ORIGINAL

USPS-T-3

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

MAILING ONLINE EXPERIMENT

Docket No. MC2000-2

DIRECT TESTIMONY
OF
CHONG BUM LIM
ON BEHALF OF
UNITED STATES POSTAL SERVICE

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SUPPORTING LIBRARY REFERENCE:

USPS-LR-2/MC2000-2 : Unit Costs Used By Witness Lim (USPS-T-3)

DIRECT TESTIMONY

OF

CHONG BUM LIM

AUTOBIOGRAPHICAL SKETCH

My name is Chong Bum Lim. I am a Principal Consultant with the Washington Consulting Practice at PricewaterhouseCoopers, LLP (PwC). I have held this position since May 1998, focusing on Internet strategies and development of Web solutions within the Electronic Business service team, and providing expertise in electronic commerce solutions utilizing the Internet. In conjunction with this role, I provided expert testimony (USPS-ST-9) before the Postal Rate Commission during the previous Mailing Online case, Docket No. MC98-1.

Previously, I was an Internet Consultant with General Electric Information Services (GEIS), where I defined requirements for Web-based electronic data interchange (EDI) projects. Before that, I was the marketing manager with IDSI, an Internet Service Provider, for which I defined business costs for Internet access. Additionally, I worked for Warner, Blue & Mahan, a strategic consulting firm, developing a business plan that projected revenue and cost streams for a new pharmaceutical joint venture.

I completed my Bachelor of Science degree at The George Washington University, majoring in computer engineering and subsequently earned an MBA from The College of William & Mary.

I. PURPOSE OF TESTIMONY

The purpose of this testimony is to present the total information technology (IT) costs for Mailing Online (MOL) for the experimental phase, which spans program years 1, 2 and 3.[1] This testimony provides the complete MOL IT costs based on the system requirements, including use of the USPS.com channel.

I separated the IT costs into the same categories used in my Docket No. MC98-1 testimony: dedicated hardware, software, telecommunications / networking, and related personnel and service costs. As before, to ensure that MOL costs are not understated, I took a conservative approach to provide all MOL IT costs caused by the MOL experiment.

This testimony presents a summary of the results of my analysis in Section II. I provide a functional overview of the USPS.com and MOL systems in Section III and then explain the methodology used to derive the cost estimates in Section IV. A summary of my testimony and conclusions appears in Section V. Detailed IT costs of MOL are provided in the attached workpapers.

[1] Under the current schedule, these years correspond to calendar dates April 2000 through March 2003.

II. SUMMARY OF RESULTS

Table 1, organized by functional area and cost category, summarizes the total IT costs for MOL version 3 and subsequent versions during the three-year MOL experiment.

Table 1: Summary of Total Information Technology Costs

System Development & Implementation	Workpaper A	$3,438,687	$2,423,913	$1,450,087	$0	$13,874,073	$21,186,760
Administrative Mgmt & Maintenance	Workpaper B	$0	$60,000	$0	$2,687,400	$3,195,415	$5,942,815
Help Desk	Workpaper C	$3,000	$10,998	$0	$735,000	$2,766,767	$3,515,765
MOL Print Sites	Workpaper D	$465,711	$29,000	$25,632	$0	$3,950,000	$4,470,343
Total		$3,907,398	$2,523,912	$1,475,719	$3,422,400	$23,786,255	$35,115,683

Table 2 separates the total IT costs for the experiment into pre-experiment costs and program year costs, providing the data necessary for use by witness Poellnitz, USPS-T-2.

Pre-experiment costs are all incurred before the MOL experiment goes live.[2] These costs consist mainly of the hardware, software, installation and development services which do not change during the three years of the experiment. Program year costs are incurred after MOL goes live. These costs consist mostly of personnel and labor costs for maintenance and enhancements, and IT costs for the roll-out of the print sites. I discuss further the nature of these cost components in Section III.

[2] Live production refers to when the system is made publicly available on the Internet.

Table 2: Pre-Experiment Versus Program Year Costs

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
System Development & Implementation	Workpaper E, Line 11	$9,503,251	$4,880,226	$4,487,841	$2,315,443	$21,186,760
Administrative Mgmt & Maintenance	Workpaper E, Line 17	$28,129	$1,550,695	$2,611,918	$1,752,074	$5,942,815
Help Desk	Workpaper E, Line 24	$0	$847,226	$1,211,119	$1,457,420	$3,515,765
MOL Print Sites	Workpaper E, Line 31	$103,069	$1,216,220	$1,591,055	$1,560,000	$4,470,343
[illegible]		[illegible]	[illegible]	$9,901,952	$7,084,937	$35,115,683

III. MAILING ONLINE FUNCTIONAL DESCRIPTION

A. System Overview

The essential function of MOL is to enable Postal Service customers to use the Internet to upload electronic documents for subsequent printing, finishing, entry into the mailstream, and delivery.

The USPS.com Web site is the main Internet portal for the Postal Service.[3] MOL will be one of many services that can be accessed by users who visit USPS.com.

USPS.com already exists, but it is being redesigned to be more dynamic. An application called Broadvision will be used to build and maintain the dynamic nature of the site as well as to offer other features. Furthermore, the new USPS.com site will be hosted by a new hardware infrastructure, the Electronic Commerce Infrastructure (ECI). The goal of these initiatives is to provide an Internet portal with a common platform for integrated information and services that provides common functions such as registration and payment.

Although MOL can be accessed through USPS.com, MOL itself will not utilize Broadvision. In addition, the MOL application will not use the ECI hardware, but will communicate with it. The MOL system will be independent from the USPS.com system, and will utilize only the USPS.com registration and

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[3] Portal is a commonly used term in the online industry to represent a collective Web site that provides a single entry point to information and services. It is similar to the term "channel" described in the testimony of witness Takis (USPS-T-4) on page 1.

payment functions. These two components of USPS.com support a number of products and services, and they would exist regardless of the existence of MOL.

MOL utilization of the USPS.com registration database is a simple process. As users register for USPS.com, their user information is stored in a database upon which MOL can then query. MOL then maintains the user information independently.

Payment processing is the other area that requires MOL interaction with USPS.com. A payment transaction requires an interaction with the USPS.com payment application client/server software. The USPS.com payment server should readily handle transactions for services well in excess of the currently planned requirements.

The final area of interaction between MOL and USPS.com is the hand-off of a user's Internet session. This process will be accomplished through a redirection of the Internet session from the USPS.com Web servers to the MOL Web servers while also passing user information from USPS.com to MOL.

Unlike the previous system under POL, MOL now has a separate Web server capability, as well as database and tape back-up systems. MOL stands as a comparatively more independent system than it was at the time of Docket No. MC98-1.

B. Description of Program Year Components

A variety of activities will occur throughout the program years of the MOL experiment. These activities include hardware and software maintenance and

MOL system enhancements. Hardware and software maintenance is necessary to keep the system functioning properly over time. Such costs can be expected to occur regardless of usage and are usually incurred through time.

MOL system enhancements are scheduled to be implemented during the experiment program years. These planned enhancements are designed to increase the functionality of the MOL system and are planned regardless of MOL usage. The MOL system design, moreover, is scaled to handle resource requirements for the full period of the experiment.

