FEDERAL COURT REPORTERS AND ELECTRONIC RECORDING

HEARING

BEFORE THE

SUBCOMMITTEE ON COURTS, CIVIL LIBERTIES, AND THE ADMINISTRATION OF JUSTICE

OF THE

COMMITTEE ON THE JUDICIARY
HOUSE OF REPRESENTATIVES

NINETY-EIGHTH CONGRESS

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FEDERAL COURT REPORTERS AND ELECTRONIC RECORDING

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FEDERAL COURT REPORTERS AND ELECTRONIC RECORDING

THURSDAY, MARCH 8, 1984

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON COURTS, CIVIL LIBERTIES,
AND THE ADMINISTRATION OF JUSTICE,
COMMITTEE ON THE JUDICIARY,
Washington, DC.

The subcommittee met, pursuant to call, at 10:05 a.m., in room 2237, Rayburn House Office Building, Hon. Robert W. Kastenmeier (chairman of the subcommittee) presiding.

Present: Representatives Kastenmeier, Glickman, Moorhead, and Hyde.

Staff present: Michael J. Remington, chief counsel; Thomas E. Mooney, associate counsel; and Audrey Marcus, clerk.

Mr. KASTENMEIER. The subcommittee will come to order.

This morning the subcommittee is holding a hearing on Federal court reporting and electronic recording of court proceedings. The subcommittee hearing is being held at the request of several members of the subcommittee, including the ranking minority member, my colleague, Mr. Moorhead.

Before we proceed with the hearing, some brief background information is in order. In 1981, the Senate Judiciary Committee held hearings on the merits of alternative methods of reporting judicial proceedings. Thereafter, the General Accounting Office published a report outlining the desirability of an "adequately structured test" of the "feasibility of using electronic record systems in Federal District Courts."

As a result of this work by the GAO and the Senate Judiciary Subcommittee on Courts, Senator Dole included a court reporting amendment in the Federal Courts Improvement Act. The amendment passed by the Senate and was agreed to by us in conference. Changes in the organic law with respect to court reporters were, in fact, made. These changes were made dependent on the completion of a study on electronic recording by the Judicial Conference of the United States.

In response to this public law, the Judicial Conference assigned responsibility for conducting the study to the Federal Judicial Center. Due to the obvious interest in this study by both court reporters and other stenographic machinery manufacturers, on August 26, 1982, this subcommittee, in a letter signed by myself and Mr. Railsback, communicated to the Federal Judicial Center

certain questions for the study to answer. The subcommittee received two letters responding to our questions.

I would ask, without objection, that these letters be included in the hearing record.

[The letters follow:]

U.S. House of Representatives
Committee on the Judiciary
Washington, D.C. 20515
Telephone: 202-225-3951

August 26, 1982

Honorable A. Leo Levin
Director
Federal Judicial Center
1520 H Street, N.W.
Washington, D.C. 20005

Dear Mr. Levin:

As you know as a result of section 401 of the Federal Courts Improvement Act of 1982 the Judicial Conference is required to "experiment with...different methods of recording court proceedings". This provision, which is derived from the Senate version of the bill (S. 1700, Senate Report 97-275 at 31), is designed to assist the Judicial Conference under the new Act. In addition, this experimentation has great potential for assisting in our deliberations.

In addition to the expected use of this study by the Conference and the Congress we have another reason for interest in this topic. The extent to which any studies or experiments are perceived as being fair will undoubtedly affect the response to any recommendations the Conference eventually makes. Because it is likely that dissatisfied parties will petition the Congress for redress we have a strong interest in seeing that aforementioned experimentation is neutral, thoughtful and objective. In this connection it will be most helpful for you to continue your existing liaison with the affected parties.

To further your work in this regard it may be helpful to outline some issues that could be addressed in this period of experimentation--keeping in mind that during this one-year hiatus that court reporters must continue to be used in every instance required by the old law (see, Remarks of Congressman Railsback, Congressional Record, March 9, 1982, at H747):

(1) To what extent or degree is it possible to obtain the "verbatim" transcript required by section 401(a) of the Act with each of the various transcription methods?

(2) What kinds of cases, if any, require a higher degree of accuracy in transcription?

(3) What standards can be estblished to take into account the varying accoustical situations in Federal courtrooms?

(4) What differences exist between the various methods of transcription in terms of timeliness of delivery to the parties and the courts?

(5) What are the relative costs of the various methods of transcription? To the parties? To the court?

Thank you in advance for taking the time to review these concerns. We are confident that this period of experimentation can resolve some of the questions left unanswered in the Act.

Sincerely,

Robert W. Kastenmeier
Chairman, Subcommittee on Courts
Civil Liberties and the
Administration of Justice

Tom Railsback
Ranking Minority Member
Subcommittee on Courts,
Civil Liberties and the
Administration of Justice

THE FEDERAL JUDICIAL CENTER
DOLLEY MADISON HOUSE
1520 H STREET, N.W.
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A. LEO LEVIN
DIRECTOR

TELEPHONE
202/633-6311

October 6, 1982

Honorable Robert W. Kastenmeier
Chairman, Subcommittee on Courts,
Civil Liberties and the
Administration of Justice
United States House of Representatives
2137 Rayburn House Office Building
Washington, D.C. 20515

Honorable Tom Railsback
Subcommittee on Courts,
Civil Liberties and the
Administration of Justice
United States House of Representatives
2137 Rayburn House Office Building
Washington, D.C. 20515

Dear Friends:

Thank you very much for your letter concerning the court reporting experiment mandated by Public Law 97-164 § 401, which the Center is undertaking on behalf of the Judicial Conference of the United States. I appreciate very much your interest in this project, and indeed your interest in and support for the work of the Federal Judicial Center.

You can be sure that we at the Center, like you, are very sensitive to the need for a thoroughly objective experiment that will inform the Judicial Conference and the Congress of the strengths and limitations of using electronic sound recording as an official court reporting method. We appreciate as well that numerous parties are watching the experiment with keen interest, and for understandable reasons.

The enclosed documents, to be described below, demonstrate our commitment to keep all interested parties informed of the project and to seek their views and suggestions. Of course, we would be pleased to meet with you or anyone you may designate to discuss the project in greater detail. As you may know, Mr. Wheeler and Mr. Bermant of the Center staff reviewed the project on

September 2 with Mr. David Beier, at his request, and they have also been in contact with Mr. Tom Mooney to arrange a meeting at his convenience.

Allow me to take up the five questions that you raised on p. 2 of your letter as issues that should be addressed in the course of the experiment, after which I would like to comment briefly on the enclosures.

The first concerns measuring the accuracy of transcripts. We are committed to measuring the degree to which an accurate transcript can be obtained by the various court reporting methods that we are examining, mindful of the statutory requirement of a "verbatim" record.

Your second point asks: "What kinds of cases if any, require a higher degree of accuracy in transcription?" We have not designed a project that examines specifically the question of whether there are certain kinds of cases that require a higher degree of accuracy in transcription than others. It may well be that accurate transcripts are harder to achieve in some cases than in others; highly technical cases, for example, may present a greater challenge than routine cases, and I hope our data will shed some light on this question, and on whether court reporting methods vary in their capability to achieve accurate transcripts in such cases.

Your third question concerns varying acoustical situations in federal courtrooms. The test sites we have selected do possess varying acoustical characteristics. We shall be sensitive to the impact of those characteristics when we report the analysis of our data.

Fourth, you raise the issue of timely delivery of transcripts. As the Plan and the Amendments make clear, we shall undertake precise comparative measurements of the timeliness of transcript delivery, accounting for the time consumed in several segments (e.g., from notice to start of preparation and from start of preparation to delivery of transcript). We shall also measure timeliness against the standards set forth by the Judicial Conference and the Federal Rules of Appellate Procedure.

Finally, you raise the question of cost. Our project is designed to measure the costs of the various transcription methods. During the experimental period, parties will not likely purchase electronic sound recordings, because

stenotype reporters remain the official reporters until the Judicial Conference regulations called for in P.L. 97-164 § 401(a) go into effect and thus give effect to § 401(a)'s amendment of 28 U.S.C. § 753(b). However, we shall have the data to measure all these costs, including what the costs to the parties would be.

I turn now to a brief description of the enclosed documents, some of which, I realize, are already in your files. I include them here for ready reference.

1. The June 14 Plan to Evaluate Different Methods of Recording Court Proceedings in United States District Courts. This document was distributed for comment to over 90 parties, including almost 50 outside the federal judicial system. Among those, naturally, was a Task Force that the United States Court Reporters Association and the National Shorthand Reporters Association have established for the purpose of monitoring this project on behalf of those organizations. In fact, when the Task Force asked for an extension of our original deadline for comments to July 19, we extended the deadline to July 27 for all parties.

The Plan has been amended in certain particulars, as described below, but the basic design is as is stated in the June 14 Plan. We are placing electronic sound recording equipment into twelve federal district courts, selected to reflect a variety of conditions that might be thought to bear on electronic sound recording's feasibility. As you know, until the Judicial Conference promulgates the regulations called for in P.L. 97-164, the present provisions of 28 U.S.C. § 753(b) remain in effect unamended. Court reporters are required by statute to serve as the official reporters in the federal district courts, thus creating the conditions for a side-by-side comparison. We have procedures in place by which to gather data on all aspects of the performance of both systems--including the timeliness of transcript production, the costs of both systems, and of course the accuracy of the transcripts produced. The equipment now being put in place will be in use for approximately six months, after which we shall analyze the data and prepare the report for the Judicial Conference of the United States. Copies of the report will of course be made immediately available to you, and to all others who may wish them.

