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

POSTAL RATE COMMISSION OFFICE OF THE SECRETARY

POSTAL RATE AND FEE CHANGES, 1997

Docket No. R97-1

RESPONSE OF UNITED STATES POSTAL SERVICE WITNESS TAKIS TO INTERROGATORIES OF THE NEWSPAPER ASSOCIATION OF AMERICA (NAA/USPS-T41—1-9)

The United States Postal Service hereby provides responses of witness Takis to the following interrogatories of the Newspaper Association of America: NAA/USPS-T41—1–9, filed on August 21, 1997.

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. Washington, D.C. 20260–1137 (202) 268–2993; Fax –5402 September 4, 1997

#### 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

475 L'Enfant Plaza West, S.W. Washington, D.C. 20260–1137 September 4, 1997

**NAA/USPS-T41-1.** Please refer to your direct testimony at page 5, lines 6-11. For each cost component of each cost segment, please specify whether the marginal costs are 1) declining with volume, 2) rising with volume, or 3) constant.

#### NAA/USPS-T41-1 Response:

I did not prepare such an analysis in the course of developing my incremental cost estimates. It should be noted that my testimony at page 5, lines 6-11 refers to the simple graphical example presented in the figure on page 4. In reality, the determination of whether marginal costs are decreasing, increasing, or constant with volume for each component / cost pool over specific ranges of subclass / group of subclasses volume levels is a very complex and time consuming process. As these calculations do not have any direct bearing on the results of my analysis, I did not perform them.

However, if someone were to perform this process, they might take the following general steps:

- Step 1: Determine the general form of the second derivative of the cost function used to estimate volume variable / incremental costs for each of the roughly 400 cost pools / components in my analysis.
- Step 2: Substitute suitable parameter estimates into these sets of equations for each of the over 10,000 cost pool / subclass combinations. These parameter estimates include the variability estimates developed by witnesses in this and previous dockets, as well as volume levels associated with each cost pool / subclass combination analyzed.

**NAA/USPS-T41-2**. Please refer to your direct testimony at page 7, lines 16-17. For each cost component of each cost segment, please identify the product-specific fixed costs within the component.

#### NAA/USPS-T41-2 Response:

Please see my response to UPS/USPS-T41-5.

**NAA/USPS-T41-3**. Please refer to your direct testimony at page 11, lines 17-20. Please list all cost components for which you do not rely on the analytical framework used to develop volume variable costs. In each case, please explain why you do not rely on the framework and what you used in place of this framework.

#### NAA/USPS-T41-3 Response:

There are two general areas of postal costs where I do not employ a strict "equation-based" approach to estimating incremental costs, as described on pages 11 (lines 14 through 27) and 12 (lines 1 through 9) of my testimony.

- Single Subclass Stop Components As discussed in my Workpapers (pages II-16 through II-17), I use single subclass stop ratios to estimate the incremental costs associated with "access" and "time at stop" activities for city carrier letter routes (SDR, MDR, and BAM). As noted there, I chose to use single subclass stop ratio costs because of the nature of incremental costs in those carrier activities.
   Specifically, multiple subclass stop costs cannot be considered incremental to any particular subclass, while single subclass stop costs are clearly incremental to individual subclasses.
- 2. Express and Priority Manual Mail Processing and Air Transportation Operations The expedited nature of Express and Priority Mail require that certain special operations exist to ensure product quality. These special operations include four manual mail processing operations (Manual Express, Manual Priority, LDC 48 Express, and SPBS Priority) as well as the Eagle, Western, and Christmas air-transportation networks. For a more detailed discussion of these costs, including my reasons for deviating from a strict "equation based" approach in analyzing them, please see my responses to UPS/USPS-T41-5 and UPS/USPS-T41-8, as well as my testimony at page 12, lines 15 through 23.

NAA/USPS-T41-4. Please refer to your direct testimony at page 12, lines 11-14.

- a) Please list all cost components that have relatively large specific fixed costs, to the extent that such an answer differs from your answer to NAA/USPS-T41-3.
- b) How large do specific fixed costs need to be before you consider a cost component to have "relatively large" specific fixed costs? Please explain why.