C. Changes From the Previous Version of the MOL System

The overall IT costs for MOL are larger than those presented in my Docket No. MC98-1 testimony (USPS-ST-9), for three reasons. First, costs for planned enhancements during the three-year period of the experiment have been added. Second, several of the shared areas in the old system under PostOffice Online (POL) have now become part of MOL. Third, the period of the experiment has expanded from two to three years.

Planned Enhancements. Most of the MOL enhancements to be done in the program years after implementation relate to improved monitoring and feedback to and from the print sites. Examples include:

- warning when the work assigned to any printer exceeds 80 percent of capacity;
- permitting print sites to view print jobs being assembled for transmission to that site;
- providing easy reconciliation of print contractor invoices with MOL print logs; and

- permitting print sites to regenerate any single document or sequence of documents for reprinting.

Shared Components. In addition, MOL is the sole cause of the cost of some components that were previously shared with POL. For instance, while costs for the tape backup system were shared by MOL and POL, these costs are now borne exclusively by MOL. Additionally, the cost of the database is now MOL-specific.

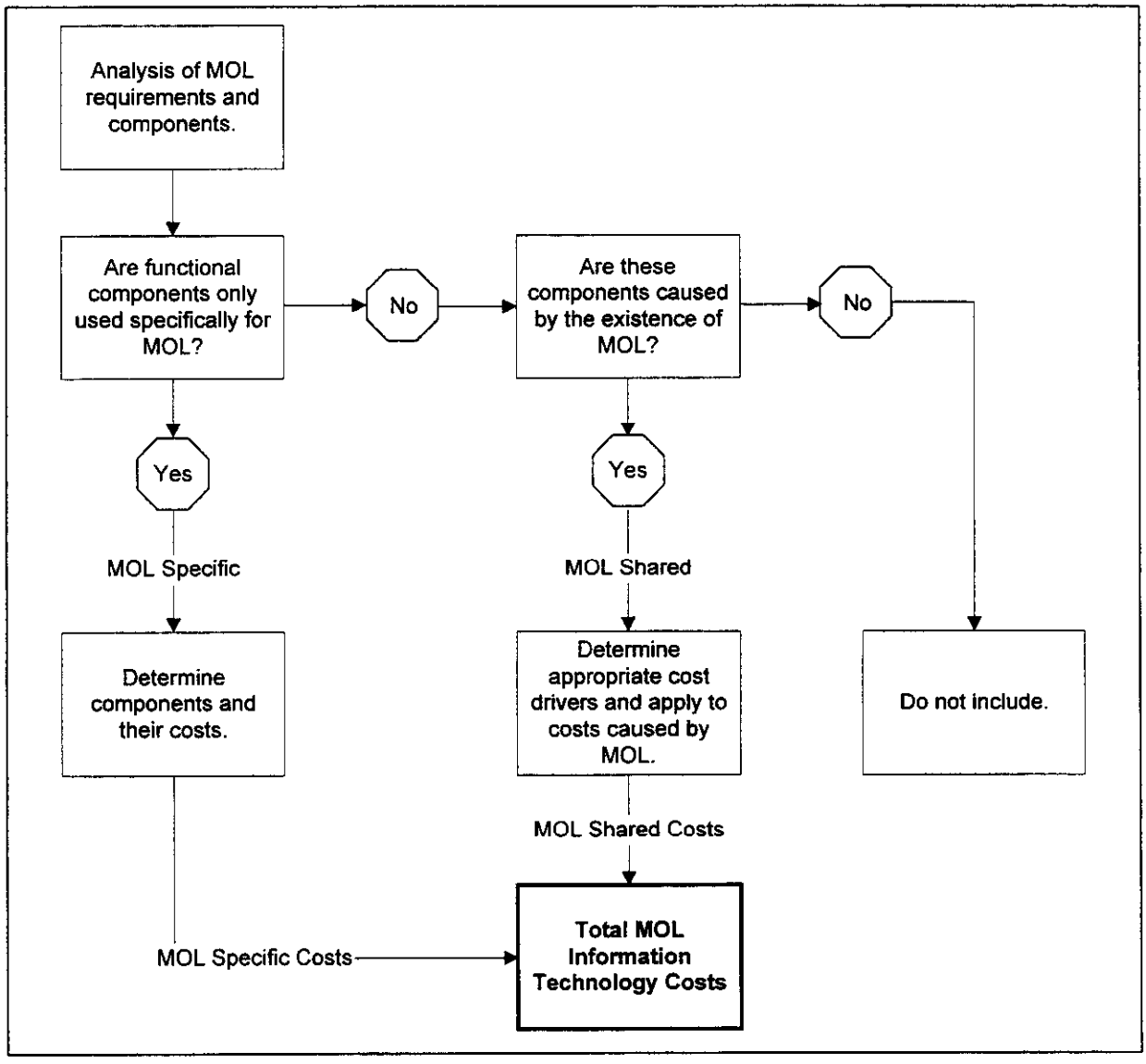
The inclusion of these previously shared components in MOL has made it more of a self-functioning system and less dependent on the USPS.com system. As a result of this independence from USPS.com, MOL is responsible for a portion of the costs in only two functional areas: the help desk and T3 Internet connections.

Experimental Period. Finally, I include costs for three years, instead of two years, as in my Docket No. MC98-1 testimony.

IV. METHODOLOGY

This section describes the bottom-up methodology for gathering and estimating MOL IT costs. Overall economic costing testimony is provided by witness Takis in USPS-T-4.

Diagram 1: Methodology



As indicated in Diagram 1, I first identified the complete set of MOL specifications and components, then determined which are specific to MOL and

which are shared. MOL-specific components are included in the MOL system costs together with an appropriate portion of shared components.

The appropriate portion of shared components was determined by asking, "What components are caused by the existence of the MOL program?" Only the components caused by MOL were analyzed further, while those that remained the same regardless of whether MOL existed were disregarded. The economic costing basis for excluding components not caused by MOL is discussed in detail by witness Takis (USPS-T-4).

The technical components of MOL's cost figures were then categorized into four functional areas (as in my previous testimony), and separated by the four MOL environments: Production and Staging (both located in San Mateo, California), and Development and Testing (both located in Reston, Virginia). The four functional areas are:

- Systems Development and Implementation
- Administrative Management and Maintenance
- Print Sites
- Help Desk

As during the market test, the help desk will provide assistance for users of MOL and other products. The most relevant cost driver for help desk components is the number of service interactions between the help desk and

users.[4] Specifically, I used the number of calls and email inquiries received by the help desk during the market test. Although this may not correspond directly to the experimental period under USPS.com, this was the best driver available. This analysis showed that 25 percent (rounded down from 25.02 percent) of the phone calls and emails were MOL-related. See Workpapers, endnote h.

Similarly, numerous applications and users share the two T3 Internet connections already installed at the Postal Service San Mateo location. The charge for the T3 line in California is graduated, based on usage. Based on estimates from developers and my assessment of the MOL requirements, it was determined that a maximum of 12Mbps bandwidth would be required for MOL. Based on current usage levels in San Mateo, and sharing on the load into 6Mbps usage per T3 connection[5], the MOL T3 telecommunication cost was determined to be $18,000 per month per T3 connection.

In the final step, we added the two sets of costs – costs specific to MOL and those costs of the shared help desk and T3 Internet costs – to estimate the total IT costs for the MOL experiment.

