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

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POSTAL RATE COMMICSION OFFICE OF THE SECRETARY

Postal Rate and Fee Changes, 2000

Docket No. R2000-1

# RESPONSE OF THE UNITED STATES POSTAL SERVICE WITNESS RAYMOND TO NAA INTERROGATORIES (NAA/USPS-T13-1-7)

The United States Postal Service hereby provides the response of witness

Raymond to the following interrogatories of the Newspaper Association of America:

NAA/USPS-T13-1-7, filed on March 22, 2000.

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

Richard T. Cooper

475 L'Enfant Plaza West, S.W. (202) 268-2993; Fax: -5402 Washington, D.C. 20260-1137 April 21, 2000

NAA/USPS-T13-1: Please refer to page 28 of your testimony. Under Level 11.4 Activity, there appears the designation "JO6 Mix - Letters, Flats, ADVOs packet". With respect to this designation, please state:

a. Is there any other instance in your survey in which mail pieces are identified by the name of a particular mailer, such as Advo? If so, please identify those instances.

b. Was the selection of "Advo" as a designation pursuant to a suggestion or directive from anyone in the Postal Service?

c. What does the designation "Advo" mean in this context?

#### **RESPONSE**:

a. Yes, ADVO was used in the data collection for level 13 code R41 Study

Quantities and again in level 11.4 code J14 in the Inside Office work

sampling. ADVO in these instances is used in a generic context to identify

DALs (Detached Address Labels) that are cased, for which a corresponding

flat will be delivered.

- b. The Postal Service did not direct the selection of ADVO.
- c. For all intents and purposes ADVO = DAL. There are other providers of

DALs besides Advo, Inc., such as PennySaver.

NAA/USPS-T13-2. Please describe how observations of carriers handling detached address labels were recorded.

#### **RESPONSE**:

In the Outside work sampling and time studies, there was no tracking of detached address labels. During Inside work sampling, if a carrier was working with DALs, the observer would have scanned J14 ADVO. Also, if DALs were carried on a study day, the observer was to record the quantity of DALs carried using the R41 code.

NAA/USPS-T13-3. Did you consider alternative means of conducting the Engineered Standards/Delivery Redesign project? If so, please explain why you chose to conduct the project in the way that you did, rather in an alternative manner.

#### **RESPONSE:**

Yes, I considered alternative means of conducting the study. After reading an arbitration decision provided to me by the Postal Service, meeting various USPS personnel, visiting two post offices, and seeing the variability of the mail mix, considering the effect of work environment, and facing developing a system that could apply to approximately 243,000 carriers and affect over 30,000 potential locations, possibly replacing negotiated standards that had been in place since the 1920s, I believed that it would be beneficial to create extensive documentation and collect numerous data to support the difficult decisions to be faced by USPS Management, Unions and various others. Therefore, I designed a very comprehensive program, with more than one means of recording information relevant to city carrier operations.

Direct observation of the carriers was necessary in order to obtain information to support the development of engineered work methods, time standards, and to prepare for possible arbitration.

The work sampling data identified where the carriers were spending their time, so that we could prioritize the parts of the carrier's work day that might yield the biggest productivity gains if improvements were made to work methods.

Work sampling also provided measurements of the percentage of the

carrier's workday in which delays were experienced. This percentage of delay is and important component in developing time standards.

The time study data identified the rates at which carriers were performing various tasks. This time study data was used to develop various components of the engineered standards.

We also used videotapes to create a visual history of what was being observed, to assist in the methods work, serve as a frame by frame time study tool for validating the predetermined time measurement system. The videos were also used to create the time standards and evaluate various methods. The videos provided a method to obtain actual work rate data for comparison to the predetermined time measurement system.

We also recorded quantitative data such as temperature, humidity, age, gender, weight, smoking or non-smoker, etc. These data were used to help us to determine if these factors had an effect on the work being performed, and control for them.