2. A document dated July 21, 1982, submitted by the Task Force by its Chairman, Mr. McNutt. This was the most substantial of the comments we received on the Plan.

3. Amendments to the June 14 Plan, dated September 9, 1982. The amendments reflect comments received as well as information that came to us after June 14. The amendments also emphasize some points that may not have been articulated clearly in the June 14 plan, including our commitment to testing the ability of electronic sound recording to produce an accurate transcript, and our commitment to measure the monetary costs of the various recording methods. It is possible that we may effect additional modifications in the plan, particularly as to transcript evaluation, and if so, you will be promptly provided this information, and other documents that describe the project.

4. A letter to the Chairman of the Task Force from Russell Wheeler of the Federal Judicial Center, dated September 10, 1982. This letter attempts to clarify a serious difference of opinion between the Center and the Task Force over the best method of conducting empirical reasearch and, more broadly, the locus of responsibility for conducting judicial administration research for the federal courts. As Mr. Wheeler's letter explains, and as you certainly know, Congress, when it established the Center, did not intend that any interested party would have the right to claim an official role in the design or conduct of our research. We remain, of course, open and eager to receive all comments and suggestions.

I state again my appreciation for your interest in this project, my full agreement with the objectives and concerns stated in your letter, and our willingness to meet with you or your staff at your convenience should you find it desirable to discuss this matter in any greater detail at any time during the course of the project.

Sincerely,

A. Leo Levin

ALL:chm

Enclosures

THE FEDERAL JUDICIAL CENTER
DOLLEY MADISON HOUSE
1520 H STREET, N.W.
WASHINGTON, D.C. 20005

November 22, 1982

Writer's Direct Dial Number:
633-6216

Honorable Robert W. Kastenmeier
Chairman, Subcommittee on Courts,
Civil Liberties and the
Administration of Justice
United States House of Representatives
Washington, D.C. 20515

Honorable Tom Railsback
Subcommittee on Courts,
Civil Liberties and the
Administration of Justice
United States House of Representatives
Washington, D.C. 20515

Dear Chairman Kastenmeier and Mr. Railsback:

I write in connection with the Center's experiment concerning electronic sound recording as a court reporting method, about which Center Director A. Leo Levin wrote you on October 6, in response to your inquiry.

With that letter, he sent you a June 14, 1982 Plan for the experiment, along with separate amendments to that Plan, dated September 9. For ease of use, we have now consolidated those two documents into one, which I send because of your interest in this project.

The evaluation of the accuracy of the reporters' transcripts and those produced from the electronic sound recording was a matter of special interest in your inquiry, and thus I should point out that we have also broadened the portion of the plan concerning that evaluation. Those additional changes are also reflected in the amended Plan. First, we have expanded the evaluation of transcript discrepancies that may be functionally relevant; we shall seek to learn the effect that any differences in the two transcripts might have had, not only on appeal, but also for other uses to which the transcript is put, such as evaluating a case for possible appeal or planning trial strategy. Second, we have added an additional evaluation

method; rather than evaluate only "functionally relevant" differences, we shall also assess, as best we can, the overall accuracy of the two transcripts.

The two evaluation methods are described on pp. 14-16 of the Plan. For ease in comparing the new language with the old, however, I have included a separate memorandum that shows how the earlier language was revised.

We appreciate very much your interest in this experiment, and stand ready to provide whatever assistance or additional information that you might want.

Cordially,

Russell Wheeler

cc: Mr. David Beier
Mr. Tom Mooney

THE FEDERAL JUDICIAL CENTER
DOLLEY MADISON HOUSE
1520 H STREET, N.W.
WASHINGTON, D. C. 20005

November 19, 1982

The document below is the Federal Judicial Center's "PLAN TO EVALUATE DIFFERENT METHODS OF RECORDING COURT PROCEEDINGS IN UNITED STATES DISTRICT COURTS" with all amendments to the Plan through November 19, 1982. A June 14, 1982 statement of the Plan had been sent to numerous groups and individuals interested in the project, seeking comments and suggestions. On September 9, 1982, the Center distributed separate amendments to the June 14 Plan; those amendments have now been incorporated into the text of the Plan, below. The instant document also includes (1) additional amendments that broaden the evaluation of transcript accuracy, (2) appropriate changes in the introductory paragraphs, and (3) occasional other changes to reflect developments, and to alter grammar or syntax.

PLAN TO EVALUATE DIFFERENT METHODS OF RECORDING COURT PROCEEDINGS IN UNITED STATES DISTRICT COURTS, AS AMENDED TO NOVEMBER 19, 1982

The Federal Judicial Center and the Administrative Office of the United States Courts have been asked to execute for the Judicial Conference of the United States the statutory directive that the Conference "experiment with the different methods of recording court proceedings" (Public Law 97-164, § 401(b)).[1] This Plan describes the recent

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1. The reference to different methods of "recording court proceedings" requires some explanation. Section 753(b) of Title 28, United States Code, requires a court reporter to "record [proceedings] verbatim by shorthand or by mechanical means. . . ." As amended by P.L. 97-164--such amendment to take effect sometime after September, 1983--§ 753(b) will require proceedings to "be recorded verbatim by shorthand, mechanical means, electronic sound recording, or any other method. . . ." Following this terminology, Congress has required the Judicial Conference to experiment with "the different methods of recording court proceedings" (emphasis added). Court reporting, however, involves much more than mere "recording." It includes, for example, the transcription of what has been recorded as well as reading back in court from the recorded material. This experiment, therefore, deals with the full scope of court reporting functions, rather than merely with the "recording" function.

amendments to the statute governing federal court reporting, the legislative directive for the experiment, and describes the objectives of the study and its general method, procedures, and timetable.

The project's design was coordinated through the Federal Judicial Center-Administrative Office Joint Development Planning Committee--established several years ago and including key administrative personnel from both agencies. The Committee deals with all aspects of the work of the Center and the Administrative Office that specifically require a high level of cooperation. A. Leo Levin and William E. Foley, Directors respectively of the Center and the Administrative Office, approved the basic project scope and design.

Throughout the course of this experiment, the Center welcomes all comments, critiques, criticisms, and suggestions about the experiment, including any specific points of information about its conduct that anyone may wish to provide us. Please provide them to Russell R. Wheeler, Federal Judicial Center, 1520 H Street, N.W. Washington, D.C. 20005 (202/FTS 633-6216).

The Center will, of course, publish a report describing in detail how this experiment was designed, how the data were gathered and analyzed, and the results of the analysis. All methodologies employed in the experiment will be fully described and explained. Any special circumstances that are found to obtain in the test sites will of course be reported. This report will be made available as soon as possible to appropriate judicial personnel, including those responsible for preparing the regulations called for in P.L. 97-164 § 401(a), and to all interested parties, who may wish to comment on the policy question of whether and to what extent electronic sound recording should be used as an official court reporting method in United States District Courts.

I. Statutory Changes and Authority for the Experiment

A. Statutory Provisions

The directive to experiment is in § 401(b) of The Federal Courts Improvement Act of 1982, P.L. 97-164, signed April 2, 1982. Among other things, the experiment will provide the Conference with information to aid it in developing regulations called for in P.L. 97-164 § 401(a). Such

regulations are to take effect no sooner than October 1, 1983, i.e., "one year after the effective date of this Act," which is October 1, 1982. They are to "prescribe the types of electronic sound recording or other means which may be used" to record district court proceedings pursuant to 28 U.S.C. § 753(b) as amended. P.L. 97-164, § 401(a), amends § 753(b) to give "electronic sound recording or any other method" equal status with "shorthand [or] mechanical means" as methods of recording district court proceedings; the particular method to use is at the discretion of the judge. Until the effective date of the regulations, however, § 753(b) remains in effect unamended: the record and any transcript of the proceedings will be prepared by the official court reporter using the methods currently authorized. The full text of § 401 is attached as Appendix A.

1. Amendment of the Court Reporter Statute. Section 753(b) currently

--requires that a court reporter, appointed pursuant to § 753(a), attend each session of court and every other proceeding as directed, and "record [the proceedings] verbatim by shorthand or by mechanical means which may be augmented by electronic sound recording subject to regulations promulgated by the Judicial Conference."

--directs the reporter to "attach his official certificate to the orginial [sic] shorthand notes or other original record so taken," e.g., stenotype notes, and file them with the clerk. Electronic sound recordings of arraignments, pleas or sentences are now the only other official record of proceedings, and only if certified by the court reporter.

--directs the reporter to prepare and to certify certain transcripts, viz.: (1) all arraignments, pleas, and proceedings in connection with imposition of a sentence (unless they have been electronically sound recorded and certified and filed as indicated above); (2) other parts of the certified record for which rule or order of court requires transcription; and (3) those parts of the record for which transcription is requested by a judge, or by any party to any proceeding (who agrees to pay the fee).

As amended, § 753(b) provides simply that "[e]ach session of the court and every other proceeding designated by rule or order of the court or by one of the judges shall be recorded verbatim by shorthand, mechanical means, electronic sound recording, or any other method, subject to regulations promulgated by the Judicial Conference and

subject to the discretion and approval of the judge." As noted, however, the regulations may not take effect until October 1, 1983; when they take effect, so do the amendments to 28 U.S.C. § 753(b). (This means, inter alia, that during the life of the experiment no electronic sound recording transcripts will go up on appeal.)