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[4] Certain help desk and personnel are dedicated to MOL, so 100 percent of these costs are allocated to MOL. See Workpaper C.

[5] The Internet connection will be balanced between the two T3 connections. Therefore, to cost the MOL load, the 12Mbps usage was halved between the two T3 connections.

V. CONCLUSION

Since my previous testimony, MOL has taken on additional components and has become integrated with, although fairly independent from, USPS.com. Using the methodology explained in Section IV, I analyze and present the complete MOL IT system costs for the planned three-year period of the experiment for MOL under the USPS.com channel. Costs are analyzed in terms of:

- Functions: the collection of all system components organized by the role or the purpose of that set of components (i.e., System Development and Implementation, Administrative Management and Maintenance, Print Sites, and Help Desk).
- Cost Categories: the types of items procured (i.e., Hardware, Software, Telecommunication and Networking, Personnel and Services).
- Locations: Geographically separate sites where work is conducted (i.e., San Mateo and Reston).
- Pre-experiment versus program year: the designation of costs as either required for the initial launch of the system, or as occurring during the operation of the experiment.

Workpaper A

MOL System Development & Implementation

Item	Description	Manufacturer	Notes	Production[A] San Mateo	Staging[A] San Mateo	Development[A] Reston	Test[A] Reston	Total Quantity[B]	Unit Cost	Extended Cost[C]
1	**Hardware**									
2	**Core System**									
3	72-inch StorEdge Expansion Rack with 2 power sequencers	Sun		1	1	0	1	3	$ 4,216	$ 12,647
4	Fan assembly for 72' expansion cabinet	Sun		1	1	0	1	3	$ 923	$ 2,769
5	Enterprise 4500 Server Base Package, standalone Enclosur	Sun		1	1	1	1	4	$ 15,523	$ 62,093
6	Rack mount rails for E4500	Sun		1	1	1	1	4	$ 233	$ 932
7	CPU/Memory Board, 2 empty CPU slots, 2 empty memory b	Sun		5	5	3	5	18	$ 2,633	$ 47,401
8	400MHz UltraSPARC Module with 4MB external cache	Sun		10	10	6	10	36	$ 5,498	$ 197,921
9	1 G-Byte Memory Expansion (8x128 MB memory modules)	Sun		10	10	6	10	36	$ 5,121	$ 184,338
10	SBus I/O Board w/ three empty SBus slots, two empty 100 M	Sun		3	3	3	3	12	$ 2,102	$ 25,225
11	100 MByte/sec FC-AL GBIC Module	Sun		4	4	2	4	14	$ 286	$ 4,010
12	36-Gbyte (4x9.1-Gbyte) Sun StorEdge D1000 for rack mount	Sun		1	1	1	1	4	$ 9,641	$ 38,564
13	2-meter 68pin External SCSI Cable/ Opt SCI Cable	Sun		2	2	1	2	7	$ 78	$ 546
14	Quad FastEthernet 2.0 SBus (QFE)	Sun		0	0	2	0	2	$ 952	$ 1,904
15	Gigabit Ethernet 2.0 Sbus Card	Sun		2	2	0	2	6	$ 1,184	$ 7,106
16	TurboGxplus 8-bit color graphics card	Sun		1	1	1	1	4	$ 588	$ 2,352
17	SBus Ultra Differential F/W SCSI Host Adapter	Sun		6	6	4	6	22	$ 618	$ 13,603
18	2meter 68-pin External SCSI Cable	Sun		1	1	1	1	4	$ 78	$ 312
19	*Enterprise Power/Cooling Module, 300W*	*Sun*		2	2	2	2	*8*	$ 665	$ 5,322
20	Solaris 7 Server Media Kit	Sun		1	1	1	1	4	$ 53	$ 212
21	Wyze Terminal WY-65 White	Wyse		1	1	1	1	4	$ 339	$ 1,356
22	Wyse Keyboard	Wyse		1	1	1	1	4	$ 81	$ 324
23	254.8-Gbyte StorEdge A5100 (14 X 18.2GB, 7200 rpm half-h	Sun		2	2	1	2	7	$ 32,450	$ 227,151
24	StorageNet Access HUB 32 ports	StorageTek		0	0	0	1	1	$ 30,132	$ 30,132
25	Cable Assy, Fiber, SC Duplex, 50U,50M	StorageTek		0	0	0	3	3	$ 277	$ 831
26	Cable Assy, Fiber, SC Duplex, 50U,100M	StorageTek		0	0	0	3	3	$ 462	$ 1,386
27	FC/SCSI Router, 3200	StorageTek		0	0	0	3	3	$ 8,014	$ 24,042
28	Universal Equipment Cabinet	StorageTek		0	0	0	1	1	$ 2,834	$ 2,834
29	9710-003 Cart. Lib. 252 Slots w/FC9903,2017	StorageTek		0	0	0	1	1	$ 47,274	$ 47,274
30	HBA, Jaycore 32 Bit SBUS	StorageTek		0	0	0	3	3	$ 3,440	$ 10,320
31	ACSLS for 9710 1190-U97 w/FC 2926/240	StorageTek		0	0	0	1	1	$ 2,000	$ 2,000
32	ACSLS Server 4443-UX1	StorageTek		0	0	0	1	1	$ 8,439	$ 8,439
33	9840-L01, Library, SCSI	StorageTek		0	0	0	5	5	$ 20,550	$ 102,750
34	9840 Media Labeled	StorageTek		0	0	0	60	60	$ 78	$ 4,692
35	*9840 Cleaner Cartridge Labeled*	*StorageTek*		0	0	0	2	2	$ 70	$ 140
36	Professional Services	StorageTek		0	0	0	72	72	$ 160	$ 11,520
37	StorageNet Access HUB 32 ports	StorageTek		1	0	0	0	1	$ 30,132	$ 30,132
38	Cable Assy, Fiber, SC Duplex, 50U,50M	StorageTek		4	0	0	0	4	$ 277	$ 1,108

Workpaper A (page 2)