We had specific reasons for proceeding as we did with collecting the data. We determined that the best means to collect data would be one that was easy for the data collector to learn. In this way, the data collectors could stay focused on the activities they were observing, rather than on how to record them. The pool of data collectors was selected from a non-Postal environment so as to minimize the potential role of preconceptions. It was our goal for the observers to simply record what was happening, not what "should" happen. We wanted to

avoid any preconceived notions as to what is slow or fast, we wanted the observers to not assume but to ask why. We wanted to present every opportunity for possible methods improvements, and not to accept any practice as "that is the way it has always been done." The bar code approach that we used allowed the observers to stay focused on their subjects. The technique allows for ease, speed, consistency, and accuracy in collecting data.

The use of the bar code approach had additional advantages. It eliminated the need for data collectors to be skilled in the use of a stopwatch to be able to take time studies. The data collected does not require manual calculations for determining the length of a time study, because the calculations were performed by the software. The bar code approach allowed time-of-day analysis to determine if the rate of work was slowing down or speeding up as the day progressed. The use of bar coding greatly reduces manual entries and keying-in data that is associated with other possible data collection approaches. Scanning for the most part eliminated writing down information during the collection process. The wands were programmed to admit a beep to signal when the work sampling was to take place. The wands were programmed in a defined hierarchy that prompted the user in what to do next. The scanned data turned into information almost instantaneously via the software application. This ability allowed edits to take place while the day's events were still fresh in the observer's mind. Nightly, the data was rolled into a composite database so analysis could be ongoing and information made available throughout the

collection process which enabled multiple phases/tasks of the project to be taking place concurrently.

Other methods were looked at to determine if they would be appropriate for collecting data. An electronic board that was developed for collecting data on oil rigs at sea was reviewed. This device could perform both time study and work sampling. It was heavy, required special software, and you had to know the codes for input. We considered the use of another Data Collection Device (DCD), but this unit required two hands to operate. You could input codes directly, but this meant you needed to remember all the codes. This unit also required the sequencing/scanning via a LCD screen through codes to get to the function you needed to perform, and the software is proprietary. Small notebook computers with touch screens were looked at, but they were heavy, required two hands, were slow, and were difficult to see in the field. The TimeWand II is light and easy to slip into a pocket while performing other tasks, teams could carry more than one scanner with them in case of a scanner problem, they are very fast and speed up data collection, they are both visual and audible, have a high level of reliability, are easy to learn how to use for either right or left handed people, and are flexible in terms of modifying the applications software.

I also considered having carriers self-report: via use of paging, through the use of cell telephones, by giving them a TimeWand II scanner, and by having them fill out forms. All these approaches were considered to increase the volume

of data. None of these techniques were used because they would not supply the total set of data/documentation of a carrier's day that we wished to collect.

The technology used, the TimeWand II along with Sony High 8mm video, combined with the process used, should be considered state-of-the-art. The use of bar code technology allowed multiple time studies to be made at the same time, and at the same time collect work sampling and quantitative data, and still allow the data collection team time to make the videotape records. The use of the technology allowed for studies/processes that are normally performed independently to be performed concurrently and with a great deal of ease and simplicity. The bar code approach also produced data that identified the time-ofday of the data collection, which also greatly increased our knowledge of carriers' work patterns. The collection of the quantitative data, such as temperature, humidity, gender, age, height, weight, smoker, non-smoker, rain, snow, wind, distances in paces to various locations, satchel weight, doors, gates, bends, was also important. This quantitative data regarding factors that may be affecting the other data being collected is usually not collected due to the difficulties in recording the information, entering it into a database, and linking it to the other data. This quantitative data has allowed for a view of the effects of age, gender, smoking, etc. that will assist in defending the fairness and equity of the engineered standards with respect to different demographic groups. The videos' frame by frame analysis has provided invaluable data to support the validation of

the predetermined time system, assisting with method recommendations, and in some cases answering work sampling questions.

