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

Postal Rate and Fee Changes, 2000 Docket No. R2000-1

RESPONSE OF THE UNITED STATES POSTAL SERVICE WITNESS RAYMOND TO OCA INTERROGATORIES (OCA/USPS-T13-1-8abc)

The United States Postal Service hereby provides the response of witness Raymond to the following interrogatories of the Office of the Consumer Advocate: OCA/USPS-T13-1-8abc, filed on February 17, 2000. Objections were filed to interrogatories OCA/USPS-T13-8d and 9.

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

Respectfully submitted,

UNITED STATES POSTAL SERVICE

By its attorneys:

Daniel J. Foucheaux, Jr.
Chief Counsel, Ratemaking

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March 2, 2000

RESPONSE OF UNITED STATES POSTAL SERVICE WITNESS RAYMOND TO INTERROGATORIES OF OCA.

OCAUSPS-T13-1. Please refer to page 7, line 7 through page 8, line 21 of your testimony. Did you perform a statistical analysis to determine the number of data observations that would constitute a statistically accurate sample in your data collection efforts? If your answer is yes, please delineate the methodology.

(a) Did you perform a statistical analysis and/or stratification to determine which routes should be selected for data collection? If your answer is yes, please provide the analysis.

(b) Please indicate whether the resulting database could be considered random and representative of the population, including all pertinent documentation on which you base your conclusions.

(c) Did you perform an analysis of the statistical implications of the decision to eliminate potential implementation sites that did not have Delivery Unit Computers?

RESPONSE:

Yes, as part of the ES study we also time studied the carrier tasks. We determined the sample size for the number of time studies to have reference data on the rate at which carriers were performing various tasks. The number of time studies was the guide for the number of routes studied. We had performed a similar job for a previous client and used the following calculations to determine the sample size for time studies.

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Sample Size and Recommended Observation Days Calculations

by Tom Short

for R.B. Maynard and Co.

June 15, 1995

1. To illustrate the method I used for the calculations, I chose the data for the first four numbered tasks (1.10, 1.20, 1.40, and 1.50) in Point to Point Provisioning, since these had non-missing Volumes and Estimated Times for the most part.

Here are the data:

	AT&T		MCI		Sprint		General		Wireless	
Task	Weekly Volume	Est. Time	Weekly Volume	Est. Time	Weekly Volume	Est. Time	Weekly Volume	Est. Time	Weekly Volume	Est. Time
1.10	491.5	22	361.75	11	43.25	.	107.00	.	359.25	16
1.20	360.00	25	245.50	10	68.50	32	265.00	20	344.75	27
1.40	1463.50	35	955.50	60	256.25	55	926.50	65	1068.50	45
1.50	297.75	20	371.25	55	74.00	20	340.25	.	509.50	.
Staff	62		7		12		35		8	

2. I divided the Weekly Task Volume by the number of employees to get

n = Volume per 40 hours.

3. I computed the Percent Allowed Deviation for each Task and Customer combination using the following formula:

$$r_t = 5\sqrt{\frac{T}{n \cdot t}} = 5\sqrt{\frac{2400}{n \cdot t}},$$

where t = Estimated Time for each task, and T is called the "balancing time." In this case $T = 2400$ = the number of minutes in a 40 hour week.

The value 5 in the formula represents the desired accuracy of ±5% for a 40 hour week. It could be adjusted if necessary.

The quantity r_t comes out of the MOST literature on work measurement. In statistical terms, it provides a target precision for each task in the form of a "slot". The idea is that an overall precision of ±5%, say, for a forty hour week can be achieved by placing Allowed Deviations on the individual Task times. (My statistical understanding is that this is like controlling the overall error rate in a multiple comparisons procedure like Tukey's Honestly Significant Differences or Bonaferroni intervals after an Analysis of Variance test.)

4. I computed Upper and Lower limits for the "slots" or intervals on each Task and Customer combination by adding and subtracting a margin of error, denoted by m:

$$t \pm \left[t \left(\frac{r_t}{100} \right) \right] = t \pm m$$

Here are the resulting limits, for each combination of Task and Customer:

	Lower and Upper Slot Limits				
Task	AT&T	MCI	Sprint	General	Wireless
1.10	(18,26)	(10,12)	.	.	(15,17)
1.20	(20,30)	(9,11)	(26,38)	(16,24)	(25.29)
1.40	(32,38)	(58,62)	(51,59)	(61,69)	(44,46)
1.50	(15,25)	(53,57)	(16,24)	.	.