MOL System Development & Implementation

Item	Description	Manufacturer	Notes	Production[A] San Mateo	Staging[A] San Mateo	Development[A] Reston	Test[A] Reston	Total Quantity[B]	Unit Cost[C]	Extended Cost[C]
39	Cable Assy, Fiber, SC Duplex, 50U,100M	StorageTek		7	0	0	0	7	$ 462	$ 3,234
40	FC/SCSI Router, 3200	StorageTek		7	0	0	0	7	$ 8,014	$ 56,098
41	Universal Equipment Cabinet	StorageTek		1	0	0	0	1	$ 2,834	$ 2,834
42	9330-002 Wolfcreek LMU-ACSLS	StorageTek		1	0	0	0	1	$ 30,608	$ 30,608
43	HBA, Jaycore 32 Bit SBUS	StorageTek		4	0	0	0	4	$ 3,440	$ 13,760
44	ACSLS, UNIX HSC	StorageTek		1	0	0	0	1	$ 35,200	$ 35,200
45	ACSLS Server 4443-UX1	StorageTek		1	0	0	0	1	$ 8,439	$ 8,439
46	9840-L01, Library, SCSI	StorageTek		14	0	0	0	14	$ 20,550	$ 287,700
47	9840 Media Labeled	StorageTek		1000	0	0	0	1000	$ 78	$ 78,200
48	9840 Cleaner Cartridge Labeled	StorageTek		10	0	0	0	10	$ 70	$ 702
49	Professional Services	StorageTek		72	0	0	0	72	$ 160	$ 11,520
50	Qty 2 S350P Expandable Z302, D301 C2 S350P expandable	Cubix		5	5	1	5	16	$ 6,213	$ 99,408
51	P11-400MHz, 64MB ECC SDR S340P	Cubix		9	9	1	9	28	$ 1,611	$ 45,114
52	Processor Upgrade, 500MHz PIII S50_400P	Cubix		19	19	3	19	60	$ 409	$ 24,567
53	SDRAM Memory Upgrade 128MB PM SMD 128-64	Cubix		19	19	3	19	60	$ 168	$ 10,098
54	ERS/PT MUX-TO-MUX Daisy Chain CB F0650X	Cubix		4	4	0	4	12	$ 40	$ 475
55	GBLVSN SVR-CP6366NX, 32MB SDRAM P051P	Cubix		1	1	1	1	4	$ 1,705	$ 6,821
56	Mouse	Logitech		1	1	0	1	3	$ 9	$ 27
57	Cubix Rack	Sun		1	1	0	1	3	$ 2,126	$ 6,377
58	Fan assembly for 72" expansion cabinet	Sun		1	1	0	1	3	$ 923	$ 2,769
59	17-inch monitor	Sun		1	1	0	1	3	$ 480	$ 1,440
60	Keyboard	HP		1	1	0	1	3	$ 25	$ 75
61	Fast Forward	USPS		5	5	1	5	16	$ 20,000	$ 320,000
62	RS-232 controlled SCSI Switch	USPS		5	5	1	5	16	$ 2,000	$ 32,000
63	RS232 controlled power switch	USPS		5	5	1	5	16	$ 500	$ 8,000
64	Fast Forward Rack	USPS		5	5	1	5	16	$ 1,000	$ 16,000
65	17-inch monitor	Sun		1	1	1	1	4	$ 480	$ 1,920
66	Monitor Shelf	HP		1	1	1	1	4	$ 95	$ 380
67	Keyboard	HP		1	1	1	1	4	$ 40	$ 160
68	Keyboard Drawer	HP		1	1	1	1	4	$ 50	$ 200
69	8 port Keyboard/Monitor/Mouse switch	HP		1	1	1	1	4	$ 2,000	$ 8,000
70	Misc. (cables, parts, etc)	Sun		1	1	1	1	4	$ 1,000	$ 4,000
71	StorageNet Access HUB 32 ports MMC/MLC	StorageTek		0	0	0	1	1	$ 242	$ 242
72	FC/SCSI Router, 3200 MMC/MLC	StorageTek		0	0	0	3	3	$ 123	$ 369
73	9710-003 Cart. Lib. 252 Slots w/FC9903,2017 MMC/MLC	StorageTek		0	0	0	1	1	$ 312	$ 312
74	HBA, Jaycore 32 Bit SBUS MMC/MLC	StorageTek		0	0	0	3	3	$ 26	$ 78
75	ACSLS for 9710 1190-U97 w/FC 2926/240 MMC/MLC	StorageTek		0	0	0	1	1	$ 50	$ 50
76	ACSLS Server 4443-UX1 MMC/MLC	StorageTek		0	0	0	1	1	$ 123	$ 123
77	9840-L01, Library, SCSI MMC/MLC	StorageTek		0	0	0	5	5	$ 72	$ 360
78	StorageNet Access HUB 32 ports	StorageTek		1	0	0	0	1	$ 242	$ 242

Workpaper A (page 3)

MOL System Development & Implementation

Item	Description	Manufacturer	Notes	Production[A] San Mateo	Staging[A] San Mateo	Development[A] Reston	Test[A] Reston	Total Quantity[B]	Unit Cost[C]	Extended Cost[D]
79	FC/SCSI Router, 3200	StorageTek		7	0	0	0	7	$ 123	$ 861
80	9330-002 Wolfcreek LMU-ACSLS	StorageTek		1	0	0	0	1	$ 225	$ 225
81	HBA, Jaycore 32 Bit SBUS	StorageTek		4	0	0	0	4	$ 26	$ 104
82	ACSLS, UNIX HSC	StorageTek		1	0	0	0	1	$ 755	$ 755
83	ACSLS Server 4443-UX1	StorageTek		1	0	0	0	1	$ 123	$ 123
84	9840-L01, Library, SCSI	StorageTek		14	0	0	0	14	$ 72	$ 1,008
85	68" Enterprise Expansion Cabinet	Sun		0	0	1	0	1	$ 4,497	$ 4,497
86	Opt second power sequencer	Sun		0	0	1	0	1	$ 567	$ 567
87	Catalyst 2924-XL 24Port 10/100 Autosensing FE Switch	Cisco		0	0	2	0	2	$ 1,677	$ 3,354
88	NT Workstations, 400 MHz PII, 128 MB RAM 6.2 GB Hard dr	Compaq		0	0	15	0	15	$ 2,244	$ 33,660
89	17" Color Monitor	Compaq		0	0	15	0	15	$ 367	$ 5,505
90	**Web Servers**									
91	Enterprise 4500 Server Base Package	Sun		1	1	0	1	3	$ 15,523	$ 46,570
92	CPU/Memory Board, 2 empty CPU slots, 2 empty memory b	Sun		3	3	0	3	9	$ 2,633	$ 23,701
93	400-MHz UltraSPARC Module with 4-MB of cache	Sun		6	6	0	6	18	$ 5,498	$ 98,960
94	1 G-Byte Memory Expansion (8x128 MB memory modules)	Sun		6	6	0	6	18	$ 5,121	$ 92,169
95	SBus I/O Board w/ three empty SBus slots, two empty 100 M	Sun		3	3	0	3	9	$ 2,102	$ 18,919
96	*Sbus Ultra Differential F/W Intelligent SCSI Host Adapter*	*Sun*		2	2	0	2	6	$ 618	$ 3,710
97	36-Gbyte (4x9.1 Gbyte 10K RPM disks) Sun StorEdge D100	Sun		1	1	0	1	3	$ 9,641	$ 28,923
98	TruboGXplus 8-bit color graphics card, cables, documentatio	Sun		1	1	0	1	3	$ 588	$ 1,764
99	Enterprise Power/Cooling Module, 300W	Sun		1	1	0	1	3	$ 665	$ 1,996
100	Rack Mounting Rails for Enterprise 4X00 Servers	Sun		1	1	0	1	3	$ 302	$ 906
101	2meter 68-pin External SCSI Cable	Sun		1	1	0	1	3	$ 78	$ 234
102	Solaris 7 Server Media Kit Solutions for ISP	Sun		1	1	0	1	3	$ 53	$ 159
103	Misc. (cables, parts, etc)	Sun		1	1	0	1	3	$ 1,000	$ 3,000
104	**System Management**									
105	Sun Ultra 5S Workstation, 333-Mhz UltrSPARC-IIi, 128 Mbyt	Sun		2	2	0	2	6	$ 4,090	$ 24,540
106	Solaris 7 Server Media Kit	Sun		2	2	0	2	6	$ 53	$ 318
107	17 inch Entry Color Monitor	Sun		2	2	0	2	6	$ 480	$ 2,880
108	Rack	Sun		1	1	0	1	3	$ 2,126	$ 6,377
109	*Fan assembly for 72" expansion cabinet*	*Sun*		1	1	0	1	3	$ 923	$ 2,769
110	Monitor Shelf	Wright Line		1	1	0	2	4	$ 50	$ 200
111	Keyboard Drawer	Wright Line		1	1	0	1	3	$ 50	$ 150
112	Terminal	Sun		1	1	0	1	3	$ 300	$ 900
113	Shelf	Sun		1	1	0	1	3	$ 50	$ 150
114	8 port Serial Switch	Sun		1	1	0	1	3	$ 1,000	$ 3,000