Under amended § 753(b), the record filed with the clerk is the shorthand notes or other original records produced and officially certified by the reporter "or other individual designated to produce the record." Such an "other individual" would presumably be the person designated by the court to operate the electronic sound recording machine, or other alternative method to record the proceedings. Amended § 753(b) does not change the instances in which certified transcripts are to, or may, be produced, although it authorizes the transcription and certification of the record by the "reporter or other individual designated to produce the record."

Amended § 753(b) does not mandate "electronic sound recording, or any other method" to produce the certified record. The method or methods to be used are subject to the discretion of the individual judge, and as noted, "to regulations promulgated by the Judicial Conference," which "shall prescribe the types of electronic sound recording or other means which may be used." The Act does not specify the effective date of these regulations, except that it may not be before October 1, 1983. Nor does the Act preclude the promulgation of further regulations.

2. Directive to Experiment. P.L. 97-164, § 401(b) directs the Judicial Conference to "experiment with the different methods of recording court proceedings." The experiment is specifically directed to occur "[d]uring the one-year period after the date of the enactment of this Act." The Act imposes no prohibition to further experimentation beyond the year specified in the legislation.

B. Statutory Background

Section 401 of P.L. 97-164 stems from hearings on "Improvements in Federal Court Reporting Procedures," held June 26, 1981 before the Senate Judiciary Subcommittee on Courts, chaired by Senator Robert Dole. (Hearings before the Subcommittee on Courts, Committee on the Judiciary, United States Senate, 97th Cong., 1st Sess., on Improvements in Federal Court Reporting Procedures.) One impetus for those hearings was a General Accounting Office study of

federal court reporting. The report of that study has recently been issued (Federal Court Reporting System: Outdated and Loosely Supervised, Report to the Congress by the Comptroller General of the United States, June 8, 1982). William J. Anderson, Director of GAO's General Government Division, told Senator Dole's Subcommittee on June 26, 1981:

> "[W]e believe consideration should be given to a proven alternative, the electronic recording of court proceedings. Such a change would not only result in substantial savings but would also provide a better record of courtroom proceedings" (Hearings, p. 13).

In November, the Senate Judiciary Committee reported out S. 1700. Section 401 of that bill included the changes in 28 U.S.C. § 753(b) as described above, but did not include § 401(b) as enacted, which directs the experimentation and delays the effective date of amended § 753(b) until the effective date of Judicial Conference regulations. Senator Heflin introduced § 401(b) (as eventually enacted) on the Senate floor, on December 8. He said:

> "A 1-year test period with a mandatory evaluation by the Judicial Conference will provide Congress with the basis for determining what is the best system for court reporting. During the experimental period, there will be a comparison between the existing system and various electronic systems, side by side. . . . Congress should take care in instituting a new mechanism which has not yet been appropriately examined compared to an existing and proven system" (Cong. Rec., December 8, 1981, S.14702).

Earlier, in anticipation of Senator Heflin's amendment, Senator Dole commented in support:

> "At the end of the test period, the results of each method will be compared in order that the relative effectiveness of alternative reporting methods can be properly evaluated. I believe that such a testing period would enable the Congress and the Administrative Office of the U.S. Courts to determine readily whether or not the alternative methods are feasible--and would aid in any transition to new reporting systems" (Cong. Rec., Dec. 8, 1981, S.14694).

II. Elements of the Study

A. Timing

It is for the Judicial Conference to decide when after September 30, 1983, it wishes to make effective the regulations authorized by the statute. However, absent any indication that the Conference intends to delay that well beyond October 1, 1983, the experiment has been designed

--to have data available for analysis by April 1, 1983; and

--to complete analysis of the data, preparation of reports on the experiment, and any draft regulations that may be requested, by June or July 1983 for review by appropriate Judicial Conference committees.

Appendix B presents a time chart for the experiment.

B. Study Objectives and Limitations

The principal objectives of this study are to assess electronic sound recording and to provide the Judicial Conference with information to help it develop regulations to "prescribe the types of electronic sound recording or other means which may be used" (P.L. 97-164, § 401(a)).

1. Focus on Electronic Sound Recording. The statute directs experimentation with what it calls "the different methods of recording court proceedings." This study, however, will only test electronic sound recording: that is to say, for purposes of the experiment, only electronic sound recording equipment will be installed in the test sites and its performance rigorously evaluated. This decision is based on several factors. The most important is that electronic sound recording appears to be the most feasible alternative to the use of stenotype reporters, be they assisted by computers for transcription, or by various stenomask or voicewriting devices. Other methods of recording court proceedings appear at the present time to be of questionable practicality for widespread adoption in the federal district courts. The need to limit the experiment is heightened by the relatively short time of the experiment should the Judicial Conference wish information available in time to allow it to promulgate regulations to take effect on or shortly after October 1, 1983. So focusing the experiment does not preclude evaluation of other technologies or approaches at a future time.

The Senate subcommittee hearings took note of the sustained interest in computer-aided transcription as a technological innovation. Because of that same interest, last year the Federal Judicial Center published Greenwood, Computer-Aided Transcription: A Survey of Federal Court Reporters' Perceptions. At the time of this study, from fifty to sixty federal court reporters used computer-aided transcription technologies. The project will include some reporters using computer-aided transcription in its parallel examination of court reporters and electronic sound recording.

2. Other Limitations. The project will not evaluate the effectiveness of electronic sound recording (or any other method) for recording depositions or other evidentiary matters such as wire taps. Nor will it deal with topics in the General Accounting Office report other than electronic sound recording.

C. Study Design

The basic design of the study is to place electronic sound recording equipment into a sample of courtrooms in order to measure, according to a variety of criteria, the performance of the recording equipment, the performance of those directed to operate it, and the transcripts produced from the audio tapes. Cassette four-track recorders will be used in eleven courts; reel-to-reel eight track recorders will be used in one court, that in the District of Massachusetts. The four-track cassette recorders are produced by Gyyr Products of Anaheim, California, authorized by the General Services Administration in the FSC Group 58, Part 3, Sec. B, FSC Class 5835: Recording and Reproducing Video and Audio Equipment. The basic unit is the ACR-7 Dual Deck Recorder/Transcriber, 15/16 ips. The cost for a quantity of five or more of such units is $3,003 per unit; additional accessories, supplies, and services will be purchased from Gyyr in accordance with GSA schedule contract number GS-00C90438. The eight-track reel recorder is produced by Baird Corporation of Bedford, Massachusetts. The basic recording unit is the MR-600-AT Recorder/Transcriber, 15/16 ips. The cost for purchase of one such unit is $5,727; additional accessories, supplies, and services will be purchased from Baird in accordance with an agreement between the Administrative Office of the United States Courts and Baird Corporation.

1. Test Sites. The purpose of the experiment is not simply to assess the performance of electronic sound record-

ing. Rather it is to assess its performance in the range of operating conditions that typify the federal courts. Those writing regulations, and district judges contemplating a new recording method, would surely want to know, for example, whether electronic sound recording can allow for the production of daily transcript in high volume courts, or whether timely transcript could be regularly produced from electronic sound recording only in courts within a specified proximity of a certified transcription service.

The courtrooms in which we plan to test electronic sound recording are listed in Appendix C. For most courtrooms, the judge listed will be the only judge to use the courtroom during the experiment. These twelve sites will provide four large district courts (ten or more judgeships), six moderate sized district courts (five to nine judgeships), and two small courts. The courtrooms vary in their caseloads and in the amount of transcript production that can be expected. At least two (W.D. Texas and D. New Mexico) have a higher than normal proportion of bilingual proceedings. At least one of the court reporters usually present in one of these courtrooms regularly uses computer-aided transcription. Furthermore, the courts vary in their proximity to transcript production companies. The number of test sites will be expanded if it proves necessary.

The selection of the twelve judges and respective courtrooms is the result of a process to ensure adequate representation of key variables. The specific selection process proceeded along several courses. Several judges, not all of whom are included, volunteered for the project once they had word that some sort of experiment would take place. Center and Administrative Office staff contacted numerous courts of various characteristics to learn whether judges there might be willing to participate, and from this information developed a list of candidate courtrooms that would provide the necessary representativeness. It may prove necessary to expand the number of test sites, in order to assess all or some of the factors involved in the experiment. If that does become necessary, we shall welcome suggestions as to those sites, and, indeed, several recommendations have already been offered in the event that the sites must be expanded.

2. Specific Research Procedures. Until the Judicial Conference regulations become effective, and therefore during the life of this experiment, the official court reporter will continue to be the only individual designated to produce the official record and thus must continue to perform all court reporting duties prescribed by statute. The experiment is designed to operate without burdening the official court reporter, who will be responsible neither for the operation of the court reporting equipment nor for any but the most minimal administrative or procedural practices relating to the conduct of the experiment. At this point, it would appear that the court reporters will be asked to do nothing more than complete the first part of a "transcript request form" for regular or expedited copy. With this information, appropriate court officials can trigger the preparation of a transcript from the electronic sound recording. In the courts in which transcripts will be prepared from audio tapes for daily copy, reporters will be asked to provide appropriate court personnel timely information about all requests for this copy. Court reporters will be required to submit all notes and records prepared in court--with the exception of those for daily copy--to the clerk of court after each day's proceedings. Certain exceptions to these procedures, as requested, may be necessary.

The electronic sound recording system is expected to remain in each district court for a period of five to six months. The electronic recording system will operate according to procedures and practices established by the Federal Judicial Center and Administrative Office staff, who will coordinate with the participating district judges and supporting personnel. In all courtrooms, personnel similar to those who would have the responsibility if electronic sound recording were the primary court reporting method will have full responsibility for the control and operation of the recording equipment, and for additional administrative practices that are necessary for the preparation of the record (such as monitoring the record and preparing the log and index of relevant events).