These "slots" represent the target accuracies for the individual tasks that are supposed to allow for the overall time in a 40 hour period to be estimated to ±5%.

5. In order to generate a sample size for each Task and Customer combination, I needed to find a standard deviation. For the lack of more information at this point, I propose making the variance of the time for each Task and Customer combination equal to the Estimated Time for the Task. Here are the resulting estimated standard deviations:

	Standard Deviations				
Task	AT&T	MCI	Sprint	General	Wireless
1.10	4.7	3.3	.	.	4.0
1.20	5.0	3.2	5.7	4.5	5.2
1.40	5.9	7.7	7.4	8.1	6.7
1.50	4.5	7.4	4.5	.	.

Ideally, we could obtain at least minimum and maximum times for each task, which would help to provide a more realistic estimate for the standard deviation.

6. I used the target width of the slot for each Task and Customer combination to compute recommended sample sizes. At a 95% confidence level, the formula for a required sample size is:

$$N = \left(\frac{1.96 \cdot \sigma}{m}\right)^2$$

The value 1.96 represents a 95% confidence level, and could be changed using a Normal distribution table. The values of m and σ correspond to the margin of error (half-width) for the slot and the estimated standard deviation of times for the task, both measured in minutes.

Assuming that the standard deviations are reasonable, here are the sample sizes required to achieve the target Allowed Deviations for each Task and Customer combination:

	Required Sample Sizes				
Task	AT&T	MCI	Sprint	General	Wireless
1.10	5	42	.	.	61
1.20	4	38	3	5	26
1.40	15	58	13	16	173
1.50	3	53	5	.	.

7. Given some control over selection of Tasks to be observed, Joe Redding suggests the following formula for estimating the Recommended Observation Days for each Task:

1.5 × Sample Size × Estimated Time within Task and Customer .

In my opinion this represents the shortest length of time required to achieve the number of observations required for the precisions of the observed time estimates to fall within the Allowed Deviations.

Here are the results:

	Recommended Observation Days				
Task	AT&T	MCI	Sprint	General	Wireless
1.10	0.3	1.4	.	.	3.1
1.20	0.3	1.2	0.3	0.3	2.2
1.40	1.6	10.9	2.2	3.3	24.3
1.50	0.2	9.1	0.3	.	.

The values at MCI and Wireless for Task 1.40 are extremely large because the data report a huge Volume with a large Estimated Time and a small Staff. The combination of values for these two cells do not seem realistic, and if they are adjusted or corrected, the Recommended Observation Days for these two cells will be more reasonable.

(a) No, we did not perform a statistical analysis and/or stratification to determine which routes should be selected for data collection. We did after Phase 1 and 2 check to see if the routes, the mix of delivery points, gender, and age of carriers that we had studied matched the Postal Service percent distributions.

(b) Based on the comparison of the data we collected from the random routes to the Postal Service selected routes we feel the all data should be considered as random and representative of the population.

(c) No, we did not perform a statistical analysis of the implications of the decision to eliminate sites that did not have delivery unit computers.

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OCAUSPS-T13-2. Why did you perform a two-phase study for the data collection?

(a) Did you have a methodology that presented the statistical implications of such an approach? If so, please explain.

RESPONSE:

The initial Task Order anticipated that all the work could be accomplished by the end of Phase1. As the complexity of the needs and potential opportunities became more apparent the Postal Service decided to continue the project with the Phase 2 study.

(a) The number of samples needed to support the confidence level and level of accuracy of the time studies were used as a guide for collecting data.

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OCAUSPS-T13-3. It is the OCA's understanding that letter carriers do not, in general, have their activities monitored by data collectors.

(a) Did you perform any analysis of potential differences between the work actions of the observed carriers on the days on which they were observed in comparison to their work actions on days during which they were not observed?

(b) Did you have access to any such studies or analyses performed by other researchers? If so, please provide copies of all documents related to such studies or analyses.

RESPONSE:

Letter carriers are accustom to having their routes monitored by Postal Service supervisors, and having route inspections to determine both their in-office and on- street level of expectations.