I felt that it was necessary to have the video, work sampling, time study, and quantitative data all being collected simultaneously, or overlapping and/or at different times during a carrier's day to make sure I had a comprehensive set of data. By using multiple approaches, I could use each approach's data to assist in supporting the other approach. By conducting the data gathering the way I did, I documented a day in the life of a city carrier thoroughly enough to support engineered methods and engineered standards development, an application system, and a possible future arbitration.

NAA/USPS-T13-4. Please refer to your testimony at page 1, lines 6-8 where you state that you have "extensive experience applying work-measurement systems, developing time-based planning and scheduling systems, providing data for project/product costing, and making recommendations for methods improvements."

a. Please provide further description of this experience that is not related to the United States Postal Service.

b. Please provide further description of this experience that is related to the United States Postal Service.

c. Please identify similarities between the experiences described in (a) and (b) and the ES study.

#### RESPONSE:

a. As an apprentice to become a Machinist at Fellows Gear Shaper in

Springfield, Vermont, I not only had to learn the right way of operating the various machines and designing tooling, fixtures, and machines, but I was constantly under pressure from superiors and peers to find improved methods and improve quality with lower cost. During my college years, I had the good fortune of working my college breaks at Fellows where I had completed my apprenticeship and the pressure was even greater to apply my college education to improving methods, quality, and reducing cost.

My first career opportunity after college placed me at Fafnir Bearing Inc. New Britain, Connecticut and in a position to rejuvenate a failed Maintenance Work Force Management program and Office Management program. The engineered standards supporting these programs had not been accepted by the union. This opportunity required me to learn a predetermined time system, and various forms of standard data developed by H.B. Maynard and Company, Inc.

These standards had to be updated to reflect method changes. The objectives of these programs were to estimate workload based on engineered methods and standards. The workload was then used for scheduling, costing projects, determining staffing levels, and allocating costs to various manufacturing centers, and equipment justification analysis. I developed a computerized approach for the Maintenance Work Force Management before such approaches were common, and managed to have the union buy into the programs as tools to assist managing over previously used arbitrary processes. I became supervisor of the Industrial Engineering section called Indirect Labor and Methods, and, as time went on, the Plant Layout group and Office Services department. Office Services included the typing and filing pool, the Mailroom, and communications. As the supervisor, I did all capital equipment and facilities justifications, administered the company suggestion program and methods improvement program, and supervised industrial engineers in the development of methods and engineered standards for multiple plants with over 3000 employees. I also was the caretaker of the job classification system. Data from the standards programs was an integral part of the company's standard costing system.

My second career opportunity placed me as the Chief Industrial Engineer of Chase Brass and Copper located in Euclid, Ohio where I was responsible for the incentive system, maintenance bonus system, job classification program, and methods improvements. Circumstances led to federal meditation to modify the job classifications and adjust the incentive program.

My third career move was to join H.B. Maynard and Company, Inc. (HBMCo) an industrial engineering based management consulting firm based in Pittsburgh, Pennsylvania, HBMCo is a world renowned firm that is credited with developing a number of predetermined work measurement techniques, editing editions of the Industrial Engineering Handbooks, training clients in method improvements, work measurement, and in the application of an expert system for standards applications. As a Senior Consultant, Consultant Manager, Manager, and Principal in the firm, my role was to train, provide on-site guidance, and develop application systems for clients. In my early days, I trained clients in MTM (Methods Time Measurement), Universal Standards Data, Maintenance Standard Data, the development of benchmarks, the technique of using benchmarks to estimate work orders, planning and scheduling, and cost estimating. As time went on, MOST® (Maynard Operation Sequence Technique) in various forms replaced MTM. The use of computers allowed for developing better-balanced benchmarks and for taking into account multiple resources. This approach allowed me to move clients towards better methods analysis, resource costing, scheduling, and planning. Most of my career with HBMCo was spent working with clients applying various techniques to very difficult work measurement environments in Electric and Gas Utility companies, a few manufacturing companies, and various special assignments not related to work measurement.