The equipment "operators" are to be distinguished from the "monitors," described on p. 11. A written specification of court reporting duties for each operator shall be prepared and shall take note of additional non-court reporting duties that may be assigned. It is impossible to certify at this point that the list will be identical to the functions that would exist at a time that electronic sound recording were to be used as an official court reporting method. Federal district court personnel have not been used for this task, and the exact nature of these operations cannot be known in advance of the test. Clearly, however, the experiment would be deficient if the equipment operators performed only the court reporting functions described

above, and then the data so derived were used to assess whether similar individuals could do those functions and perform other tasks as well. By the same token, for example, the project would not produce adequate comparisons if stenotype reporters were rotated in a project courtroom at a rate appreciably greater than would be the case under normal operating conditions. Any substantial deviation from reporters' standard practice in the test sites will be duly noted in the project report.

When counsel request transcripts from the official court reporters, procedures will go into effect by which the sound recording will be sent to one of several transcription companies to prepare typed transcripts of the audio record. The procedures will of course be designed to provide fair notice for transcript preparation to the official reporters as well as to the electronic sound recording operators. As the procedures are specified, including any variations from court to court if necessary, they shall be a matter of public record. Furthermore, there is a difference between a notice to prepare transcripts and the actual start of their preparation. The final report shall present data on both events and related factors. The identity of the transcription companies with whom the Center signs contracts for this project will be a matter of public record.

Consideration will also be given to other methods of transcription production. We cannot state with specificity what those other methods of transcript production might be. We may attempt, for example, to analyze the feasibility of transcript production within the courthouse, perhaps using court staff. Of course, all costs and other data will be analyzed if this procedure is used. If and when such procedures as are referenced generally in the Plan are developed with specificity, they will be a matter of public record, and will be clearly documented in the final report.

The guidelines for the preparation of the typed transcript[2] will incorporate those now prescribed by the Judicial Conference, and those developed with the help of a technical panel created for this project. The panel includes court reporters and representatives of

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2. REVISED GUIDELINES for the PREPARATION OF TRANSCRIPTS, pursuant to the Plan to Evaluate Different Methods of Recording Court Proceedings in United States District Courts. The Federal Judicial Center, Innovations and Systems Development Division, October 12, 1982.

transcription companies, in order to benefit from their knowledge and advice on this matter. Typists preparing transcripts from the electronic sound recording shall be expected to follow these guidelines, and we hope that the transcripts produced under the authority of the official reporters would also reflect these guidelines. We shall note the extent to which differences between transcripts appear to be due to the guidelines developed for this project. These transcription guidelines, moreover, will be assessed in the project report, because they may be of interest to the Judicial Conference.

To assist the Center in the comprehensive and continuous monitoring of the experiment, the Center will rely on monitors on contract to the Center at each test site, persons with experience and a reputation for objectivity in the community. There will be no more than one monitor at each site. The monitors will be responsible for assuring full compliance with the prescribed tests and procedures, for assisting in the gathering of pertinent data, as well as for providing monthly status reports. They will have no responsibility for managing or advising the courts. Once the monitors are selected and under contract--and they have been selected primarily upon the recommendation of the judges participating--their names shall be a matter of public record. Any meetings that the Center sponsors for all the monitors will be open to all interested observers.

3. Assessment of Electronic Sound Recording.

a. In recording the proceedings. The performance of the electronic sound recording systems in recording the proceedings will be assessed on the criteria of costs and ease of use. It will be necessary to determine whether the electronic sound recording method meets prescribed Judicial Conference requirements as to what must be recorded. The experiment will also test the degree to which electronic sound recording meets judges' instructions and informal expectations as to, for example, read backs and play backs of recorded testimony, identification of speakers, recording of side bar conferences, voir dire, statements made almost simultaneously, and proceedings held outside the courtroom.

b. In producing transcript. The production of transcripts from electronic sound recordings will be analyzed as to the costs of preparing typed transcript according to Judicial Conference guidelines; the costs of preparing a duplicate audio record of court proceedings; the timeliness of typed transcript production, including the production of

daily copy; the productivity and production rates associated with preparing the typed transcript; and their adequacy for the purposes for which the transcript is used. It should be stressed, as alluded to above, that the comparative costs of electronic sound recording and live reporters for all phases of recording the proceedings and producing the transcript will be assessed throughout the project and reported fully in the project report. All cost items will be analyzed, including the comparative costs of equipment, the costs of all personnel needed to perform the various functions, of requisite supplies, as well as the cost of contracted services for transcript production. We wish, among other things, to test the accuracy of Senator Dole's statement: "Allowing the courts to utilize electronic means of reporting, such as are commonly used by Congress, would mean substantial savings and greater efficiency in the court reporting process" (Dec. 8, 1981, Cong. Rec. 14694).

The matter of timeliness. Timeliness of transcript production can and will be determined on two separate measures. First, it will be possible to compare the elapsed times from request for transcript to the start of production of transcript, and from the start of production of transcript to the completion and delivery of typed transcript. However, this will not provide a complete measure of the timeliness of either stenotype-produced or electronic sound recording-produced transcripts. Second, the delivery of transcript will be evaluated according to its submission within the varying time limits as prescribed by the Federal Rules of Appellate Procedure and by relevant Judicial Conference Guidelines governing the production of ordinary, expedited, daily, and hourly transcript. Care will be taken to ensure that the project assesses the production of each type of transcript.

The matter of accuracy. Although the statute, currently and as amended, specifies that proceedings in the district court "shall be recorded verbatim," it provides no definition of a "verbatim" recording, and there are no existing court rules or guidelines nor even uniform or practical definitions by which it may be certified that a recording is indeed "verbatim." The dictionary standard of verbatim is "word for word." At this time, each official court reporter has established personal discretionary guidelines as to what should be included in, and what should be transcribed from, the official record of the proceedings, and thus what is "verbatim."

It is beyond question that an "accurate" transcript is essential, and the experiment is intended to determine if tape-produced transcripts meet that standard. The basic objective is captured by the following quotation from Judge Levin H. Campbell of the First Circuit Court of Appeals and chairman of the Judicial Conference Subcommittee on Supporting Personnel in a November 30, 1981 letter to Mr. William J. Anderson, Director of the General Government Division of the United States General Accounting Office. We are grateful to a task force of the United States Court Reporters Association and the National Association of Shorthand Reporters for directing us to Judge Campbell's words.

> The maintenance of a record of proceedings in a trial court is absolutely essential to the working of our judiciary. There can be no meaningful right of appellate review without an accurate trial record. Our aim, therefore, must not be just to report court proceedings in the cheapest possible way but to do so in the way best calculated to advance the administration of justice. Electronic sound recording may eventually prove to be such a method. But if the present system of recording court proceedings were to be replaced by a markedly inferior system, the financial savings would be vastly outweighed by the devaluation of our system of justice. (Letter reprinted in General Accounting Office, Federal Court Reporting System: Outdated and Loosely Supervised, June 8, 1982, at 69-70.)

A general adjective such as "accurate," however, has fully interpretable meaning only in context. Our commitment to accuracy in transcripts does not mean we believe that all differences between any two transcripts of the same proceeding are of equal significance. We would be very surprised were proponents of live court reporters or electronic sound recording to hold such a belief, although to be comprehensive, the evaluation procedures described below will seek assessment of all non-discretionary differences in the two transcripts. Our goal is to measure accuracy but not to let the project slip into fruitless analysis of trivial differences. Judge Campbell's statement accords fully with this concept of accuracy. Our goal is to determine whether electronic sound recording is among those procedures "best calculated to advance the administration of justice." We believe that the evaluation procedures explained below are carefully constructed to allow the

assessment of whether transcripts produced from electronic sound recordings meet that standard of accuracy.

The electronic sound recording transcripts should not be evaluated solely by comparing them, word for word, against reporter-produced transcripts, nor against the audio tapes or the original stenotype record. Rather, they need also to be evaluated by the use of expert judgment as to the functional relevance of any discrepancies. Thus, two methods of evaluation will be utilized. One method will assess the frequency with which functionally relevant discrepancies occur and the accuracy of the two sets of transcripts with regard to the functionally relevant points. The other will compare the overall accuracy of the two sets of transcripts.

Functionally Relevant Discrepancies

The evaluation of functionally relevant discrepancies will be in four stages. First, a scientific sample -- and the sampling method will of course be fully described in the final report -- of all transcript pages will be given to proofreaders, who will mark all places where the sound recording transcripts deviate from the reporter-produced transcripts. Second, skilled persons will review the deviations marked by the proofreaders to identify those that might be meaningful and therefore should be evaluated by a panel of experts; the pages to be evaluated will be placed in appropriate context. Third, panels of judges and attorneys will be asked to evaluate the deviations by the application of such evaluation components as are embodied in the following question:

With regard to each discrepancy, would using one transcript as opposed to the other make a difference to you when using the transcript:

(1) to evaluate a case for possible appeal or in considering whether to file post-trial motions,

(2) to write an appellate brief, argue the case on appeal, or decide a case on appeal,

(3) to plan trial strategy

(4) for other, unrelated proceedings, such as the preparation for administrative hearings, or trials into which the transcript might be submitted as evidence?

The evaluators will be given more specific guidance on the application of these situations.

