Productivities and Conversion Factors

<u>Productivity</u> <u>Units per Manhour</u>	<u>Variability</u> ¹	<u>Productivity</u> <u>With Variability</u> ²	<u>Operation</u>	<u>Source of Productivity Estimate</u>
145.8	0.90	161.98	unload sacks from van to in-house container (IHC) - (SCF)	Docket No. R97-1, LR-H-132, page 329.
20.0	0.90	22.22	move all-purpose container (APC), IHC to outbound dock - (SCF)	Docket No. R97-1, LR-H-111, Appendix F
172.7	0.95	181.77	load sacks to van from IHC - (BMC)	Docket No. R97-1, LR-H-132, page 329.
176.9	0.90	196.57	unload sacks to conveyor - (SCF)	Docket No. R97-1, LR-H-132, page 329.
172.7	0.90	191.87	load sacks to van from extendible conveyor - (SCF)	Docket No. R97-1, LR-H-132, page 329.
420.0	1.00	420.00	sack sorter - (SCF)	National Database, PIRS average 1995-2000
11.6	0.95	12.22	unload pallets - (BMC)	Docket No. R97-1, LR-H-132, page 329.
6.7	0.90	7.44	move pallets to outbound dock - (SCF)	Docket No. R97-1, LR-H-111, Appendix F
12.7	0.95	13.34	load pallets to van - (BMC)	Docket No. R97-1, LR-H-132, page 329.
176.9	0.95	186.23	unload sacks to extendible conveyor - (BMC)	Docket No. R97-1, LR-H-132, page 329.
172.7	0.95	181.77	load sacks to van from extendible conveyor - (BMC)	Docket No. R97-1, LR-H-132, page 329.
9.8	0.95	10.32	load wheeled containers to van - (BMC)	Docket No. R97-1, LR-H-132, page 329.
172.7	0.98	176.21	load sacks from roller table to IHC - (BMC)	Docket No. R97-1, LR-H-132, page 329.
420.0	1.00	420.00	sack sorter - (BMC)	National Database, PIRS average 1995-2000
6.7	0.95	7.01	crossdock pallets - (BMC)	Docket No. R97-1, LR-H-132, page 329.
100.0	1.00	100.00	primary NMO sort - (BMC)	National Database, PIRS average 1995-2000
219.0	1.00	219.00	secondary NMO sort - (BMC) [scf]	LR-H-107, MODS, Operation 200
167.1	0.95	175.89	load NMOs to van from IHC - (BMC)	Docket No. R97-1, LR-H-132, page 329.

<u>Container</u> <u>Conversion Factor</u>	<u>Description</u>	<u>Source</u>
26.5	sacks per IHC	Docket No. R97-1, LR-H-111, Appendix F
40.0	sacks per BMC container	Docket No. R97-1, LR-H-111, Appendix F

<u>Percentage</u>	<u>Flow Description</u>	<u>Source</u>
73.79%	sack sorter machine (SSM) to load to van from extendible conveyor	Docket No. R97-1, LR-H-111, Appendix F
16.01%	SSM to roller table to BMC containers and load BMC containers to van	Docket No. R97-1, LR-H-111, Appendix F
10.20%	SSM to roller table to in-house containers and load sacks to van from IHCs	Docket No. R97-1, LR-H-111, Appendix F

¹ USPS-T-13, Table 1

BMC volume variabilities are applied when marginal productivities at BMCs are used as proxies for marginal productivities at SCFs.

² Productivity divided by volume variability.

Appendix F, Table 2
Inputs to Periodicals Dropship Models
Piggyback Factors, Wages and Volumes

<u>Value</u>	<u>Description</u>	<u>Source</u>
\$30.840	TY 2003 Other Mail Processing Productive Hourly Wage Rate	USPS LR-J-50, Chapter 9B.
30.53	Periodical Pieces per Sack	USPS LR-J-114
1,728.89	Periodical Pieces per Pallet	USPS LR-J-114
11.13%	Proportion of SCFs That Are Mechanized	Docket No. MC95-1, Exhibit USPS-T-11U
88.87%	Proportion of SCFs That Are Not Mechanized	Docket No. MC95-1, Exhibit USPS-T-11U
30.91%	Proportion of Periodicals Mail in Sacks	USPS LR-J-114
69.09%	Proportion of Periodicals Mail on Pallets	USPS LR-J-114
1.018	Base Year FY 2000 Premium Pay Factor for All Facilities	USPS LR-J-52, Attachment 14.
2.1236	FY 2000 Pieces per Pound for Outside County Publications	LR-J-2, FY 2000 Cost and Revenue Analysis Report
0.9713	BMC Realization Factor	Docket No. R94-1, Tr. 8/4006
96.86%	Proportion of Volume from DBMCs to DDUs via DSCFs	Docket No. R90-1, Exhibit USPS-12B, p. 5
3.14%	Proportion of Volume from DBMCs Directly to DDUs	Docket No. R90-1, Exhibit USPS-12B, p. 5
2.075	Piggyback Factor for Sack Sorters at BMCs	USPS LR-J-52, Attachment 12, BMCS SSM
1.844	Piggyback Factor for Sack Sorters at Non-BMCs	USPS LR-J-52, Attachment 12, MODS 13 Sacks_M
1.784	Piggyback Factor for Platform at BMCs	USPS LR-J-52, Attachment 12, BMCS PLA
1.655	Piggyback Factor for Platform at Non-BMCs	USPS LR-J-52, Attachment 12, MODS 17 Platform
1.545	Piggyback Factor for Opening Units	USPS LR-J-52, Attachment 12, MODS 17 Oppref
1.482	Piggyback Factor for Other Mail Processing - BMCs	USPS LR-J-52, Attachment 12, BMCS OTHR
1.019	Base Year FY 2000 Premium Pay Factor for Non-BMC Facilities	USPS LR-J-52, Attachment 14.
2.1958	FY 2000 Pieces per Pound for Total Periodicals	LR-J-2, FY 2000 Cost and Revenue Analysis Report