Workpaper A (page 4)

MOL System Development & Implementation

Item	Description	Manufacturer	Notes	Production[A] San Mateo	Staging[A] San Mateo	Development[A] Reston	Test[A] Reston	Total Quantity[B]	Unit Cost[C]	Extended Cost[C]
115	Misc. (cables, parts, etc)	Sun		1	1	0	1	3	$ 200	$ 600
116	Other									
117	Hardware Enhancements, 3 years		a	1	0	0	0	1	$ 793,543	$ 793,543
118		Sum of Lines 1 thru 117							Hardware Subtotal	$ 3,439,087
119	Software									
120	System Software									
121	Windows NT Server	Microsoft		19	19	15	19	72	$ 434	$ 31,248
122	Windows NT Server Media and Documentation	Microsoft		1	1	5	1	8	$ 135	$ 1,080
123	Microsoft Office 2000	Microsoft		19	19	0	19	57	$ 298	$ 16,986
124	Microsoft Office 2000 Media and Documentation	Microsoft		1	1	0	1	3	$ 40	$ 120
125	Quark Xpress	Quark		19	19	0	19	57	$ 662	$ 37,716
126	Corel Office 2000	Corel		19	19	0	19	57	$ 265	$ 15,110
127	Corel Office 2000 Media and Documentation	Corel		1	1	0	1	3	$ 44	$ 133
128	Ventura 8.0	Corel		19	19	0	19	57	$ 369	$ 21,033
129	Ventura 8.0 Media and Documentation	Corel		1	1	0	1	3	$ 50	$ 151
130	PageMaker 6.5	Adobe		19	19	0	19	57	$ 341	$ 19,437
131	PageMaker Media and Documentation	Adobe		1	1	0	1	3	$ 55	$ 165
132	Intel LanDesk 3.0 Media	Intel		1	1	0	1	3	$ 20	$ 60
133	PGP (Pretty Good Privacy)	Network Assoc.		19	19	0	19	57	$ 2,400	$ 136,800
134	AMS (Address Management System)	USPS		19	1	0	1	21	$ 65,528	$ 1,376,088
135	Postal Soft Presort 5.6	USPS		1	1	0	0	2	$ 50,000	$ 100,000
136	Veritas NetBackup for Unix	Veritas		2	0	0	2	4	$ 6,630	$ 26,520
137	Direct Assist Support 5x12 Veritas NetBackup for Unix	Veritas		2	0	0	2	4	$ 1,469	$ 5,876
138	One media & documentation kit Veritas NetBackup for Unix	Veritas		1	0	0	1	2	$ 200	$ 400
139	Single Client License	Veritas		2	0	0	2	4	$ 546	$ 2,184
140	Direct Assist Support 5x12 Veritas NetBackup for Unix Singl	Veritas		2	0	0	2	4	$ 121	$ 484
141	NetBackup Robotic Support (STK 9710) first connection	Veritas		1	0	0	0	1	$ 19,600	$ 19,600
142	NetBackup Robotic Support '(STK 9710) additional connectio	Veritas		1	0	0	0	1	$ 7,840	$ 7,840
143	Direct Assist Support 5x12 STK 9710 first connection	Veritas		1	0	0	0	1	$ 4,140	$ 4,140
144	Direct Assist Support 5x12 additional connection	Veritas		1	0	0	0	1	$ 1,656	$ 1,656
145	NetBackup Robotic Support (STK 9710) first connection	Veritas		0	0	0	1	1	$ 13,260	$ 13,260
146	NetBackup Robotic Support (STK 9710) additional connecti	Veritas		0	0	0	1	1	$ 5,331	$ 5,331
147	Direct Assist Support 5x12 Robotic support (STK9710) first	Veritas		0	0	0	1	1	$ 2,938	$ 2,938
148	Direct Assist Support 5x12 Robotic support (STK9710) addit	Veritas		0	0	0	1	1	$ 1,126	$ 1,126
149	HSM Server License	Veritas		2	0	0	2	4	$ 15,600	$ 62,400
150	Premier Direct Assist Support 7x24 HSM Server	Veritas		2	0	0	2	4	$ 3,456	$ 13,824
151	One media & documentation kit HSM Server	Veritas		1	0	0	1	2	$ 100	$ 200
152	VERITAS Volume Manager	Veritas		2	0	0	2	4	$ 5,456	$ 21,824
153	Direct Assist Support 5x12 Veritas Volume Manager	Veritas		2	0	0	2	4	$ 1,209	$ 4,836
154	One media & documentation kit Veritas Volume Manager	Veritas		1	0	0	1	2	$ 150	$ 300

Workpaper A (page 5)