#### NAA/USPS-T41-4 Response:

Parts (a) and (b): By the phrase "relatively large", I do not intend to distinguish "specific fixed" costs of any particular magnitude, nor do I intend to distinguish the larger "specific fixed" costs from the smaller ones. Furthermore, in the part of my testimony that you cite in your question, I am specifically referring to the conditions under which I considered departing from the a strict "equation-based" approach to estimating incremental costs (see my testimony at page 11, lines 14 through 27 and at page 12, lines 1 through 9, as well as my response to NAA/USPS-T41-3). Specifically, I considered such a deviation when

"... the assumption that the operations within the component will not change radically if a particular product is eliminated cannot be supported. In these components, it would be inappropriate to use an "equation-based" approach to estimate incremental costs."

(USPS-T-41 at page 12, lines 12-15)

These components/pools include Express and Priority Manual Mail Processing and Air Transportation Operations (see my response to NAA/USPS-T41-3) and contain "specific fixed" costs (see my response to UPS/USPS-T41-5).

The decision to deviate from a strict "equation-based" approach is driven by my analysis of how the operations within a component/pool would change if a product were eliminated. Components/pools where operations *would* change significantly (e.g., the ones described above) also contain "specific fixed" costs. However, the decision to "deviate" is driven by operational considerations, not by the presence of "specific fixed"

costs. Therefore, the term "relatively large" is descriptive only and not a criteria upon which I based my decision to deviate from a strict "equation-based" approach.

My response to UPS/USPS-T41-5 lists all of the costs which I term "specific fixed", no matter how large or small.

NAA/USPS-T41-5. Please refer to footnote 4 at page 12 of your direct testimony.

- a) Please confirm that changes in technology through the introduction of new equipment, new processing procedures or enhanced capabilities of existing equipment will result in a shift of the marginal cost curve. If you cannot confirm this statement, please explain why.
- b) Please confirm that changes in the number and/or mix of machines available to process mail can result in a shift in the marginal cost curve. If you cannot confirm, please explain why.
- c) In your incremental cost analysis, did you account for the introduction of new technological enhancements and the greater automation capability as described in the direct testimony of Postal Service Witness Moden (USPS-T-4) at page 5, lines 22-5 and page 6, lines 4-11; page 9, lines 11-19; and page 13, lines 7-24. If so, please explain how these advancements were incorporated in your incremental cost calculations. If no, please explain why not.

#### NAA/USPS-T41-5 Response:

Parts (a) and (b): Not confirmed. I can imagine situations where the introduction of new technologies would not change the cost function for a particular operation (a necessary condition for a shift in the corresponding marginal cost curve). For example, if the introduction of new machines did not change the capital/labor mix or productivities associated with a particular operation, then the cost function (and thus, the marginal cost curve) might remain unchanged. In most cases, however, the introduction of new technologies will result in a shift in the marginal cost curve.

Part (c): Your question is comparing "apples to oranges".

The footnote to which you refer addresses my methodology for calculating incremental costs in the Base Year. When I say that I contemplate movements <u>along</u> the marginal cost curve only, and not <u>shifts</u> of the marginal cost curve, I am referring to hypothetical differences in mail volumes that would have occurred in the Base Year if a particular subclass had been removed. The assumption is that a Postal Service without, for example, Special Rate Standard B mail, would have operated in 1996 in essentially the

same way as the real Postal Service actually did operate in 1996. Specifically, for most operations, I assume that the elimination of volume associated with any particular subclass would not force the Postal Service to "radically reconfigure" its operations. Therefore, I use the underlying framework in the Postal Service's cost analysis for BY1996, including the assumption that the existing technology in place in 1996 remains in place even after the elimination of a particular subclass.

Your question refers, on the other hand, primarily to changes in the mail processing environment that have occurred or will occur after BY1996. While Witness Moden (USPS-T-4) addresses the "current" mail processing environment throughout his testimony, my reading of the passages you cite in your question leads me to believe that he is, for the most part, describing changes in the mail processing environment that will occur in the remainder of FY97 and beyond. Therefore, the question as to whether I included the effects of technological change in my BY1996 incremental cost estimates (to which footnote 4 on page 12 of my testimony refers) is irrelevant.