Appendix F, Table 3

Periodicals Calculation of Crossdocking Costs at SCFs

	(1) Productivity Containers/Hr	(2) Pieces per Container	(3) Wage Rate	(4) Piggyback Factor	(5) Premium Pay Factor	(6) Cost per Hr Col 3*Col 4*Col 5	(7) Pieces per Hr Col 1*Col 2	(8) Cost per Piece Col 6/Col 7
Sacks								
Manual	Unload sacks from van to in-house container	161.98	30.53	30.84	1.655	1.01891	4,944.61	\$0.010518
	Move APC to outbound dock	588.89	30.53	30.84	1.655	1.01891	17,976.83	\$0.002893
	Load sacks to van	181.77	30.53	30.84	1.655	1.01891	5,548.85	\$0.009372
Mechanized	Unload sacks to conveyor	196.57	30.53	30.84	1.655	1.01891	6,000.77	\$0.008666
	Load sacks to van from extendible conveyor	191.87	30.53	30.84	1.655	1.01891	5,857.12	\$0.008879
	Sack sorter	420.00	30.53	30.84	1.844	1.01891	12,821.21	\$0.004519
Pallets								
Manual	Unload pallets	12.22	1,728.89	30.84	1.655	1.01891	21,121.62	\$0.002462
	Move pallets to outbound dock	7.44	1,728.89	30.84	1.655	1.01891	12,870.65	\$0.004041
	Load pallets to van	13.34	1,728.89	30.84	1.655	1.01891	23,059.80	\$0.002255

Weighted Cost per Piece

	(9) Percent of Volume in Container Type	(10) Percent of Volume By Method	(11) % Overall Col 9*Col 10	(12) Cost Per Piece	(13) Weighted Cost Per Piece Col 11*Col 12
Sacks	30.91%	88.87%	27.47%	0.022783	\$0.006259
		11.13%	3.44%	0.022065	\$0.000759
Pallets	69.09%	100%	69.09%	0.008758	\$0.006051
Total	100%		100%		\$0.013069

Weighted Cost per Pound

\$ 0.027753 ²

¹ Includes a container conversion factor of 26.5 sacks per IHC from Appendix F, Table 1.

² Weighted average cost per piece multiplied by test year pieces per pound (Appendix F, Table 2).

Source:

- Column (1) Appendix F, Table 1
- Column (2) Appendix F, Table 2
- Column (3) Appendix F, Table 2
- Column (4) Appendix F, Table 2
- Column (5) Appendix F, Table 2
- Column (9) Appendix F, Table 2
- Column (10) Appendix F, Table 2

Appendix F, Table 4

Periodicals
Calculation of Crossdocking Costs at BMCs

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	% Sack Flow from BMC Sack Sorters	Productivity containers/hr	Pieces per Container	Wage Rate	Piggyback Factor	Premium Pay Factor	BMC Realization Factor	Cost per Hour Cost/Cds/Cds/Cat	Pieces per Hour Cat 2/Cat 3	Cost per Piece Cat 2/Cat 3
Sacks										
Manual Unload sacks to extendible conveyor	N/A	186.23	30.53	\$30.84	1.784	1.01795	0.9713	\$54.3988	5,684.94	\$0.00957
Load sacks to van from extendible conveyor	73.79%	181.77	30.53	\$30.84	1.784	1.01795	0.9713	\$54.3988	5,548.85	\$0.00980
Load sacks from roller table to IHC	16.01%	176.21	30.53	\$30.84	1.545	1.01795	0.9713	\$47.1110	5,378.99	\$0.00876
Load containers to van	412.63%		30.53	\$30.84	1.784	1.01795	0.9713	\$54.3988	12,598.28	\$0.00432
Load sacks from roller table to IHC	10.20%	176.21	30.53	\$30.84	1.545	1.01795	0.9713	\$47.1110	5,378.99	\$0.00876
Load sacks to van from IHC	10.20%	181.77	30.53	\$30.84	1.784	1.01795	0.9713	\$54.3988	5,548.85	\$0.00980
Sack sorter	N/A	420.00	30.53	\$30.84	2.076	1.01795	0.9713	\$63.2721	12,821.21	\$0.00493
Pallets										
Manual Unload pallets	N/A	12.22	1,728.89	\$30.84	1.784	1.01795	0.9713	\$54.3988	21,421.62	\$0.00258
Crossdock pallets	N/A	7.01	1,728.89	\$30.84	1.482	1.01795	0.9713	\$45.1900	12,118.63	\$0.00373
Load pallets to van	N/A	13.34	1,728.89	\$30.84	1.784	1.01795	0.9713	\$54.3988	23,059.80	\$0.00236