MOL System Development & Implementation

Item	Description	Manufacturer	Notes	Production[A] San Mateo	Staging[A] San Mateo	Development[A] Reston	Test[A] Reston	Total Quantity[B]	Unit Cost[C]	Extended Cost[D]
155	VERITAS File System	Veritas		2	0	0	2	4	$ 5,456	$ 21,824
156	Direct Assist Support 5x12 Veritas File System	Veritas		2	0	0	2	4	$ 1,209	$ 4,836
157	One media & documentation kit Veritas File System	Veritas		1	0	0	1	2	$ 150	$ 300
158	NetBackup Standard Installation	Veritas		1	0	0	1	2	$ 9,600	$ 19,200
159	Volume Manager Training	Veritas		1	0	0	1	2	$ 1,800	$ 3,600
160	File System Training	Veritas		1	0	0	1	2	$ 1,200	$ 2,400
161	NetBackup Training	Veritas		2	0	0	2	4	$ 1,800	$ 7,200
162	BP Vault for NetBackup	Veritas		1	0	0	1	2	$ 15,000	$ 30,000
163	Vault Maintenance	Veritas		1	0	0	1	2	$ 3,000	$ 6,000
164	Oracle 8.0	Oracle		10	0	1	0	11	$ 11,871	$ 130,582
165	Sun StoreEdge Enterprise NetBackup 3.11 Base Pack, medi	Sun		0	0	1	0	1	$ 53	$ 53
166	Sun StoreEdge Enterprise NetBackup 3.11 MGMT Interface	Sun		0	0	1	0	1	$ 4,820	$ 4,820
167	Sun StoreEdge Enterprise Tier 2 Robotices RTU	Sun		0	0	1	0	1	$ 5,387	$ 5,387
168	Sun StoreEdge Enterprise database Extension for Oracle	Sun		0	0	1	0	1	$ 6,690	$ 6,690
169	Hummingbird Exceed			0	0	15	0	15	$ 300	$ 4,500
170	*Visual Studio*			*0*	*0*	*15*	*0*	*15*	$ *1,619*	$ *24,285*
171	**Web Server Software**									
172	Netscape Server / Commerce Server	Netscape		1	1	0	1	3	$ 995	$ 2,985
173	**Other**									
174	Software Enhancements, 3 years		b	1	0	0	0	1	$ 198,386	$ 198,386
175			Sum of Lines 119 thru 174						Software Subtotal	$ 2,433,913
176	**Telecom & Networking**									
177	Catalyst 5509 Chassis	Cisco		1	1	0	1	3	$ 1,397	$ 4,192
178	Catalyst 5000 AC Power Supply	Cisco		1	1	0	1	3	$ 1,677	$ 5,032
179	Catalyst 5000 second AC Power Supply	Cisco		1	1	0	1	3	$ 1,677	$ 5,032
180	Catalyst 5500/5000 Supervisor Engine III Module w/NFFC II	Cisco		2	2	0	2	6	$ 7,837	$ 47,023
181	24-Port 10/100TX Backbone Switching (FEC, 802.1Q/ISL,RJ	Cisco		2	2	0	2	6	$ 2,797	$ 16,783
182	Catalyst 5000 Rel. 4.x. SW License, Enhanced Feature Set	Cisco		2	2	0	2	6	$ 2,237	$ 13,423
183	Catalyst 5000 Route Switch Module	Cisco		1	1	0	1	3	$ 11,197	$ 33,592
184	C5000 Gigabit Ethernet Switching Module w/o GBICs (3 Port	Cisco		2	2	0	2	6	$ 2,517	$ 15,103
185	1000Base-SX "Short Wavelength" GBIC (Multimode Only)	Cisco		2	2	0	2	6	$ 280	$ 1,680
186	**User Fax Communications**									
187	Terminal Server w/ 8 modems	Cisco		1	1	0	1	3	$ 3,076	$ 9,228
188	Misc. (cables, parts, etc)	Sun		1	1	0	1	3	$ 1,000	$ 3,000
189			Sum of Lines 176 thru 188						Subtotal	$ 154,057
190	T3 Connection Fee	PacBell/ Uunett	c	2	0	0	0	2	$ 648,000	$ 1,296,000
191			Line 189						Subtotal	$ 1,450,057
192			Sum of Lines 189 & 190						Telecom & Networking Subtotal	$ 1,450,057
193	**Services**									
194	MOL Cost For Development (To Date)	Marconi		1	0	0	0	1	$ 3,258,290	$ 3,258,290

Workpaper A (page 6)

MOL System Development & Implementation

Item	Description	Manufacturer	Notes	Production[a] San Mateo	Staging[a] San Mateo	Development[a] Reston	Test[a] Reston	Total Quantity[a]	Unit Cost	Extended Cost
195	MOL Application Development	Marconi		1	0	0	0	1	$ 970,202	$ 970,202
196	MOL Enhancements	Marconi	d	1	0	0	0	1	$ 9,395,581	$ 9,395,581
197	MOL Integration with USPS.com	Andersen		1	0	0	0	1	$ 250,000	$ 250,000
198			Sum of Lines 195 thru 197						Services Subtotal	$ [illegible]
199			Sum of Lines 119, 175, 182 & 195						Total	$ [illegible]

Workpaper B

MOL Administrative Management & Maintenance

Item	Description	Manufacturer	Notes	Production[A] San Mateo	Staging[A] San Mateo	Development[A] Reston	Test[A] Reston	Total Quantity[A]	Unit Cost[A]	Extended Cost[A]
1	**Software**									
2	**Maintenance Software, 3 years**	**USPS**	**e**	**1**	**0**	**0**	**0**	**1**	**$ 60,000**	**$ 60,000**
3			Line 2						Software Subtotal	$ 60,000
4	**Personnel**									
5	**USPS Maintenance, 3 years**	**USPS**	**f**	**1**	**0**	**0**	**0**	**1**	**$ 2,687,400**	**$ 2,687,400**
6			Line 5						Personnel Subtotal	$ 2,687,400
7	**Services**									
8	**System Maintenance**									
9	E4500 Installation	Sun		1	1	1	1	4	$ 1,825	$ 7,300
10	SPARCstorage Array Installation Services	Sun		2	2	1	2	7	$ 1,800	$ 12,600
11	Ultra 5 Installation	Sun		1	1	0	1	3	$ 459	$ 1,377
12	E4500 Prepaid 4 Hour MTTR, 3 years	Sun		1	1	1	1	4	$ 5,441	$ 21,766
13	CPU/Memory Board 4 Hour MTTR, 3 years	Sun		8	8	3	8	27	$ 1,455	$ 39,285
14	Rack Systems 4 hr MTTR, 3 years	Sun		1	1	1	1	4	$ 3,920	$ 15,682
15	A5100 4hour MTTR, 3 years	Sun		2	2	1	2	7	$ 5,675	$ 39,724
16	Solaris Software Maintenance, 3 years	Sun		1	1	1	1	4	$ 286	$ 1,145
17	Oracle 8.0 Support, 3 years	Oracle		10	0	0	0	10	$ 12,719	$ 127,190
18	MOL Application Support, 3 years	Marconi	g	1	0	0	0	1	$ 2,759,371	$ 2,759,371
19	**Web Server Maintenance**									
20	E4500 Installation	Sun		1	1	0	1	3	$ 1,825	$ 5,475
21	Ultra 5 Installation	Sun		1	1	0	1	3	$ 459	$ 1,377
22	E4500 Prepaid 4 Hour MTTR, 3 years	Sun		1	1	0	1	3	$ 5,441	$ 16,324
23	CPU/Memory Board 4 Hour MTTR, 3 years	Sun		1	0	0	0	1	$ 1,455	$ 1,455
24	Rack Systems 4 hr MTTR, 3 years	Sun		1	1	0	1	3	$ 3,920	$ 11,761
25	Solaris Software Maintenance, 3 years	Sun		1	1	0	1	3	$ 286	$ 859
26	**Data Network Maintenance**									
27	Catalyst 5000 On-Site Premium Maintenance, 3 years	Cisco		1	1	0	0	2	$ 18,278	$ 36,557
28	**System Management Maintenance**									
29	Solaris Software Maintenance, 3 years	Sun		2	0	0	0	2	$ 286	$ 572
30	**Print Site Service**									
31	Solaris Software Maintenance, 3 years	Sun		25	2	2	0	29	$ 286	$ 8,300
32	1720 On-Site Premium Maintenance, 3 years	Cisco		25	2	2	0	29	$ 3,010	$ 87,296
33			Sum of Lines 7 thru 32						Services Subtotal	$ 3,196,415
34			Sum of Lines 3, 6, & 33						Total	$ 5,944,015