(a) We did not perform any analysis of the potential differences between the work actions of the observed carriers on days on which they were observed in comparison to their work actions on days during which they were not observed.

(b) We did not access any such studies or analyses performed by other researchers pertaining to subjects differences in actions when being observed versus not being observed.

We did however perform analysis of data from the test sites after implementation.

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OCAUSPS-T13-4. Please refer to Section IV of your testimony, headed "Procedure," on page 10 and following.

(a) Did you develop or have a handbook or other documentation used to convey the data collection procedure in a standardized way to all data collection personnel? If so, please discuss and provide the documentation furnished consistently to all personnel.

(b) Did you have training sessions conducted on a formal, consistent basis with all data collection personnel? If so, please discuss and provide all relevant information.

RESPONSE:

(a)-(b): The data collectors in Phase 1 participated in the inventory of the carrier tasks, assisted with development of the data collection approach, and participated in the pilot study to perfect the data collection approach. During Phase 2 new data collectors were placed with Phase 1 data collectors to receive on the job instruction as to the data requirements and techniques used. They also received on the job instruction from Postal Subject Matter Experts. In Phase 2, there were three Phase 1 collectors teamed with six new collectors for 3 weeks for on the job instruction, then these nine were teamed with 18 additional collectors for 2 weeks for on the job instruction. Then the three collectors from Phase 1 formed the Quality Control – rovers, and twelve 2-person teams formed the collection group.

Team members reviewed a book of Postal Forms carriers may fill out, pictures of Postal equipment and mailboxes/drops, and a book of bar codes. The experienced contractors and Postal Subject Matter experts worked with the contractors.

Any additional Phase 2 contractors were placed with the two person teams and received on the job instruction and instruction from a Postal Service Subject Matter Expert.

ES materials used in support of on the job instruction are being provided in Library References to be filed shortly: 1. Engineered Standards Book of Forms/Pictures Library Reference USPS-LR-I-220, a book of forms and pictures developed and used by the Postal Subject Matter Expert, and 2. Engineered Standards Book of Bar Codes Library Reference USPS-LR-I-221, the bar code book developed in Phase 1.

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OCAUSPS-T13-5. Please refer to Section V, "Quality Assurance" of your testimony on page 13. In this section you discuss the review and correction of potential data collection errors.

(a) Please provide information on the total number of data observations accepted as correct, the number of observations determined to be incorrect, and the statistical (or other) rules and methodologies used to eliminate the observations considered as being incorrect,

(b) Did you perform an analysis of the outliers? If so, please provide the analysis and statistical tests used.

RESPONSE:

(a) Observers would mark on the reports records that were improperly scanned. They used their daily comments logs to assist in remembering scans for possible edits. A count of these records was not maintained. Data base administrators would identify other possible scans by reviewing reports and scans of other data collected. They would discuss possible edits with the teams before any changes were made. A count of these records was not maintained. Estimate to be less that 0.1 percent.

(b) No, analysis was performed on the outliers.

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OCAUSPS-T13-6. Please refer to page 14 of your testimony, lines 7 through 8 where your state, "Of the 844 route-days observed 100 route-days were studied from sites and routes chosen at random."

(a) Were the randomly observed routes representative of the population of routes? Please explain.

(b) Do you have a study to verify whether the aforesaid routes were random?

(c) Were the remaining 744 route-days a sample that was not random? Do you have a study or analysis of the statistical accuracy of the 744 nonrandom route-days? If so, please provide all related documents.

(d) Would the data you provided to witness Baron have produced significantly different proportions if only the random sample were used to generate the proportions? If only the nonrandom sample were used?

(e) Please provide separate data sets for the random and nonrandom samples.

RESPONSE:

(a) The randomly observed routes are a respectable sample but is not large enough to represent the total population of routes. It does not include the demographics of: carrier classification mix, route type mix, delivery point mix, age and gender mix for the ES study.

(b) We used Excel® to generate a random number list for the Postal Service to use in the selection of the random sites. The Postal Service picked the sites in my presence from a listing of finance numbers. The data collectors then used an Excel® random number list to pick the routes.

(c) We did no additional analysis to determine if the routes were random. The remaining 744 route-days were from Postal Service picked sites but randomly picked routes.