The fourth stage is a verification stage: those discrepant portions of transcript that the expert panels tell us might have made a difference in one or more of the situations identified for their consideration will be compared with the electronic sound recording and assigned to one of the four categories below:

(1) the official transcript is correct and the ESR transcript is incorrect

(2) the official transcript is incorrect and the ESR transcript is correct

(3) both transcripts are incorrect

(4) the discrepancy cannot be resolved by listening to the audio recording and the reporter's transcript is thus presumed correct.

Overall Accuracy

For the accuracy evaluation, a sample will be selected from the pages that have been proofread. First, all discrepancies will be sorted according to whether or not they are capable of being resolved by listening to the audiotapes. (Some discrepancies will present only discretionary orthographic or grammatical conventions. Whether, for example, two complete phrases are transcribed as two separate sentences or as one sentence, punctuated by a semicolon, is a discretionary discrepancy, which cannot be resolved by checking the transcripts against the audio record of the proceeding.)

All discrepancies (other than those presenting only discretionary orthographic or grammatical conventions) will then be checked against the audio record to determine (a) whether or not the sound recording is in fact clearly audible and (b), if it is, which of the transcripts, if either, is correct. Furthermore, all deviations from the audio recording will be categorized; possible categories might include word omissions, word substitutions, changes in verb tense, changes in word order, and other types of differences that present themselves during the evaluation. Deviations such as omissions of false starts or stutters will be separately classified because such omissions may be discretionary under the project's transcription guidelines.

Appendix D presents a graphic summary of this evaluation plan.

In addition to the evaluation procedure described above, all transcripts will be made available on request to the judges and attorneys who participated in the respective proceedings, for any comments, analysis, comparisons, and critique that they may care to offer. Any such observations will be reported in the project report.

IV. Project Organization and Personnel

This experiment is primarily the responsibility of the Federal Judicial Center, and more specifically of its Division of Innovations and Systems Devlopment. The Director of that Division is Dr. Gordon Bermant. The project will receive occasional assistance from other Center personnel, especially those in its Division of Research. The project will receive technical assistance and financial support from the Administrative Office of the United States Courts.

The Directors of the Center and the Administrative Office have determined, in light of the numerous persons and groups having an interest in the project's conduct and outcome, that all inquiries concerning the project should be directed to one person, Mr. Wheeler, identified on p. 2 of this document.

APPENDIX A
Section 401 of P.L. 97-164

DISTRICT COURT REPORTERS

SEC. 401. (a) Section 753(b) of title 28, United States Code, shall be amended to read as follows:

"(b) Each session of the court and every other proceeding designated by rule or order of the court or by one of the judges shall be recorded verbatim by shorthand, mechanical means, electronic sound recording, or any other method, subject to regulations promulgated by the Judicial Conference and subject to the discretion and approval of the judge. The regulations promulgated pursuant to the preceding sentence shall prescribe the types of electronic sound recording or other means which may be used. Proceedings to be recorded under this section include (1) all proceedings in criminal cases had in open court; (2) all proceedings in other cases had in open court unless the parties with the approval of the judge shall agree specifically to the contrary; and (3) such other proceedings as a judge of the court may direct or as may be required by rule or order of court as may be requested by any party to the proceeding.

"The reporter or other individual designated to produce the record shall attach his official certificate to the original shorthand notes or other original records so taken and promptly file them with the clerk who shall preserve them in the public records of the court for not less than ten years.

"The reporter or other individual designated to produce the record shall transcribe and certify such parts of the record of proceedings as may be required by any rule or order of court, including all arraignments, pleas, and proceedings in connection with the imposition of sentence in criminal cases unless they have been recorded by electronic sound recording as provided in this subsection and the original records so taken have been certified by him and filed with the clerk as provided in this subsection. He shall also transcribe and certify such other parts of the record of proceedings as may be required by rule or order of court. Upon the request of any party to any proceeding which has been so recorded who has agreed to pay the fee therefor, or of a judge of the court, the reporter or other individual designated to produce the record shall promptly transcribe the original records of the requested parts of the proceedings and attach to the transcript his official certificate, and deliver the same to the party or judge making the request.

"The reporter or other designated individual shall promptly deliver to the clerk for the records of the court a certified copy of any transcript so made.

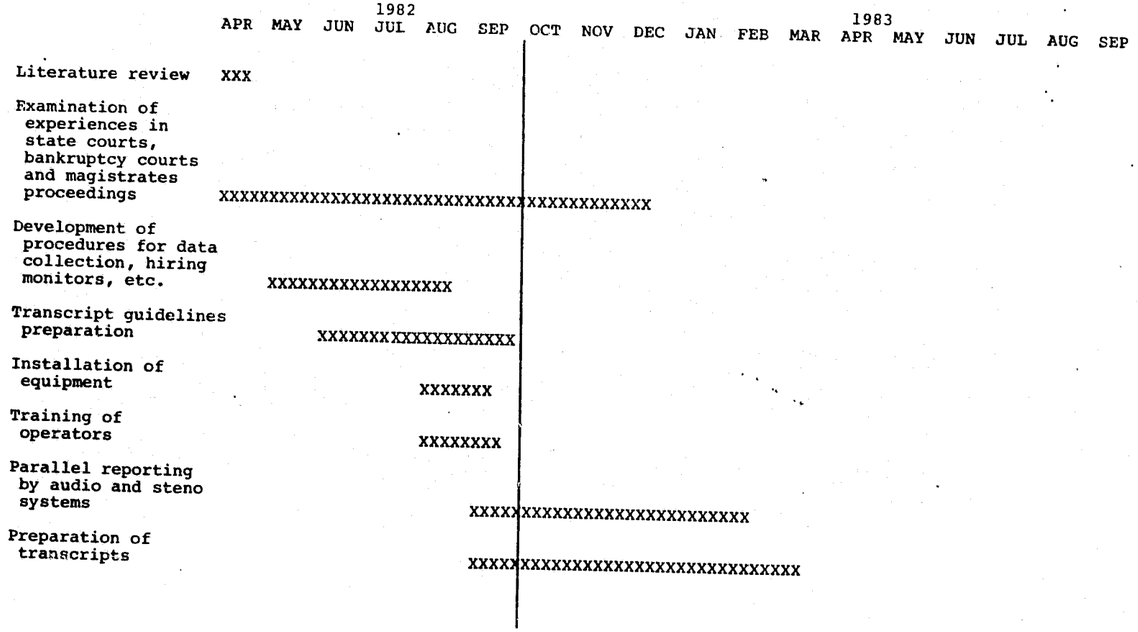
"The transcript in any case certified by the reporter or other individual designated to produce the record shall be deemed prima facie a correct statement of the testimony taken and proceedings had. No transcripts of the proceedings of the court shall be considered as official except those made from the records certified by the reporter or other individual designated to produce the record.

"The original notes or other original records and the copy of the transcript in the office of the clerk shall be open during office hours to inspection by any person without charge."

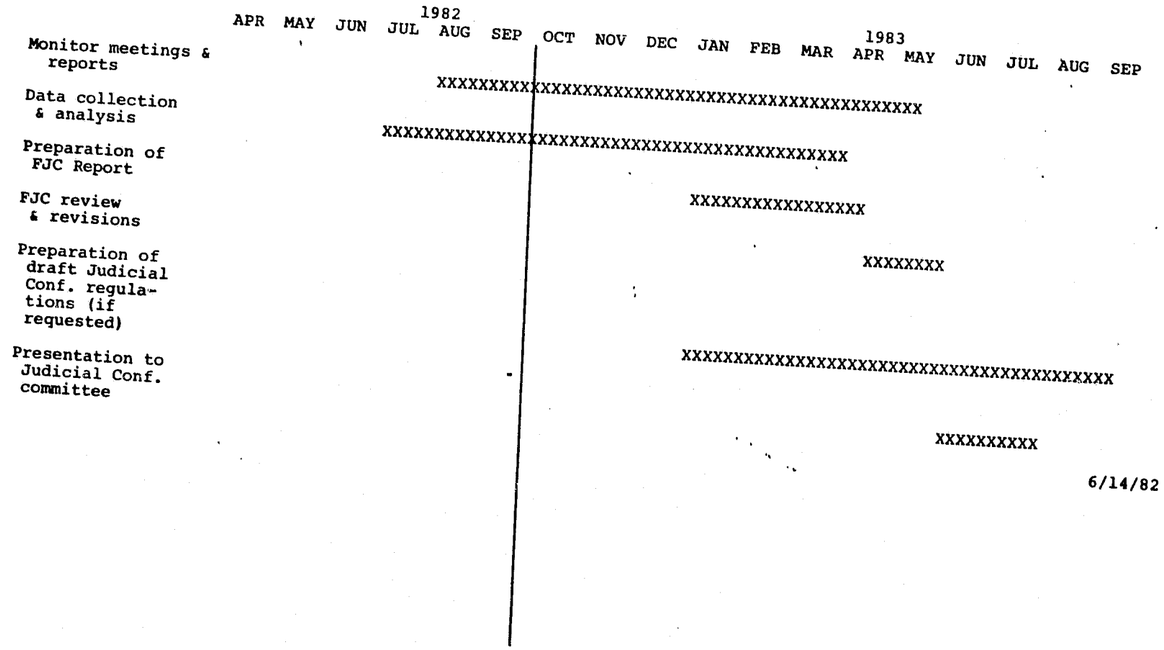
(b) The regulations promulgated by the Judicial Conference pursuant to subsection (b) of section 753 of title 28, as amended by subsection (a) of this section, shall not take effect before one year after the effective date of this Act. During the one-year period after the date of the enactment of this Act, the Judicial Conference shall experiment with the different methods of recording court proceedings. Prior to the effective date of such regulations, the law and regulations in effect the day before the date of enactment of this Act shall remain in full force and effect.