These assignments typically had from 6 to 30 client personnel, on occasion another HBMCo consultant would be assigned to assist. The areas covered included electric and gas construction and maintenance of distribution including right of way clearing, electric transmission construction and maintenance including right of way, various shops such as: breaker, switch, and transformer maintenance, vehicle modification and maintenance, meter repair and calibration. Tree trimming, trouble shooting systems, and communications installation and maintenance were also areas covered. Estimating, planning, scheduling systems, and computerized management information systems were either developed or integrated with existing systems.

In addition to my normal consulting duties, I also developed an interactive seminar process to get all organizational levels to participate in improving methods, understanding the difference between Planning and Scheduling, Estimating, Quality, and Effecting the Change Process. This interactive seminar process was applied to both utilities and manufacturing organizations.

b. A large telecommunications company, BellSouth, wanted to baseline different crafts involved in installation and maintenance activities. They wanted a sound sample that would represent their operation across nine states and a craft work force in excess of twenty thousand people. The baseline process needed to identify areas for method improvements and determine the length of time for various tasks. Combinations of work sampling and time studies were used along

with Access® to accomplish the project. Around 26 non- BellSouth observers were trained and used to collect the sample. A manual/digital timer was used along with manual forms, keying in the data, and a process for quality checking both the raw data and the keyed data was put in place. Twelve people were used to key-in the data. The resulting picture of the day in the life of a field technician was very well received.

The next step was to study their operating centers and supply time study data to assist them in pursuit of the Demming award and as operational information for organizational changes. The operations being studied were documented on process flow charts and data collection needed to follow these diagrams. Part of the studies needed to take place in very low light conditions where reading a stopwatch and filling out manual forms would be difficult. I introduced the use of the TimeWand II to collect the data. The approach was so successful the client had their personnel trained in using the bar code methodology for additional studies.

Next was a call back to baseline a subset of a craft we had studied on the first project. The objective was the collection of data for evaluation of a possible investment of millions in new technology as a methods improvement business case. They needed new data, and the new data needed to be compared to our first data set along with the data collected during the use of a prototype. Bar code scanning was expanded to replicate the initial study's manual approach. The data was collected and information supplied for the business case.

c. My next assignment was to develop the Engineered Methods and Standards for the United States Postal Service city letter carriers. After my initial exposure to the USPS, my experiences identified this as a formidable task.

- 1. There was room for methods improvements. All through my career, I have been placed in environments that felt they had evolved to the best level and yet there always has been room for improvement. The study needed to document what was in place and provide the opportunity for creative thinking to identify improvements. The processes used would have to allow for evaluating various methods without field trials.
- Based on the prior arbitration case I felt the USPS had four choices for establishing standards:
  - A. Develop standards based on only work sampling data,
  - B. Develop standards based on time studies,
  - C. Negotiate new standards without developing standards from analyses,
  - D. Use a predetermined time measurement system that is methods sensitive, but validate the measurement system for application in the USPS environment.

I was used to using all of these approaches. I have trained clients and contractors in their use, and have developed approaches/techniques to collect the data. The size of the client's territory and number of people performing the work was 6 to 10 times the size of the telecommunications

client. The tasks the carriers were performing were far simpler than most of the complex tasks I had to evaluate in my past. The size would be an advantage in terms of where to look. My experience with sampling populations is that when the population gets very large, no matter what criteria the company uses to pick a sample, the results are very close to a random sample. In this assignment, I would use both company picked and random approaches.