It is, however, relevant to discuss how I incorporated the introduction of new technologies into my estimates of incremental costs for the Test Year. In terms of TY1998(AR) incremental costs, my analysis takes into account the introduction of new technological enhancements to the same extent that Witness Patelunas' (USPS-T-15) roll forward analysis takes them into account, as my estimates of incremental costs for TY1998(AR) are directly proportional to Witness Patelunas' estimates of volume variable costs for the test year. It is my understanding that Witness Patelunas takes into account a number of planned cost reduction and other special programs. Presumably, some of these involve technological changes akin to those which you mention in your question, though I cannot confirm whether the actual changes you mention are included in his analysis.

<sup>1</sup> Areas where I deviate from this assumption are outlined in my response to NAA/USPS-T41-3.

It should be noted that it is possible that a shift in the marginal cost curve will result in a change in the ratio of the incremental to volume variable costs associated with the cost pool in question. To the extent that is the case, my "ratio approach" to calculating Test Year incremental costs is not perfect. That being said, I believe that the potential biases stemming from my approach are relatively insignificant in this particular case.

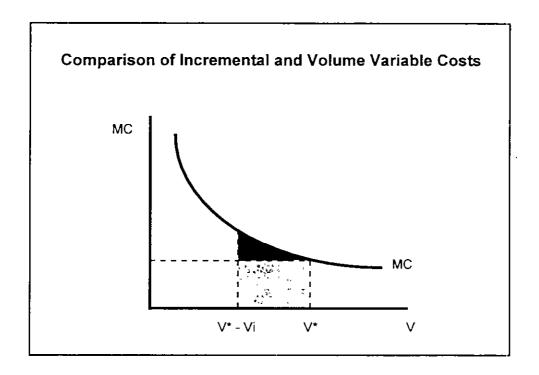
Specifically, the changes contemplated in the segments of Witness Moden's testimony to which your question refers do not appear to be radical departures or major initiatives, but less dramatic changes within a more broadly stable mail processing structure. Therefore, I would not expect a wholesale shift in the marginal cost curve for mail processing operations (although there may be some shifts within specific operations). Given the realistic limits in the ability of anyone to predict the impact of a technological change on the shape of a cost curve, I know of no superior proxy for a new ratio of incremental to volume variable costs for a given subclass than the existing ratio.

NAA/USPS-T41-6. Please refer to your direct testimony at page 19, lines 16-25.

- a) Please explain whether it is possible to aggregate the FY96 incremental costs at the component level and then roll forward these incremental costs using the roll-forward model as described by Witness Patelunas. If not, please explain why not. If yes, please explain why you have not done so.
- b) Would the approach described in part (a) above produce the same results as the "ratio approach" described at page 20, lines 2-7 of your direct testimony? If yes, please explain why. If no, please explain the reason for any differences that would result from the two approaches.
- c) Did you consider any other methods for developing TY1998 incremental costs other than the "ratio approach"? If so, please describe the alternative methods you considered and why these alternatives were discarded in favor of the "ratio approach." If no please explain why not.
- d) Please confirm that the "ratio approach" you employ assumes that the value of estimated incremental costs relative to estimated volume variable costs will be identical in the base year and test year. If confirmed, please explain in detail your justification for making this assumption.
- e) Please provide any examples where the relationship between incremental costs and volume variable costs could differ between the base year and test year.
- f) Is the "ratio approach" appropriate for cost components with large levels of specific fixed costs? Please fully explain your reasoning.

#### NAA/USPS-T41-6 Response:

Part (a): To understand why it is not possible to "roll forward" incremental costs from the base year to the test year, it is helpful to examine a simplified depiction of a marginal cost curve. The following graph, reproduced from my direct testimony (page 4), shows the BY1996 incremental and volume variable costs of subclass i associated with a hypothetical cost pool with the marginal cost curve depicted. I assume that there are no "specific-fixed" costs associated with this hypothetical cost pool throughout the remainder of my response.



The lightly shaded area (area "A") corresponds to the volume variable costs of subclass i, where "volume variable costs" conform to the strict postal definition of the term (see my response to UPS/USPS-T41-5). The darkly shaded area (area "B") represents the balance of incremental costs above and beyond the volume variable costs of "A", but does not itself contain any volume variable costs as these costs are technically defined in postal costing. We could also imagine similar curves for other cost pools.