(d) We do not believe the data provided to witness Baron will produced significantly different proportions if only the random sample is used or if only the Postal Service selected sites sample is used.

(e) The following is a listing of CY codes for sites selected by the Postal Service and at random. This information will allow you to use Library Reference USPS-LR-I-163 to sectionalize the data into sites picked by the Postal Service and at random.

CY02	Allegheny	Region
CY03	Allegheny	Region
CY04	Allegheny	Region
CY05	Southwest	Region
CY06	Southwest	Region
CY07	Southwest	Region
CY08	Southeast	Region
CY09	Southeast	Region
CY10	Southeast	Region
CY11	Pacific	Region
CY14	Western	Region
CY15	Western	Region
CY16	Western	Region
CY17	NY Metro	Region
CY18	NY Metro	Region
CY19	NY Metro	Region
CY20	Mid Atlantic	Region
CY21	Mid Atlantic	Region
CY22	Mid Atlantic	Region
CY23	Northeast	Region
CY26	Mid West	Region
CY27	Mid West	Region
CY28	Mid West	Region
CY29	Great Lakes	Region
CY30	Great Lakes	Region
CY31	Great Lakes	Region
CY32	Northeast	Random
CY33	Northeast	Random
CY34	NY Metro	Random
CY35	Southwest	Random
CY36	Great Lakes	Random
CY37	Great Lakes	Random

CY38	Allegheny	Random
CY39	Midwest	Random
CY40	Great Lakes	Random
CY41	Great Lakes	Region
CY42	NY Metro	Region
CY43	NY Metro	Region
CY44	Southeast	Region
CY45	Southeast	Region

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OCAUSPS-T13-7. Please refer to page 7 of your testimony, line 19, through page 8, line 4, which discusses the selection process for zip codes, cities, and carrier routes.

(a) Please provide copies of the paperwork, including memos, letters, emails, faxes, studies, and/or other documents, sent internally by the Postal Service management to the various proposed data collection site locations.

(b) Please indicate what criteria, studies, and analyses were used in determining the selection of the sites in (a).

(c) If information as to the selection process by the various criteria is unavailable to you, please refer this interrogatory to the Postal Service.

RESPONSE:

(a) The following are examples that were emailed to the regions to use in the selection of sites.

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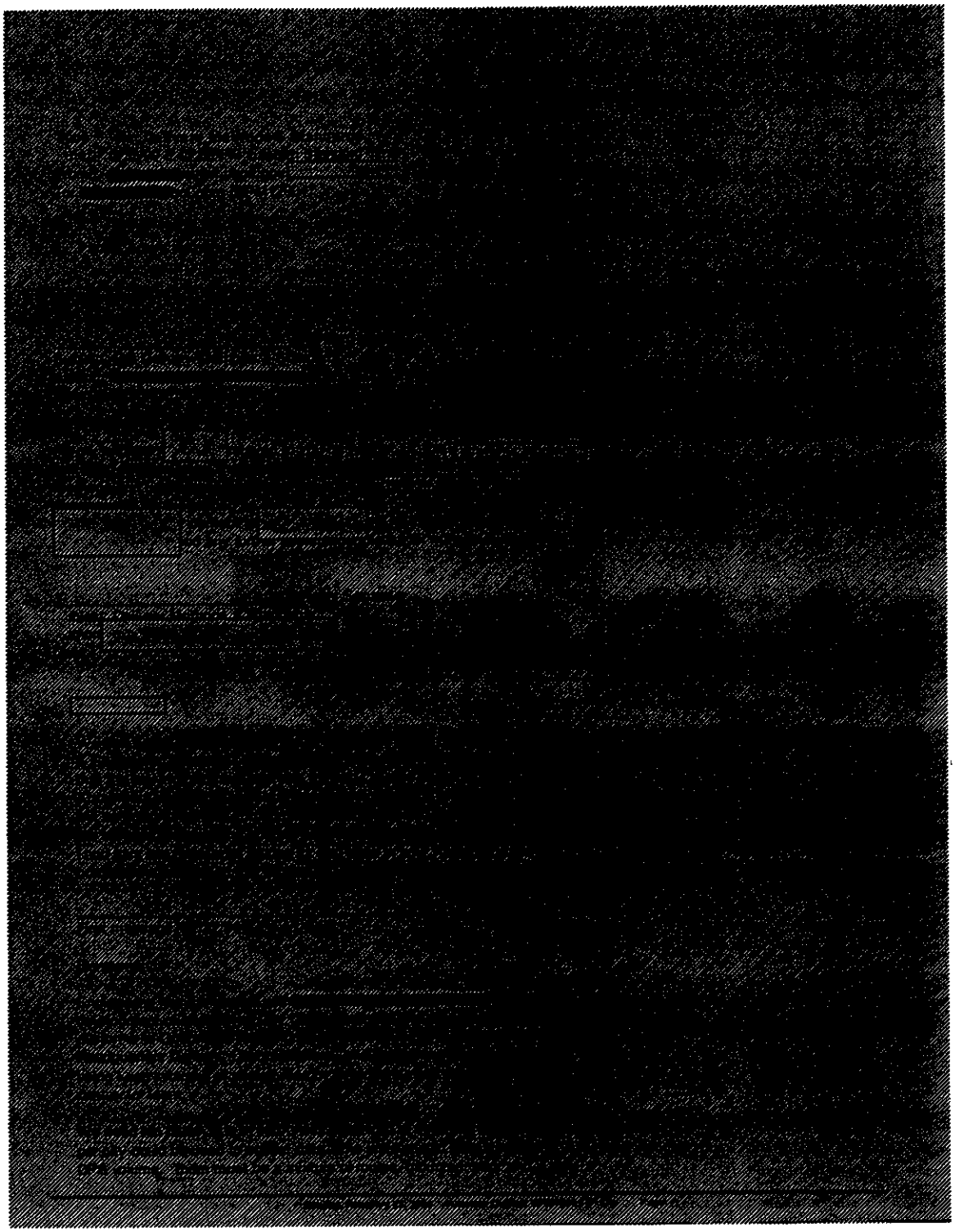