3. The project needed to be phased so both the client and the teams assembled to perform the tasks could learn as time moved on. My concern was that the potential improvement opportunity would benefit from data and documentation beyond normal standards in order to support the decision makers. Confidence in the process to collect data would be necessary from the get-go, and data turned into information quickly to avoid surprises. The teams would be better off comprised of knowledgeable non-postal people in order to record what is/was and not what may look good, and to freshly evaluate all aspects of the city carrier operation. People from a wide variety of occupations, with diverse experience levels, and different educational backgrounds using technology-supported processes would contribute the most. They had nothing to lose or gain from collecting the facts, evaluating the facts, and challenging the current processes. The most difficult teams in my past had been the know-it-all experts that supported the current conditions. It would be far easier to train people in using the bar code

technology to perform time studies and work sampling than un-train experts and get them to adapt to this new approach. I judged that a hands-on approach with On-Job-Training through in-the-field involvement were keys to success. The data that needed to be collected was not complex, but the project would require lots of data/information in short periods of time. My apprenticeship and seminar development experiences were very important. I have spent hours studying, and reading definitions, but having an experienced person show me how, and then provide on the job coaching/guidance, has been the quickest route to doing things right. Based on my years of experience I made the decision that the way to document, "What happens in the day of a life of a carrier" would be best accomplished by on the job training. What is transpiring during a carrier's day is very clear when you are there seeing it happen. Learning how to tie your shoes by being shown/guided is far easy than by reading directions.

4. My experience developing benchmarks manually and with the use of computers for total resource identification, tracking and balancing had helped me develop skills in identifying the fixed and variable components of a task. In order to measure work and have a proper workload application system there needs to be a set of constants, proper identification of the variables, and a way of determining and/or inputting frequencies of the variables into necessary software applications. Simply stated <u>Standard Time ≈ The Sum of Constants +(Sum of (Variables x Frequencies))</u>. This would require

information from work sampling data, time study data, knowledge gained from the application of the predetermined time system, and knowledge acquired from researching Postal Service computer systems. Developing new application systems and integration with existing systems has been a common practice throughout my career.

5. Overcoming potential resistance from the unions and management would be facilitated by the collecting of extensive data and documentation. There had been no change in the basic standards since the 1920's and there had been a failed attempt in to develop new standards in 1978. I anticipated concerns about: adequacy of sample size, the need for age-based exemptions from standards, potential gender-based performance distinctions, whether new methods and standards would result in too much work for the carriers, fatigue resulting from physical effort to meet standards, whether requiring supervisors to use a computer-based workload management system would result in additional workload for the supervisors, and other issues. I intended to be prepared for every "what if and no way" I had ever heard plus some I hadn't heard to be thrown my way.

NAA/USPS-T13-5. Please refer to your testimony at pages 1-3 regarding the project design.

a. Please confirm that you were principally responsible for the design of the project that collected the ES data contained in LR-I-163.

b. Please describe the tally sampling approach that you employed. What other data collection, measurement, or sampling processes could have been utilized to develop engineered methods and time standards for city letter carriers?

c. Given that alternative methods identified in (b), on what basis did you select the tally sampling approach?

d. Have you developed other projects that required the collection of data over a 16-month period?

e. Please identify your knowledge of any similarities between the ES study and the route measurement systems or engineering time studies of other postal administrations or courier companies used to design and attribute their delivery costs, as suggested by the A. T. Kearney Data Quality Study (April 16, 1999).

f. Please provide your assessment of the appropriateness of the use of the ES data in the current R2000-1 docket, given the Data Quality Study's suggestions that such a project is a "potential alternative source of data" and "will take several years to fully develop," including any and all quality and validation steps you or others performed to merit its use.

g. Please confirm that the quality assurance checks described at page 13 of your testimony were typical of projects of this type and magnitude.

#### **RESPONSE:**

a. Confirmed. I was the one principally responsible for the design of the project.

However, William M. Lloyd should share a great deal of credit for the

execution.

b. The tally sampling approach used was fixed interval work sampling. In this case, every six minutes the observer was to identify what the carrier/subject was doing according to a defined hierarchy of bar codes. The observer was to use the TimeWand II to scan in the appropriate bar codes from the five levels in the hierarchy. The classic approach to work sampling is to have a predefined set of tasks in a table format and at random times place a tally mark next to the task to identify what subject was doing. The process for picking the random times varies.

I believe I have answered the second part of this question in my response to NAA/USPS-T-13-3.