Were I to "roll-forward" aggregate component-level BY1996 incremental cost estimates (i.e., the sums of individual cost pool estimates), as suggested in your question, I would, naturally, treat area "A" (or the sum of all area "A's" across pools) in the same fashion that Witness Patelunas (USPS-T-15) treats "volume variable costs". This would entail making a series of adjustments to the costs represented by area "A", including an adjustment for the effects of volume changes among classes between BY1996 and TY1998(AR).

Similarly, were I to borrow the roll forward methodology for incremental costing, I would treat the costs of area "B" (or the sum of all area "B's" across pools) as Witness

Patelunas treats costs which are not "volume variable" as technically defined in postal costing. This process would also entail making a series of adjustments to the base year costs. However, it is my understanding that Witness Patelunas does *not* make any adjustment for changes in mail volumes when treating costs which are not "volume variable" as defined in postal costing.

Herein lies the reason why one cannot "roll forward" base year incremental costs. While it is true that the costs of area "B" are not "volume variable" in the technical sense of the word, they are indeed related to volume. Were we to vary the value of V<sub>ii</sub> the volume of subclass i, the value represented by area "B" would certainly change. Hence, the roll forward process will lead to a distortion (i.e., an understatement if the marginal cost curve is declining and volume increases from the base year to the test year) if used to estimate test year incremental costs.<sup>2</sup> Specifically, it will account for the impact of mail volume changes on one portion of incremental costs in this simplified example but not another.

Part (b): The approach described in part (a) would not necessarily produce the same results as the "ratio approach" I describe in my direct testimony. The essential reason is described in my answer to part (a), namely that the "roll forward" approach to test year incremental costs does not take account of the volume effects on all portions of incremental costs. My "ratio approach", on the other hand, does not distinguish between "volume variable" and "non-volume variable" portions of incremental costs.

Part (c): I considered several other approaches to estimating TY98(AR) incremental costs in addition to the "ratio approach" that I finally adopted. All of these involved taking the aggregate component level data that is produced through Witness Patelunas' (USPS-T-15) roll forward model and attempting to "disaggregate" it back into the cost

It may be argued that I should treat area B costs in the same way that volume variable costs are treated in the roll-forward model. This approach would also lead to a distortion in that I would have to take into account the curvature and slope of the marginal cost curve beyond V\* (see graph), which is a complex problem not currently contemplated in the roll-forward model, which, to the best of my knowledge, was not designed to "roll forward" incremental costs.

pool-level data that is required to perform the same type of calculations that I performed in my BY1996 analysis. I abandoned these approaches, however, as it was almost impossible to trace individually and accurately all of the effects of the roll-forward process at the cost pool level, a necessity for implementing this approach successfully. This is the general problem to which I refer on page 20, lines 13 through 14, of my testimony.

Part (d): Confirmed. As I stated in my response to parts (a) and (b) of this interrogatory, if I were to use another assumption (e.g., using the roll-forward approach as described in my response to part (a) above), I might understate TY1998(AR) estimates of incremental costs. Given the difficulties associated with generating TY1998(AR) incremental costs discussed in my testimony and in the various other parts to this interrogatory, I believe that the "ratio approach" most thoroughly captures all of the various components of incremental costs.

Part (e): Please see my response to UPS/USPS-T41-1.

Part (f): As a point of clarification, I apply the "ratio approach" at the subclass level (or group of subclasses level), and not at the individual component level. Incremental costs for any individual subclass are comprised of incremental costs from a series of individual pools / components (some, but not necessarily all, of which may have "specific fixed" costs). Given this application of the "ratio approach", I will answer your question assuming that you mean "subclasses with large levels of specific fixed costs" and not "cost components with large levels of specific fixed costs".

If a cost is truly "specific" to a particular subclass and "fixed" with respect to volume, then my ratio approach would tend to overstate incremental costs in TY98(AR), because I treat the "specific fixed" portion of incremental costs in the same manner as all other portions of incremental costs through the "ratio approach". However, I do not believe this overstatement is significant (as I discuss below), and as I stated in my response to

UPS/USPS-T41-1 and part (c) of this interrogatory above, the "ratio approach" is the best approach among those that I considered.