November 19, 1982

APPENDIX B
TIME CHART FOR THE PLAN



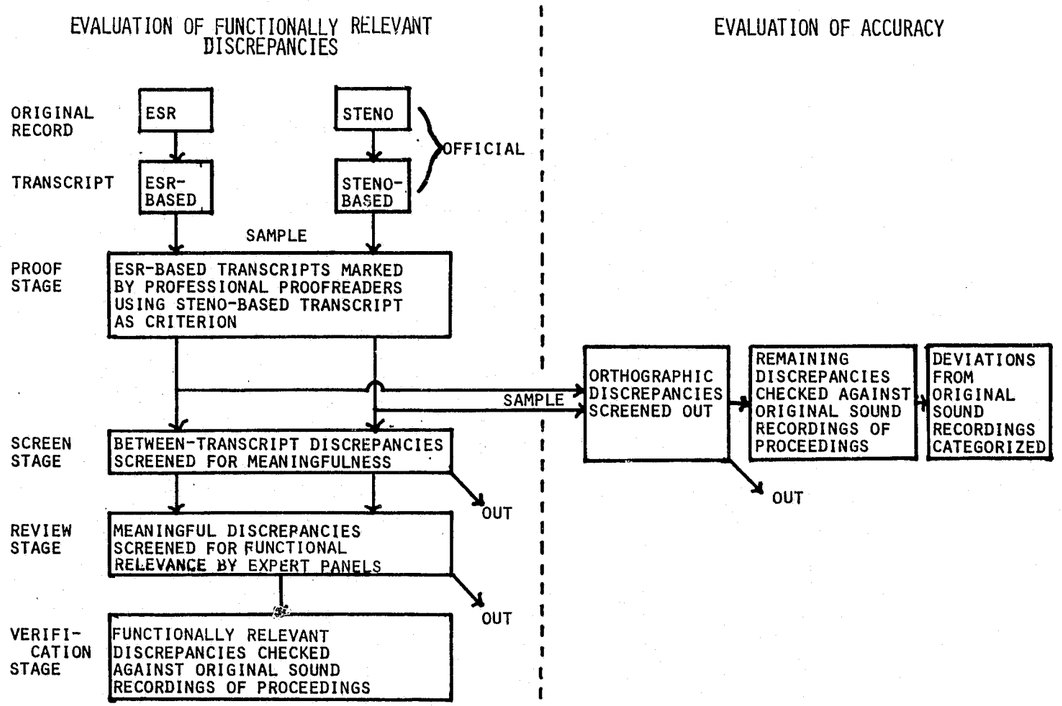
November 19, 1982



November 19, 1982

APPENDIX C
TEST SITES FOR COURT REPORTING EXPERIMENT

District	Judge
Massachusetts (CA-1)	Rya W. Zobel (Boston)
E.D. New York (CA-2)	Jack B. Weinstein (Brooklyn)
E.D. Pennsylvania (CA-3)	Daniel H. Huyett (Philadelphia)
South Carolina (CA-4)	Charles E. Simons (Columbia)
W.D. Texas (CA-5)	William S. Sessions (San Antonio)
W.D. Louisiana (CA-5)	John M. Shaw (Opelousas)
W.D. Wisconsin (CA-7)	Barbara Crabb (Madison)
E.D. Missouri (CA-8)	Clyde S. Cahill (St. Louis)
N.D. California (CA-9)	Robert F. Peckham (San Francisco)
W.D. Washington (CA-9)	Walter T. McGovern (Seattle)
New Mexico (CA-10)	Howard C. Bratton (Albuquerque)
N.D. Alabama (CA-11)	Sam C. Pointer, Jr. (Birmingham)


EVALUATION OF FUNCTIONALLY RELEVANT DISCREPANCIES
EVALUATION OF ACCURACY
ORIGINAL RECORD
ESR
STENO
OFFICIAL
TRANSCRIPT
ESR-BASED
STENO-BASED
SAMPLE
PROOF STAGE
ESR-BASED TRANSCRIPTS MARKED BY PROFESSIONAL PROOFREADERS USING STENO-BASED TRANSCRIPT AS CRITERION
SAMPLE
ORTHOGRAPHIC DISCREPANCIES SCREENED OUT
REMAINING DISCREPANCIES CHECKED AGAINST ORIGINAL SOUND RECORDINGS OF PROCEEDINGS
DEVIATIONS FROM ORIGINAL SOUND RECORDINGS CATEGORIZED
OUT
SCREEN STAGE
BETWEEN-TRANSCRIPT DISCREPANCIES SCREENED FOR MEANINGFULNESS
OUT
REVIEW STAGE
MEANINGFUL DISCREPANCIES SCREENED FOR FUNCTIONAL RELEVANCE BY EXPERT PANELS
OUT
VERIFI-CATION STAGE
FUNCTIONALLY RELEVANT DISCREPANCIES CHECKED AGAINST ORIGINAL SOUND RECORDINGS OF PROCEEDINGS

THE FEDERAL JUDICIAL CENTER
DOLLEY MADISON HOUSE
1520 H STREET, N.W.
WASHINGTON, D.C. 20005

November 19, 1982

Writer's Direct Dial Number:

202/FTS 633-6216

TO: Recipients of Federal Judicial Center Plan to Evaluate Different Methods of Recording Court Proceedings in United States District Courts, as Amended to November 19, 1982

FROM: Russell Wheeler, Federal Judicial Center

The amended plan, noted above, includes a significant broadening of the transcript evaluation portion of the project. For ease of reference, the changes in the evaluation portion of the plan are described separately below.

1. The first full paragraph on page 7 of the September 9 amendments is changed by inserting the following phrase after "belief". (See p. 13 of amended Plan.)

although, to be comprehensive, the evaluation procedures described below will seek assessment of all non-discretionary differences in the two transcripts

2. (The last full paragraph on page 9 of the June 14 Plan was deleted by the September 9 amendments.)

3. The language in the paragraph starting on page 9 (and continued on page 10) of the June 14 Plan, as amended on September 9, is revised as follows. Underlined material represents new language; overstruck material represents existing language that should be deleted. (See pp. 14-16 of amended Plan.)

The ~~adequacy--of--the~~ electronic sound recording transcripts ~~cannot~~ should not be ~~determined~~ evaluated solely by comparing them, word for word, against reporter-produced transcripts, nor against the audio tapes or the original

stenotype record. Rather, they need also to be evaluated by the use of expert judgment as to the~~ir adequacy~~ functional relevance of any discrepancies. Thus, two methods of evaluation will be utilized. One method will assess the frequency with which functionally relevant discrepancies occur and the accuracy of the two sets of transcripts with regard to the functionally relevant points. The other will compare the overall accuracy of the two sets of transcripts.

Functionally relevant discrepancies

¶The ~~sound recording transcripts will be evaluated~~ evaluation of functionally relevant discrepancies will be in ~~up to~~ four stages~~, using the reporter-produced transcript as the initial criterion~~. First, a scientific sample -- and the sampling method will of course be fully described in the final report -- of all transcript~~s~~ pages will be given to proofreaders, who will mark all places where the sound recording transcripts deviate from the reporter-produced transcripts. Second, skilled persons ~~with legal training~~ will review ~~those~~ the deviations marked by the proofreaders to identify those that might be meaningful and therefore should be evaluated by a panel of experts; the pages to be evaluated will be placed in appropriate context. Third, ~~expert~~ panels of ~~district and appellate~~ judges~~,~~ and ~~staff~~ attorneys ~~or appellate advocates~~ will be asked to evaluate the deviations by the application of ~~this question~~

such evaluation components as are embodied in the following question:

~~Using the reporter-produced transcript as the standard, would forwarding the sound recording transcript have tended to support or encourage different interpretations on appeal?~~

With regard to each discrepancy, would using one transcript as opposed to the other make a difference to you when using the transcript:

(1) to evaluate a case for possible appeal or in considering whether to file post-trial motions,

(2) to write an appellate brief, argue the case on appeal, or decide a case on appeal,

(3) to plan trial strategy

(4) for other, unrelated proceedings, such as the preparation for administrative hearings, or trials into which the transcript might be submitted as evidence?

The evaluators will be given more specific guidance on the application of these situations.

¶ The fourth stage is a verification stage: those ~~deviations that the expert panels identify as those that would tend to support or encourage difference interpretations on appeal~~] discrepant portions of transcript that the expert panels tell us might have made a difference in one or more of the situations identified for their

consideration will be compared ~~directly against~~ with the electronic sound recording ~~to determine (a) whether or not the sound recording is in fact clearly audible and (b), if it is, which of the transcripts more accurately recreates the recording~~ and assigned to one of the four categories below:

(1) the official transcript is correct and the ESR transcript is incorrect

(2) the official transcript is incorrect and the ESR transcript is correct

(3) both transcripts are incorrect

(4) the discrepancy cannot be resolved by listening to the audio recording and the reporter's transcript is thus presumed correct.

Overall accuracy

For the accuracy evaluation, a sample will be selected from the pages that have been proofread. First, all discrepancies will be sorted according to whether or not they are capable of being resolved by listening to the audiotapes. (Some discrepancies will present only discretionary orthographic or grammatical conventions. Whether, for example, two complete phrases are transcribed as two separate sentences or as one sentence, punctuated by a semicolon, is a discretionary discrepancy, which cannot be

resolved by checking the transcripts against the audio record of the proceeding.)