Weighted Cost per Piece

	(11)	(12)	(13)	(14)	(15)
	Percent of Volume in Container Type	Percent Vol. In Operation	% Overall Col 11*Col 12	Cost Per Piece	Weighted Cost/Pc Col 13*Col 14
Sacks	30.91%				
unload ext		73.79%	22.81%	\$0.009568	\$0.002858
roller		16.01%	4.95%	\$0.009804	\$0.002236
roller IHC		10.20%	3.15%	\$0.013077	\$0.000647
SSM		100.00%	30.91%	\$0.018562	\$0.00585
Manual		100.00%	69.09%	\$0.004935	\$0.001526
Pallets	69.09%				
Total	100%			\$0.008604	\$0.005965
Weighted Cost per Piece					\$0.013038

Weighted Cost per Pound

\$ 0.293598 ²

¹ Includes a container conversion factor of 40 sacks per BMC container from Appendix F, Table 1.

² Weighted average cost per piece multiplied by test year pieces per pound (Appendix F, Table 2).

Source:

- Column (1) Appendix F, Table 1
- Column (2) Appendix F, Table 1
- Column (3) Appendix F, Table 2
- Column (4) Appendix F, Table 2
- Column (5) Appendix F, Table 2
- Column (6) Appendix F, Table 2
- Column (7) Appendix F, Table 2
- Column (11) Appendix F, Table 2

Appendix F, Table 5

Periodicals Calculation of Unloading Costs at DDUs

		(1) Productivity Containers/Hr	(2) Pieces per Container	(3) Wage Rate	(4) Piggyback Factor	(5) Premium Pay Factor	(6) Cost per Hour Col 3*Col 4*Col 5	(7) Pieces per Hour Col 1*Col 2	(8) Cost per Piece Col 6/Col 7
Sacks Pallets	Manual	161.98	30.53	\$30.84	1.655	1.01891	\$52.01	4,944.61	\$0.010518
	Manual	12.22	1,728.89	\$30.84	1.655	1.01891	\$52.01	21,121.62	\$0.002462

Weighted Cost per Piece

		(9)	(10) Percent Vol. In Operation	(11) % Overall Col 9*Col 10	(12) Cost/Piece	(13) Weighted Cost Per Piece Col 11*Col 12
Sacks Pallets	Percent of Volume in Container Type	Manual	100.00%	30.91%	0.0105176	\$0.003251
		Manual	100.00%	69.09%	0.0024622	\$0.001701
Total		100%		100%		\$0.004952

Source:

- Column (1) Appendix F, Table 1
- Column (2) Appendix F, Table 1
- Column (3) Appendix F, Table 2
- Column (4) Appendix F, Table 2
- Column (5) Appendix F, Table 2
- Column (9) Appendix F, Table 2

Appendix F, Table 6
Periodicals
Handling Costs Avoided

<u>Facility Type</u>	<u>Cost/Piece</u>	<u>Cost/Pound</u>
SCF	\$0.0131 ¹	\$0.0278 ²
BMC	\$0.0139 ³	\$0.0296 ⁴
Total Nontransportation Cost Savings-DADC	\$0.0034 ⁵	\$0.0072 ⁶
Total Nontransportation Cost Savings-DSCF	\$0.0165 ⁷	\$0.0350 ⁸
Total Nontransportation Cost Savings-DDU M	\$0.0341 ⁹	\$0.0748 ¹⁰

¹ Appendix F, Table 3

² Cost/piece multiplied by pieces/pound from Appendix F, Table 2.

³ Appendix F, Table 4

⁴ Cost/piece multiplied by pieces/pound from Appendix F, Table 2.

⁵ Total Nontransportation Cost Savings equals 100% of BMC costs minus 80% of SCF costs.

⁶ Cost/piece multiplied by pieces/pound from Appendix F, Table 2.

⁷ Total Nontransportation Cost Savings equals 100% of BMC costs plus 20% of SCF costs.

⁸ Cost/piece multiplied by pieces/pound from Appendix F, Table 2.

⁹ Total Nontransportation Cost Savings for DDU mail is the cost savings for DSCF mail plus the additional savings from Table 5 for offloading the truck at the DDU plus one SCF handling.