It is important to note that the incremental cost estimates for most subclasses do not contain a high level of "specific fixed costs". Specifically, as shown in my Workpapers (page IV.A.283), what I call "specific fixed" costs generally account for a very small percentage of incremental costs for any given subclass. Only Priority Mail, Express Mail, Money Orders, and International Mail have over 1 percent of their incremental costs comprised of "specific fixed" costs.

Further, as noted above, the overstatement will only occur if a cost is truly "fixed". As I discussed at length in my response to UPS/USPS-T41-5, the term "specific fixed" costs can encompass costs that are not volume variable in the traditional sense of the term (as used in postal ratemaking), but are related to volume nevertheless. For example, many of the costs that are not volume variable (again, in the strict use of the term "volume variable") which are associated with Priority and Express Manual Mail Processing Operations and the Eagle, Western Air, and Christmas Transportation networks may not truly be "fixed" in the strict economist's use of the term (see my response to UPS/USPS-T41-5 and UPS/USPS-T41-8). To the extent that they are related to changes in volume (see my response to part (a) of this interrogatory above), then my "ratio approach" minimizes the distortion discussed above.

Finally, given the nature of the incremental cost test for the presence of cross subsidy, it is prudent to err on the "conservative" side (i.e., an overstatement of incremental costs, which, if at all, my "ratio approach" generates). Specifically, if products pass the incremental cost test using "conservative" estimates of incremental costs, then the Commission can be more confident that no cross subsidy exists.

#### NAA/USPS-T41-7. Please refer to Exhibit USPS-41B.

- a) Please confirm that total 1998 incremental costs for all subclasses, including special services and international mail are \$37,005,806 thousand. If you cannot confirm this figure, please provide the correct figure.
- b) Please confirm that total 1998 volume variable costs for all subclasses are \$34,453,862 thousand. If you cannot confirm this figure, please provide the correct figure.
- c) Please explain the difference between the total volume variable costs in part (b) above and the total costs shown by Postal Service Witness O'Hara in Exhibit USPS-30B of \$34,458,447 thousand. What costs are not included in your analysis?
- d) Please confirm that the total incremental costs are 7.4 percent higher than the total volume variable costs for 1998. If you cannot confirm this figure, please provide the correct figure.
- e) Please confirm that, using a volume variable approach, approximately 56 percent of the Postal Service's total 1998 costs (after rates) will be attributed to individual subclasses. If you cannot confirm this figure, please provide the correct figure.
- f) Please confirm that, if an incremental cost approach were used to attribute costs instead of the volume variable approach, 60 percent of the Postal Service's total 1998 costs would be attributed to individual subclasses. If you cannot confirm this figure, please provide the correct figure.

#### NAA/USPS-T41-7 Response:

Part (a): I confirm your arithmetic, but not your logic. It is true that the sum of the numbers in Column [5] of Exhibit USPS-41B is equal to \$37,005,806 thousand, however, the concept of "total 1998 incremental costs for all subclasses" has no meaning. Incremental costs are not additive across subclasses, as, for each subclass, incremental cost is calculated assuming that the volume associated with that class is the "incremental" volume. For the same reason, the incremental cost of a group of products (considered together) is not equal to the sum of the incremental costs of the group's members considered alone (even if we were to concede that such a sum is conceptually coherent). Adding incremental costs across subclasses, then, is the opposite of the proverbial "adding apples and oranges". It is equivalent to adding the same apple to

itself. As such, the sum of incremental costs across subclasses or groups of subclasses bears no definable relationship to accrued costs, volume variable costs, or any other standard.

Part (b): Confirmed.

Part (c): Column 5 of my Exhibit USPS-41B does not include approximately \$4.585 million in volume variable costs for Stamped Cards.

Part (d): Again, I confirm your arithmetic, but not your logic. Per my answer to Part (a), the calculation to which you refer has no meaning.

Part (e): I assume that by the phrase "using a volume variable approach" you mean to say that all volume variable costs and volume variable costs only are what are "attributed." If so, then I confirm your contention.