Workpaper C

Help Desk

Item	Description	Manufacturer	Notes	Help Desk	Total Quantity	Unit Cost	Extended Cost
1	**Hardware**						
2	**Workstations**	**Compaq**	**h**	**4**	**4**	**$3,000**	**$12,000**
3			Line 2			Hardware Subtotal	$12,000
4			25% Ratio x Line 3			Ratio Applied Subtotal	$3,000
5	**Software**						
6	**Remedy**	**Remedy Corp.**	**h**	**1**	**1**	**$10,000**	**$10,000**
7			25% Ratio x Line 6			Ratio Applied Subtotal	$2,500
8	Microsoft Office 2000	Microsoft		4	4	$298	$1,192
9	Microsoft Office 2000 Media and Documentation	Microsoft		4	4	$40	$160
10	Quark Xpress	Quark		4	4	$662	$2,647
11	Corel Office 2000	Corel		4	4	$265	$1,060
12	Corel Office 2000 Media and Documentation	Corel		4	4	$44	$178
13	Ventura 8.0	Corel		4	4	$369	$1,476
14	Ventura 8.0 Media and Documentation	Corel		4	4	$50	$202
15	*PageMaker 6.5*	Adobe		4	4	$341	$1,364
16	**PageMaker Media and Documentation**	**Adobe**		**4**	**4**	**$55**	**$220**
17			Sum of Lines 6 thru 16			Software Subtotal	$20,483
18			25% Ratio x Line 17			Ratio Applied Subtotal	$5,121
19			Sum of Lines 7 & 18			Software Total	$15,621
20	**Personnel**						
21	**Technical Help Desk**	**USPS**		**1**	**1**	**$735,000**	**$735,000**
22			Line 21			Personnel Subtotal	$735,000
23			25% Ratio x Line 22			Ratio Applied Subtotal	$183,750
24	**Services**		**h**				
25	**Reports**	**Compaq**		**1**	**1**	**$30,000**	**$30,000**
26	Office Space	Compaq		1	1	$64,800	$64,800
27	Development	Compaq		1	1	$25,000	$25,000
28	Labor	Compaq		1	1	$10,947,267	$10,947,267
29			Sum of Lines 24 thru 28			Services Subtotal	$11,067,067
30			25% Ratio x Line 29			Ratio Applied Subtotal	$2,766,767
31			Sum of Lines 4 19 23 & 30			Total	$3,118,765

Workpaper D

MOL Print Sites

Item	Description	Manufacturer	Notes	Production[A] San Mateo	Staging[A] San Mateo	Test[A] Reston	Total Quantity[B]	Unit Cost[C]	Extended Cost[D]
1	**Hardware**								
2	Sun Ultra 5S Workstation, 333-Mhz UltrSPARC-IIi, 128 Mbyte DRAM,	Sun		25	2	2	29	$ 4,090	$ 118,610
3	Sun Swift 10/100 Ethernet/Ultra SCSI PCI Adapter	Sun		25	2	2	29	$ 444	$ 12,884
4	17-inch Entry Color Monitor	Sun		25	2	2	29	$ 437	$ 12,673
5	10/100BaseT Modular Router w/ 2 WAN slots & Cisco IOS IP SW	Cisco		25	2	2	29	$ 837	$ 24,279
6	Cisco 1700 IOS IP/FW PLUS IPSEC 56	Cisco		25	2	2	29	$ 784	$ 22,736
7	1-Port TI.Fractional T1 DSU/CSU WAN Interface Card	Cisco		25	2	2	29	$ 560	$ 16,240
8	Cisco 1700 16MB to 20MB DRAM Factory Upgrade	Cisco		25	2	2	29	$ 224	$ 6,496
9	**Onsite Spare Hardware**								
10	Sun Ultra 5S Workstation, 333-Mhz UltrSPARC-IIi, 128 Mbyte DRAM,	Sun		25	2	2	29	$ 4,090	$ 118,610
11	Sun Swift 10/100 Ethernet/Ultra SCSI PCI Adapter	Sun		25	2	2	29	$ 444	$ 12,884
12	17-inch Entry Color Monitor	Sun		25	2	2	29	$ 480	$ 13,920
13	10/100BaseT FastEthernet PCI Adapter 2.0	Sun		25	2	2	29	$ 695	$ 20,155
14	10/100BaseT Modular Router w/ 2 WAN slots & Cisci IOS IP SW	Cisco		25	2	2	29	$ 837	$ 24,279
15	Cisci 1700 IOS IP/FW PLUS IPSEC 56	Cisco		25	2	2	29	$ 784	$ 22,736
16	1-Port TI.Fractional T1 DSU/CSU WAN Interface Card	Cisco		25	2	2	29	$ 560	$ 16,240
17	Cisco 1700 16MB to 20MB DRAM Factory Upgrade	Cisco		25	2	2	29	$ 224	$ 6,496
18	Misc. (cables, parts, etc)	Sun		25	2	2	29	$ 200	$ 5,800
19	HP LaserJet 8000DN	HP		0	1	1	2	$ 2,836	$ 5,672
20	HP LaserJet 8000DN 2000 sheet input tray	HP		0	1	1	2	$ 869	$ 1,739
21	*HP LaserJet 8000DN Mailbox w/stapler*	HP		0	1	1	2	$ 1,631	$ 3,262
22		Sum of Lines 1 thru 21						Hardware Subtotal	$ 466,711
23	**Software**								
24	Oracle 8.0	Oracle		25	2	2	29	$ 1,000	$ 29,000
25		Line 24						Software Subtotal	$ 29,000
26	**Telecom & Network**								
27	Cisco 7204, 4-slot chassis, 1 AC Supply	Cisco		1	0	0	1	$ 2,880	$ 2,880
28	Cisco 7200 Dual Ac Power Supply Option	Cisco		1	0	0	1	$ 2,160	$ 2,160
29	Cisco 7200 Series IOS IP 56 Feature Set	Cisco		1	0	0	1	$ 4,608	$ 4,608
30	Cisco 7200 Input/Output Controller with Fast Ethernet Port	Cisco		1	0	0	1	$ 1,800	$ 1,800
31	Cisco 7200 Network Processing Engine, 4 MB SRAM	Cisco		1	0	0	1	$ 4,680	$ 4,680
32	Cisco 7200 NPE 64 MB DDRAM Upgrade Kit	Cisco		1	0	0	1	$ 432	$ 432
33	1-Port HSSI Port Adapter	Cisco		2	0	0	2	$ 4,320	$ 8,640
34	Cisco 7200 I/O PCMCIA Flash Memory, 16 MB Option	Cisco		1	0	0	1	$ 288	$ 288
35	HSSI Cable, Male to Male Conn.	Cisco		2	0	0	2	$ 72	$ 144
36		Sum of Lines 26 thru 35						Telecom & Network Subtotal	$ 25,932
37	**Services**								
38	T1 Installation	MCI	i	25	0	0	25	$ 2,000	$ 50,000
39	T1 Service (months of service)	MCI	j	750	0	0	750	$ 5,200	$ 3,900,000
40		Sum of Lines 37 thru 39						Services Subtotal	$ 3,950,000
41		Sum of Lines 22, 25, 36, & 40						Total	$ 4,471,643