RESPONSE OF UNITED STATES POSTAL SERVICE WITNESS RAYMOND TO INTERROGATORIES OF OCA.

Subj: **Re: Delivery Methods & Standards**
Date: 2/25/00 3:45:26 PM Eastern Standard Time
From: [redacted]email.usps.gov ([redacted])
To: [redacted]aol.com (RPM12901)

Pacific Area's response.

[redacted]

Forward Header

Subject: Re: Delivery Methods & Standards
Author: [redacted] at SBCA002L
Date: 8/20/96 2:38 PM

As my secretary, [redacted], relayed to you on August 15, the [redacted] District has been designated as the location to select test sites for the Delivery Methods and Engineered Standards project. The [redacted] District has selected [redacted] for the testing as that city matches your selection criteria. The [redacted] District contact is [redacted] and he can be reached at [redacted]. If you need any further assistance, please let me know.

Reply Separator

Subject: Delivery Methods & Standards
Author: [redacted] at ERDHQDSS
Date: 8/15/96 9:36 AM

[redacted] & [redacted],

We had hoped that each Area would participate in the Delivery Methods & Engineered Standards project. It is not mandatory. We simply felt that the buy-in from the Areas and the NALC would be better if all Areas were involved. The NALC has been notified and is invited. We will be going to our first Experimental Site by the 9/3. This site will be used to determine how we will collect data at the other sites. I had sent two messages asking for test sites in your Areas. Please consider involvement in this project.

First message 7/22/96

Gentlemen,

Engineering has contracted with [redacted] for the development of engineered City Carrier methods and standards. Our customer is Operations Redesign, who was tasked by [redacted] Headquarters Delivery, Labor Relations, and Operations Redesign is being keep informed of all activities by Engineering and the contractor team.

We need ten cities, one in each Area, where up to three delivery units per city could be used to collect data. The units should have a high DPS volume. There must be a mixture of routes, mounted, park and

---------- Reply Separator ----------
Subject: Re: Delivery Methods & Standards
Author: [redacted] at CSILOO1L
Date: 7/30/96 2:17 PM

Great Lakes Area submits the [redacted] post office in the Royal Oak Performance Cluster.