Part (f): Not confirmed, as the concept of "attributing" incremental costs has no meaning. Again, I do not deny that the value \$37,005,806 thousand is equal to roughly 60 percent of TY1998(AR) total costs. However, I do not understand what it would mean to use "an incremental cost approach... to attribute costs." As discussed throughout Dr. Panzar's testimony (USPS-T-11), incremental cost is a well-defined economic concept and should not be confused with the specifically postal term of "attributable cost". Further, even if the question were "are total incremental costs across subclasses equal to sixty percent of total Test Year costs?", I would again have to refer to my answer to part (a). I would also reiterate the point made by Dr. Panzar (USPS-T-11) that the incremental cost of a given subclass is not a proper basis for determining markups. It is only useful in testing for the presence of cross-subsidy. Hence, to think of an incremental cost as a percentage of total costs is a meaningless exercise in any event.

NAA/USPS-T41-8. Please refer to Section IV.A-2 of your workpapers, where you present the accrued load-time costs used to calculate incremental load costs. (Note that the numbering of your workpapers is unclear in the electronic files; the appropriate reference may be Section IV.A-40.) Please also refer to Section IV.A-197 of your workpapers, where you present the accrued access costs and related percentages used to calculate incremental access costs.

a) Please confirm that you employ the following accrued cost estimates for access time and load time to calculate incremental costs:

	Accrued Cost	
	(\$000)	
Stop	Access	Load
SDR	\$1,404,803	\$856,445
MDR	\$124,793	\$587,679
BAM	\$197,924	\$175,611

If you cannot confirm these figures, please provide the accrued cost estimates you employ to calculate access time and load time incremental costs.

- b) If your response to part (a) above is affirmative, please explain why you exclude the "fixed-time cost" component, as calculated by Witness Baron (USPS-T-17), from both access and load costs.
- c) Please confirm that FY96 total accrued access costs are \$1,544,209, \$138,019, and \$208,645 for SDR, MDR, and BAM stops, respectively (see Witness Baron's testimony, Page 14, Table 3, Column 4). If you cannot confirm, please provide the correct figures.
- d) Please explain why you have not used total accrued access costs when computing incremental costs for FY96.

#### NAA/USPS-T41-8 Response:

Before addressing the specific points of the question, I would note that the page numbers in the electronic version of my workpapers (USPS-LR-H-170) conform to the page numbers in the hard copy version if one simultaneously selects all the tabs in the given workbook. Hence, the appropriate page is IV.A.40, not IV.A.2.

Part (a): Confirmed.

Part (b): I exclude what your question refers to as the "fixed-time cost" from both access and load costs because I treat it separately under the category "Time at Stop," (i.e. fixed time at stop). See workpapers page IV.A.200 to 201 for the detailed calculations. As with Access costs, incremental costs for Time at Stop are calculated by the use of single-subclass stops.

Part (c): Confirmed if you are adding "Time at Stop" costs with other "Access" costs.

Part (d): Per my discussion in parts (b) and (c) above, I have accounted for all costs in my calculations of BY1996 incremental costs.

**NAA/USPS-T41-9**. Please refer to Section IV.A.1 of your workpapers. (Note that the numbering of your workpapers is unclear in the electronic files: the appropriate reference may be Section IV.A.39.) In this section of your workpapers, you present the derivation of incremental load costs.

- a) Please provide the source of the percentages presented in Columns (1) through (3) of the table. Please indicate where these percentages can be found in Library Reference H-183.
- b) If these percentages cannot be found in Library Reference H-183, please explain how you derived these percentages from the information contained in Library Reference H-183.

#### NAA/USPS-T41-9 Response:

Parts (a) and (b): The percentages in columns 1 through 3 in Section IV.A 39 of my workpapers are developed by SAS program CCS.INCCOST(LOAD2), documented in LR-H-183. The percentages can be found in LR-H-183 under the section "PROGRAM OUTPUT AND LISTING FOR CCS.INCCOST(LOAD2), USING LTSHAP96.DATA AS INPUT", on pages 7-9 of the program output.

#### **DECLARATION**

I, William M. Takis, declare under penalty of perjury that the foregoing answers are t	true
and correct, to the best of my knowledge, information, and belief.	

W.N. Toh

William M. Takis

Dated: 9/4/97

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