All discrepancies (other than those presenting only discretionary orthographic or grammatical conventions) will then be checked against the audio record to determine (a) whether or not the sound recording is in fact clearly audible and (b), if it is, which of the transcripts, if either, is correct. Furthermore, all deviations from the audio recording will be categorized; possible categories might include word omissions, word substitutions, changes in verb tense, changes in word order, and other types of differences that present themselves during the evaluation. Deviations such as omissions of false starts or stutters will be separately classified because such omissions may be discretionary under the project's transcription guidelines.

Appendix D presents a graphic summary of this evaluation plan.

Mr. KASTENMEIER. Finally, the Federal Judicial Center completed the task assigned to them by the Conference and issued its report in July 1983. During its September meeting last year, the Judicial Conference acted to implement the delegation of authority given to it by the Congress. The Conference acted to permit Federal District Court judges to choose between electronic recording and the use of court reporters.

The purpose of this hearing is to review the evidence and to make some assessment as to how best to reconcile the competing interests.

Before introducing our opening witnesses, I would like to insert in the hearing record a letter to me, dated March 5, 1984, from William E. Foley, Director of the Administrative Office of the U.S. Courts. Attached to the letter is a report on the implementation of electronic sound recording as a means of taking the official record in U.S. courts.

[The letters follow:]

ADMINISTRATIVE OFFICE OF THE
UNITED STATES COURTS
WASHINGTON, D.C. 20544

WILLIAM E. FOLEY
DIRECTOR

JOSEPH F. SPANIOL, JR.
DEPUTY DIRECTOR

March 5, 1984

Honorable Robert W. Kastenmeier
Chairman, Subcommittee on Courts, Civil Liberties
and the Administration of Justice
Committee on the Judiciary
2137 Rayburn House Office Building
Washington, D.C. 20515

Dear Mr. Chairman:

I enclose a brief report advising you of the current status of our efforts to implement discretionary utilization of electronic sound recording as a means of taking an official record of proceedings before judges serving in United States district courts. This brief report is in direct response to Counsel Michael Remington's telephone request of last week. As I understand Mr. Remington's request, this material will be included in the hearing record developed by your subcommittee on a spectrum of court reporting matters during this session. I understand that representatives of the Federal Judicial Center will testify in one hearing on March 8, and that at some point in the future you may determine that Administrative Office testimony would be helpful to your subcommittee. I assure you that we will fully cooperate in response to any requests you may wish to file. Although brief, I believe the enclosed report is a fully comprehensive statement of the status in which discretionary utilization of electronic sound recording currently stands.

If you should have any questions concerning this material, please notify me personally.

Sincerely,

William E Foley
Director

Enclosure

Report: Implementation of Electronic Sound Recording as a means of taking the official record in United States District Courts

Prepared For: Subcommittee on Courts, Civil Liberties and Administration of Justice, Committee on the Judiciary, House of Representatives.

The Judicial Conference in its September 1983 session after studying carefully the report of the Federal Judicial Center, "A Comparative Evaluation of Stenographic and Audiotape Methods for United States District Court Reporting," concluded that a district judge should be able to exercise his discretion and choose whether a proceeding would be recorded by audiotape or stenography. To give effect to 28 U.S.C. 753(b) as amended, the Judicial Conference enacted appropriate regulations which permitted a judge, after January 1, 1984, to choose the audiotape method. These regulations are attached.

Additionally, the Conference specified that an ad hoc committee of its members should monitor the implementation of this new program, to which, the Chief Justice appointed two district court and one circuit court Conference members. They reviewed and approved the procedural guidelines and technical equipment standards required by the regulations which were issued in late December 1983. These guidelines are also attached.

To date, the Administrative Office has received requests for electronic sound recording equipment and operators from 17 senior and active district judges. Two judges, one active and one senior, have had the equipment installed and personnel trained to operate it. We contemplate that eight more judges will receive the equipment in the next three months. The guidelines call for a site evaluation, equipment installation, audio operator training, and identification of transcription services. Each clerk of court, in whom the primary responsibility for taking the record by audiotape has been vested, must also establish internal management procedures. To facilitate the smooth transition to a mixed court reporting service of audio recording and stenography, the Administrative Office has had developed an audio operators manual and is developing a clerks manual.

Much of what we are doing administratively evolved from the experiences of the Federal Judicial Center's experiments. Nevertheless, because we believe that sound management is the key to success in this new court activity, prudence dictates that each phase be carefully implemented. For example, in addition to those transcription companies which provide services nationwide, we expect to identify and qualify local transcription services. Furthermore, we will go beyond the administrative experiences of the Federal Judicial Center. The clerks of court will be directly involved in processing transcript orders and collecting fees. We are instituting new procedures which will enable us to capture information to determine if the litigants realize their potential significant savings by exercising their right to purchase copies of tapes for their review - instead of transcripts - and if they thereby reduce their transcript costs by ordering only those pages required for an appeal itself. Copies of tapes might replace daily copy and save litigants substantial sums.

Because each district judge may exercise discretion about having the record taken by audiotape or by a court reporter, we cannot predict with any certainty how many judges will desire that all or part of their proceedings be audio recorded and what the total concommitant savings will be to the taxpayer. It should be noted, however, that we believe that the major method of taking the record in district courts will be by stenographic means for the forseeable future. Because of that forecast, the Judicial Conference, the Circuit Councils, and the individual district courts have devoted considerable effort to institute good administration of stenographic court reporting services, both to achieve economies wherever possible, and also to ensure that the district courts, the courts of appeals and the litigants are well served by reliable, competent and honorable reporters. For example, a court which a short time ago was cited by the General Accounting Office for poor supervision and egregious abuses has instituted a model management plan. We have made more administrative and managerial progress in court reporting services in the past two years than in the previous forty since the original court reporters act was passed.

We contemplate that if in the long run the need for court reporters should diminish significantly in a court by reason of the utilization of audiotape equipment, there will be a reduction in court reporter positions. We assume that initially, however, there will be a reduction in the use of contractual reporting services and a potential savings in new positions which will not need to be created by the Congress. If existing staff is to be diminished, court reporter staff reduction, by Conference policy, would occur by attrition, wherever feasible, or relocation.

Our budget requests reflect that it will be some time yet before the total potential savings in the federal district court system are realized. Initial capital outlays require several years to amortize, and the number of judges using the system will be small initially. The most significant savings will accrue if and when judges fill vacant court reporter positions with audiotape machines and operators.

William E. Foley

March 6, 1984

Attachments

Considering the results of the study, your Committee recommends that the Judicial Conference adopt the following regulations under 28 U.S.C. § 753(b) to authorize electronic sound recording of proceedings by each court. Your Committee also recommends that these regulations not become effective until January 1, 1984, so that the Director of the Administrative Office will have time to procure required equipment and issue procedural guidelines. The proposed regulations follow:

1. Effective January 1, 1984, pursuant to 28 U.S.C. 753(b), individual United States district court judges may direct the use of shorthand, mechanical means, electronic sound recording, or any other suitable method, as the means of producing a verbatim record of proceedings required by law or by rule or order of the court. The judge should consider the nature of the proceedings, the availability of transcription services, and any other factors that may be relevant in determining the method to be used in producing a verbatim record that will best serve the court and the litigants.

2. Electronic sound recording equipment, for purposes of this regulation, shall be multi-channel audio equipment. This regulation shall be augmented by guidelines issued by the Director of the Administrative Office, containing technical standards for equipment and procedures for implementation.

3. In the event the need for shorthand, stenotype, or other reporter services should diminish by reason of the utilization of electronic sound recording equipment, any reduction in personnel, where feasible, shall be accomplished through attrition.

The Conference further authorized the Chief Justice to appoint an ad hoc committee of members of the Conference to monitor, on behalf of the Conference between meetings thereof, the implementation by the Administrative Office of the regulations adopted on September 21, 1983 with respect to electronic sound recordings of court proceedings.

Agenda G-21
Electronic Sound Recording
March 1984

REPORT OF THE JUDICIAL CONFERENCE AD HOC COMMITTEE
TO MONITOR REGULATIONS ON ELECTRONIC SOUND RECORDING

The Committee met in Washington, D. C. on December 19, 1983 with the Deputy Director and other officials of the Administrative Office and the Federal Judicial Center for the purpose of reviewing draft procedural guidelines and technical standards for equipment to be used for electronic sound recording of court proceedings. These guidelines and standards as amended by the Committee were transmitted by the Director of the Administrative Office to all judges of the United States district courts on December 27, 1983. The guidelines, as a practical matter, also will be used for proceedings before bankruptcy judges. A copy of the guidelines and Mr. Foley's memorandum are attached for convenient reference.

The Committee was advised that the Administrative Office, to date, has received requests for electronic recording equipment from 17 senior and active district judges. Two judges, one active and one senior, have had the equipment installed and personnel trained to operate it. It is contemplated that eight more judges will be provided with the equipment within the next three months. The entire process, which includes site evaluations, the installation of equipment, training of audio operators, and arrangements for transcription services, is very time consuming and, as Mr. Foley has indicated, it may be awhile before he can accommodate all of the judges who have expressed a desire to use audio recording equipment.

There apparently is some confusion over whether or not a court may retain its full complement of reporters if a judge or judges opt to use recording equipment. The Committee has taken the position that if the need for reporters should diminish significantly by reason of the utilization of such equipment there should be a reduction in the number of permanent court reporters authorized for the court as a whole. A judge who is provided with the equipment may use it to record some, but not necessarily all, of the proceedings in court or in chambers. It is not an all or nothing proposition. If the judge should require the services of a reporter and a permanent staff reporter is not available, a contract reporter could be used.