- c. I believe I have answered this question in my response to NAA/USPS-T-13-3.
- d. Yes. I spent approximately eight calendar years assisting one utility client in the development of various standards-based programs. During one project this client we had over 40 workers involved with methods-standards development for approximately two years.
- e. I have no knowledge of the A. T. Kearney Data Quality Study. I have very limited knowledge of the Canadian postal approach and no knowledge of

route measurement systems or engineering time studies of other postal administrations or courier companies.

- f. I believe that the ES data provided to support the current R2000-1 docket is representative of current city carrier operations. The extensive, multifaceted data collection and analysis went far beyond the effort normally associated with ensuring a valid set of data designed to support work standards. Having never seen the Data Quality Study, I do not feel qualified to comment on the quotes you have included.
- g. I believe we instituted an above-average quality control process for this type and magnitude of project. The reports generated from each day's worth of data collection, that is the work sampling, time study, quantitative data and other reports used by the team of observers and others to Quality Check the data/work went far beyond normal data verification. The involvement of Postal Service staff and contractors to quality check the process and/or data, and reviews of the data while being collected and after the fact went beyond normal processes.

NAA/USPS-T13-6. Please refer to your testimony at pages 7-9 regarding the

site selection.

a. Please provide your assessment of the reasonableness of the site selection method and how representative were the sites and routes selected and studied.

b. What, if any, were the limitations of the site selection method?

c. Were other site selection methods considered, and, if so, why was this particular one utilized?

d. In selecting sites, what were the engineering objectives and accompanying statistical requirements? Please explain whether these objectives were accomplished, and provide the basis for your assessment.

#### **RESPONSE**:

a. I believe the process used for site and route selection produced a

representative set of sites and routes and was a reasonable method to use.

- b. Please see the response to ADVO/USPS-T13-23.
- c. There were the three options considered for site selection: 1. pick all sites at random, 2. have all sites picked by the Areas, or 3. have the Areas pick some sites and also have some random sites. Option 3 was selected. This approach to site selection would open up the communication channels with the Areas and their respective organizations. The approach selected meant that Areas and their organizations would to be able to assist with ensuring the studies could be made under normal operating conditions. Furthermore, by also having some sites picked at random, we could compare the two pools to

ensure that the selection technique did not affect the representativeness of the data.

d. Please see the response to ADVO/USPS-T13-23.

NAA/USPS-T13-7. Please refer to your response to ADVO/USPS-T13-17 and Witness Baron's response to MPA/USPS-T12-26 (LR-I-219).

a. Please confirm that the table in response to ADVO reports 0 Residential Central possible deliveries and 195, 33, 142, and 153 Residential NDCBU possible deliveries for route numbers 1579, 1581, 1595, and 4104 (rows 3-6 in the table).

b. Please confirm that the spreadsheet in response to MPA reports 0 Residential NDCBU possible deliveries and 195, 33, 142, and 153 Residential Centralized possible deliveries for route numbers 1579, 1581, 1595, and 4104 (rows 5-8 in the spreadsheet).

c. Please explain this discrepancy, and resolve all column headings that were apparently transposed. If you cannot, please refer this interrogatory to Witness Baron or others with the ability to provide such explanation.

#### **RESPONSE:**

a. I confirm the table values of 0 Central, 195, 33, 142, and 153 for Residential

NDCBU for routes 1579, 1581, 1595, and 4104 in my response to

ADVO/USPS-T13-17.

- b. I confirm witness Baron's spreadsheet.
- c. In the response to ADVO/USPS-T13-17, the column headings in the ADVO table for NDCBU and Central were inadvertently transposed. The Table column headings should read in this order: Residential Other, Residential Curb, Residential NDCBU, Residential Central, Business Other, Business Curb, Business NDCBU, Business Curb.

# 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.

Mapl B. Raymond Date: <u>4-21-00</u>

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.

m Cooper

475 L'Enfant Plaza West, S.W. Washington, D.C. 20260-1137 April 21, 2000