---------- Reply Separator ----------
Subject: Delivery Methods & Standards
Author: [redacted] at ERDHQDSS
Date: 7/22/96 12:34 PM

Gentlemen,

Engineering has contracted with [redacted] for the development of engineered City Carrier methods and standards. Our customer is Operations Redesign, who was tasked by [redacted] Headquarters Delivery, Labor Relations, and Operations Redesign is being keep informed of all activities by Engineering and the contractor team.

We need ten cities, one in each Area, where up to three delivery units per city could be used to collect data. The units should have a high DPS volume. There must be a mixture of routes, mounted, park and loop, business and residential. No Rural Carriers are to be observed.

The team will be there four weeks, starting October 7 with some starting as late as January 6. We would like to visit, not to collect data, a few times before that. Six to eight full time people with occasional visitors are expected to be used. They will have a hand held device which be used for the time study data collection. It looks like a pocket calculator. There will also be clipboards/note pads to record on.

We have asked [redacted] to assist at the selection of units to use. We are seeking your permission and selection of units to study. The Delivery Perfect team has asked that we not use any units with the same NALC local as their test sites. Any visit to a unit would be coordinated through you.

---------- Forwarded with Changes ----------
From: [redacted] at BLILOO2L
Date: 10/9/96 12:15PM
To: [redacted] at ERDHQDSS
*cc: [redacted]
*cc: [redacted] at BIMI001L
*cc: [redacted] at ROMI001L
*ubject: Re[3]: Delivery Methods & Standards
---------- Forwarded with Changes ----------
From: [redacted] at CSILOO1L
Date: 8/1/96 8:12AM
To: [redacted] at ERDHQDSS
cc: [redacted] at BIMI001L

loop, business and residential. No Rural Carriers are to be observed.

The team will be there four weeks, starting October 7 with some starting as late as January 6. We would like to visit, not to collect data, a few times before that. Six to eight full time people with occasional visitors are expected to be used. They will have a hand held device which be used for the time study data collection. It looks like a pocket calculator. There will also be clipboards/note pads to record on.

We have asked [redacted] to assist at the selection of units to use. We are seeking your permission and selection of units to study. The Delivery Perfect team has asked that we not use any units with the same NALC local as their test sites. Any visit to a unit would be coordinated through you.

Follow up message 8/5/96

Thank you for your responses to the request for data collection sites for the Delivery Methods & Standards Study. We have received responses from 8 of the 10 areas.

The suggested locations from the Areas are:

Allegheny Area: [redacted]

Great Lakes Area: [redacted]

Mid-Atlantic Area: [redacted]

Mid-West Area: [redacted]

New York Metro Area: [redacted]

Northeast Area: No information yet

Pacific Area: No information yet

Southeast Area: [redacted]

Southwest Area: [redacted]

Western Area: [redacted]

Forwarded with Changes

From: [redacted] at SBCA002L

RESPONSE OF UNITED STATES POSTAL SERVICE WITNESS RAYMOND TO INTERROGATORIES OF OCA.

OCAUSPS-T13-8. Please refer to your testimony on page 5, lines 3 through 5, wherein you indicate that the objective of the study was to gather data to establish a workload managing system.

(a) Were the data collected specifically for this rate case, or were the data collected for other, possibly additional, objectives? Please explain your answer in detail.

(b) If the data collection was undertaken for purposes other than this rate case, please identify when the Postal Service decided to use the data for the rate case. Please provide all related documents,.

(c) Were any changes made to the data (scrubs, adjustments, estimates, modifications, etc.) in order for the data to be used in this rate case?

RESPONSE:

(a) The data were not collected specifically for this rate case. The data was collected to support the development of Industrial Engineered based methods and time standards, and a workload management system for city carriers.

(b) Some time in August – September 1999 is when I was first contacted. All discussions were verbal.

(c) No, adjustments were made.

DECLARATION

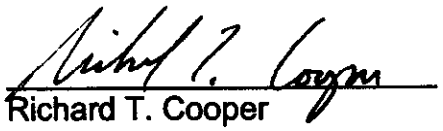
I, Lloyd B. Raymond, declare under penalty of perjury that the foregoing answers are true and correct to the best of my knowledge, information, and belief.

Lloyd B. Raymond

Date: 3-2-00

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon all participants of record in this proceeding in accordance with section 12 of the Rules of Practice.



Richard T. Cooper

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March 2, 2000