Workpaper E

Derivation of Pre-Experiment & Program Year Costs

Item	Description	Notes	Pre-Experiment Cost	Year 1	Year 2	Year 3	Total
1	**Systems Dev. & Imp.**						
2	***MOL***						
3	***Hardware***	k	**$2,645,144**	**$264,514**	**$264,514**	**$264,514**	**$3,438,687**
4	***Software***	l	***$2,225,527***	***$66,129***	***$66,129***	***$66,129***	***$2,423,913***
5	***Telecom & Networking***	m	**$154,087**	**$432,000**	**$432,000**	**$432,000**	**$1,450,087**
6	***Services***	Workpaper A					
7	***-MOL Cost For Development (To Date)***	Workpaper A, Line 194	**$3,258,290**	**$0**	**$0**	**$0**	**$3,258,290**
8	***-MOL Application Development***	Workpaper A, Line 195	**$970,202**	**$0**	**$0**	**$0**	**$970,202**
9	***-MOL Enhancement***	n	**$0**	**$4,117,583**	**$3,725,198**	**$1,552,800**	**$9,395,581**
10	***-MOL Integration with USPS.com***	Workpaper A, Line 197	**$250,000**	**$0**	**$0**	**$0**	**$250,000**
11	Subtotal	Sum of Lines 1 thru 10	$9,503,251	$4,880,226	$4,487,841	$2,315,443	$21,186,760
12	**Administrative Mgmt & Maintenance**						
13	***MOL***						
14	***Software***	Workpaper B, Line 3 divided by 3 years	**$0**	**$20,000**	**$20,000**	**$20,000**	**$60,000**
15	***Personnel***	o	**$0**	**$785,400**	**$922,000**	**$980,000**	**$2,687,400**
16	***Services***	p	**$28,129**	**$745,295**	**$1,669,918**	**$752,074**	**$3,195,415**
17	Subtotal	Sum of Lines 12 thru 16	$28,129	$1,550,695	$2,611,918	$1,752,074	$5,942,815
18	**Help Desk**						
19	***MOL/USPS.com***						
20	***Hardware***	Workpaper C, Line 4 divided by 2 years	**$0**	**$0**	**$1,500**	**$1,500**	**$3,000**
21	***Software***	q	**$0**	**$2,500**	**$4,249**	**$4,249**	**$10,998**
22	***Personnel***	Workpaper C, Line 23 divided by 3 years	**$0**	**$245,000**	**$245,000**	**$245,000**	**$735,000**
23	***Services***	r	**$0**	**$599,726**	**$960,369**	**$1,206,671**	**$2,766,767**
24	Subtotal	Sum of Lines 18 thru 23	$0	$847,226	$1,211,119	$1,457,420	$3,515,765
25	**Print Sites**						
26	***MOL***						
27	***Hardware***	s	**$73,437**	**$313,820**	**$78,455**	**$0**	**$465,711**
28	***Software***	t	**$4,000**	**$20,000**	**$5,000**	**$0**	**$29,000**
29	***Telecom & Network***	Workpaper D, Line 36	**$25,632**	**$0**	**$0**	**$0**	**$25,632**
30	***Services***	u	**$0**	**$882,400**	**$1,507,600**	**$1,560,000**	**$3,950,000**
31	Subtotal	Sum of Lines 26 thru 30	$103,069	$1,216,220	$1,591,055	$1,560,000	$4,470,343
32	Total	Sum of Lines 11, 17, 24, & 31	$9,634,449	$8,494,366	$9,901,932	$7,084,937	$35,115,683

Endnotes

A Quantity of Hardware, Software, Telecom & Networking, Personnel, and Services for Production, Staging, Development, Test, and Help Desk for each geographical area.

B Total Quantity equals the sum of quantities for a given line item.

C Most units cost are from Library Reference 2/MC2000-2. Other unit costs are based on conversations and emails with contractors and USPS. Remaining unit costs are Manufacturers Suggested Retail Prices (MSRP).

D Extended Cost equals Total Quantity x Unit Cost.

a Hardware enhancements include additional hardware costs for Year 1 thru Year 3 due to hardware oblescence and upgrades. For each year the cost is 10% of the sum of lines 1 thru 115 in Workpaper A.

b Software enhancements include additional software costs for Year 1 thru Year 3 due to the additional hardware in those years. For each year the cost is 25% of the hardware cost for that particular year.

c Monthly cost for each T3 line is estimated to be $18,000.

d MOL Enhancements, Year 1 costs equals $4,117,583, Year 2 equals $3,725,198, and Year 3 equals $1,552,800, (Year 1 + Year 2 + Year 3 = $9,395,851) as provided by the contractor.

e Maintenance Software costs for Year 1 equals $20,000, Year 2 equals $20,000, and Year 3 equals $20,000, (Year 1 + Year 2 + Year 3 = $60,000) as provided by USPS.

f USPS Maintenance costs for Personnel includes Personnel, Print Site Support, and Operations Support costs. As provided by USPS, Year 1 cost equals ($512,000+$258,400+$15,000 = $785,400), Year 2 equals ($562,000+$340,000+$20,000 = $922,000), and Year 3 equals ($610,000+$340,000+$30,000=$980,000).

g MOL Application Support costs for Year 1 equals $609,323, for Year 2 equals $1,533,946, and for Year 3 equals $616,102 as provided by the contractor.

h MOL related contacts to the Help Desk represent approximately 25% (rounded from 25.02%) of all contacts during the one year MOL market test. This 25% MOL portion is applied to hardware, Remedy software, and services subtotals to derive MOL costs for these categories.

i T1 Installation costs per print site is $2,000. Year 1 costs equals ($2,000 x 20 print sites=$40,000) and in Year 2, installation costs equals ($2,000 x 5 print sites = $10,000) as provided by USPS. There are no planned installation of new print sites in Year 3.

j T1 Service cost per month equals $5,200. Based on the print site rollout schedule. Year 1 equals $5,200 x 162 months, Year 2 equals $5,200 x 288 months, and Year 3 equals $5,200 x 300 months as provided by USPS.

k Pre-Experiment cost equals the sum of lines 1 thru 115 in Workpaper A. It is assumed costs for each year equals 10% of the Pre-Experiment costs.

l Pre-Experiment cost equals the sum of lines 119 thru 172 in Workpaper A. Cost for each year is assumed to equal 25% of hardware costs for that year.

m See Workpaper A. Pre-Experiment costs equals Line 189 and yearly cost equals Line 191 divided by 3.

n See Endnote d.

o See Endnote f.

p See Workpaper B. Pre-Experiment cost includes lines 9 thru 11 and lines 20 and 21. Costs for each year is derived by adding lines 12 thru 17, lines 22 thru 32 and dividing the sum by 3 and adding the appropriate MOL Application Support amount for the specific year (see Endnote g).

q See Workpaper C. Year 1 Software costs is for Remedy, Line 7. Year 2 and Year 3 cost equals Line 18 divided by 2.

r Workpaper C, sum of lines 25 thru 26 divided by 3 plus the appropriate Development costs for each year (Year 1=$15,000 and Year 2=$10,000) plus Labor cost for each year (Year 1 = $2,352,305, Year 2=$3,799,878, Year 3 =$4,795,084), all multiplied by 25% (See Endnote h).

s See Workpaper D. Pre-Experiment cost equals 4 x sum of lines (unit costs) 2 thru 18 plus 2 x sum of lines 19 thru 21. Year 1 hardware cost equals 20 x sum of lines (unit costs) 2 thru 18. Year 2 hardware cost equals 5 x sum of lines (unit costs) 2 thru 18.

t See Workpaper D. Pre-Experiment costs equals 4 x Line 24(unit costs). Year 1 software cost equals 20 x Line 24(unit costs) and Year 2 cost equals 5 x Line 24 (unit costs).

u See endnotes i and j.