Through the utilization of recording equipment, we will obviate the need for additional "swing" reporters, reduce expenditures for contractual services, and ultimately reduce the demands and the workload of staff reporters. If and when the demands on the regular staff reporters has diminished significantly, there should be, by attrition or relocation, a reduction in the number of positions authorized.

A court may voluntarily relinquish positions or the Director of the Administrative Office, based on a review of the workload of the reporters, may recommend a reduction in the number of positions authorized. In any event, any reduction in the number of authorized permanent reporters is subject to the approval of the Judicial Conference which by statute (28 U.S.C. 753) determines the number of reporters that may be appointed by each of the district courts. The Director's recommendations will be submitted for consideration by the Subcommittee on Supporting Personnel and the Committee on Court Administration.

The Committee would like to emphasize the fact that the guidelines may not necessarily address all of the problems and issues that may arise during the course of the implementation of the program. The guidelines will be revised or modified as necessary based on actual experience.

Respectfully submitted,

Collins J. Seitz, Chairman
Robert R. Merhige, Jr.
Albert G. Schatz

ADMINISTRATIVE OFFICE OF THE
UNITED STATES COURTS
WASHINGTON, D.C. 20544

WILLIAM E. FOLEY
DIRECTOR

JOSEPH F. SPANIOL, JR.
DEPUTY DIRECTOR

December 27, 1983

MEMORANDUM TO ALL: JUDGES, UNITED STATES DISTRICT COURTS

SUBJECT: Electronic Sound Recording of Court Proceedings

I am transmitting newly developed "Guidelines for Recording Proceedings before United States District Judges and Judges of Territorial District Courts by Electronic Sound Recording" which have been reviewed by the Ad Hoc Committee of the Judicial Conference appointed to monitor implementation of this program. These Guidelines encompass administrative procedures and technical standards for equipment to be followed if a district judge elects to direct the use of electronic sound recording of official proceedings. These Guidelines are effective as of January 1, 1984 and will be included later as part of a chapter in the Guide to Judiciary Policies and Procedures, Volume VI.

Many judges have expressed the desire to participate in this program. We have limited resources available for the procurement of equipment and will have to establish priorities based on the extent to which the equipment will be utilized and the anticipated cost savings and other benefits to be realized. You will note that we intend to conduct site evaluations, arrange for the installation of equipment, coordinate the training of audio operators, and identify the source and availability of transcription services. This entire process will take some time and we may not be able to accommodate all of the judges who have expressed a desire to use audio recording equipment immediately.

The Guidelines will be subject to modification based upon operational experience. Those judges electing to use audio recording will be asked to identify any problems or issues which have not been anticipated or appropriately addressed.

If you should have any questions or desire additional information, please call or write Edward V. Garabedian (FTS-633-6101) or his Assistant, Jon A. Leeth (FTS-633-6151).

William E. Foley

Enclosure

cc: Circuit Executives
District Court Executives
Clerks of the District Courts

A. Guidelines for Recording Proceedings before United States District Judges and Judges of Territorial District Courts by Electronic Sound Recording.

1. Authority. These guidelines are issued by the Director of the Administrative Office of the United States Courts pursuant to regulations adopted by the Judicial Conference of the United States under 28 U.S.C. 753(b). These guidelines shall not be construed to limit the discretion of a district judge to use a court reporter or other approved alternative method for recording proceedings.

2. Election to Use Electronic Sound Recording Equipment.

a. A United States district judge, including a senior judge, or a judge of a territorial district court, who elects to direct the use of electronic sound recording to record official proceedings of the court shall file a notice of the election with the Director of the Administrative Office by a written request for recording equipment. The request shall include an indication of the approximate percentage of the proceedings to be recorded through electronic sound recording, and the percentage to be recorded by other means. If the equipment will be used by more than one judge, the request should so indicate.

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b. The electronic sound recording equipment provided pursuant to these guidelines may not be used to back up court reporters, who are required by law to furnish their own equipment.

3. Installation of Equipment.

a. Before electronic sound recording equipment is installed at any court location, the Director of the Administrative Office in consultation with a district judge will determine, by site evaluation or otherwise, that the acoustical characteristics of the courtroom will not interfere with the quality of electronic sound recording and that reliable transcription services are readily available.

b. The Director will give priority to filling requests based on the following criteria.

(1) The number of judges and other judicial officers in the same courthouse electing to use electronic sound recording equipment.

(2) The degree to which a requesting judge indicates that electronic sound recording will be used.

(3) The anticipated cost savings and other benefits to be realized through the use of electronic sound recording equipment.

4. Deputy Clerks-Audio Operators.

a. The Director of the Administrative Office will:

(1) Authorize the appointment of deputy clerks who shall serve as audio operators, in addition to the performance of other duties.

(2) Issue an Audio Operators Manual.

(3) Maintain a list of persons or firms having demonstrated an ability to provide quality transcription services on a timely basis. The Director will make the list available to clerks of court in districts electing to use electronic sound recording equipment, together with the prices quoted.

b. The Audio Operator shall:

(1) Attach an official certificate to the audiotape recording of the proceeding.

(2) Maintain a log of the proceedings to be retained as an aid to the transcription of the record.

5. Responsibilities of the Clerk of Court. The clerk of court is responsible for the efficient and effective functioning of electronic sound recording. These responsiblities include:

a. Supervising audio operators.

b. Preserving the audio records according to records disposition schedules established by law or the Judicial Conference.

c. Assigning operators to judges or other judicial officers as needed.

d. Cross-training personnel so that operators are available as needed.

e. Reproducing audio recordings and making them available as required by law, at the rates prescribed by the Judicial Conference.

f. Establishing a system for listening to the audio recordings in the courthouse.

g. Arranging for the transcription of the record, or such parts thereof, as may be requested by the court or a party.

(1) Sending a copy of the audio recording and a copy of the log to the transcription service.

(2) Receiving deposits from parties ordering transcripts, other than the United States, in an amount sufficient to cover the estimated cost of transcription and depositing these funds in the deposit fund account.

(3) Paying the transcription service promptly upon receipt of the transcript and the extra copy for the records of the court and delivering the transcript to the party upon settlement of the account.

(4) Charging the party the actual fee charged by the transcription service, not to exceed transcript rates as prescribed by the Judicial Conference.

h. Monitoring transcripts produced by transcription services to ensure that they conform to the transcript format requirements of the Judicial Conference.

6. Court Reporter Staff.

a. In accordance with the Judicial Conference regulations, any reduction in staff, as a result of using electronic sound recording equipment, where feasible, will be accomplished through attrition.

b. If electronic sound recording equipment is being used by a district judge and a vacancy in a court reporter position subsequently occurs within that district, the Director of the Administrative Office will survey the need to continue the vacant position within that district and make an appropriate recommendation to the Judicial Conference. This does not preclude the appointment of a temporary reporter pending Judicial Conference action on the recommendation of the Director.

c. It is contemplated that a judge who elects to use electronic sound recording equipment may retain the use of a court reporter for a period not exceeding 180 days. If the judge elects to continue using electronic sound recording equipment thereafter, the Director of the Administrative Office will undertake a survey of the need to continue the court reporter position in that district and to make an appropriate recommendation to the Judicial Conference.

7. Transcription Certification. The person or transcription firm designated to transcribe the proceedings must certify the transcript on a form to be provided by the Director of the Administrative Office.

B. Specifications for Electronic Sound Recording Equipment.

These standards specify the types of sound recording equipment to be used in courtrooms to record official proceedings before United States district judges pursuant to 28 U.S.C. 753(b).

1. Required Equipment Features. Electronic sound recording systems to be used in courtrooms by district judges must be able to provide continuous, uninterrupted recording for clear playback and transcription. The following features must be factory installed and may not include any modification by a dealer. The minimum requirements are as follows:

   a. Dual transport system using standard audio cassettes or one-quarter inch open reel tape.

   b. Minimum of eight audio inputs recording onto four separate channels, with a minimum of two inputs per channel.

   c. If a system uses tape with a leader, the tape must advance automatically beyond the leader before any recording on the tape commences.

   d. Output for a headset for off-tape monitoring.

   e. Recording speeds of 15/16 inches per second.

f. A playback speaker, either external or internal, and an external speaker jack.

g. Incapable of erasure or over-recording.

h. Automatic switch over from one transport to the other must occur in the following situations:

(1) Detection of any prerecorded signal on the tape.

(2) Tape motion stops.

(3) Broken tape.

(4) End of the tape, at least two minutes before the tape runs out.

i. Key lock to secure all functions as well as lock tape in unit.

j. Playback capability from each channel individually as well as from any combination of channels.

k. A search/playback function capable of quickly locating any point on the tape for playback, and of searching to the point of the last recorded signal so as to record at the point where the last recording left off.

l. Audible sound warning in the following situations:

(1) Detection of a prerecorded signal on a tape

(2) Tape stops during recording.

(3) Broken tape.

m. Audible sound warning at least fifteen seconds in duration in the following situations:

(1) End of tape and other transport is not ready to record.

(2) Broken microphone line.

n. Four-digit index display system with provisions for a remote index display.

o. A device to reset the digital index counter to "0" and to rewind the tape to the beginning of the audiotape upon insertion of a cassette audiotape.

p. Audible sound recorded on the tape whenever the recording begins.

q. Automatic gain control for each channel.

2. Desired Equipment Features. The following features are not required but are desirable.

a. Public address output.

b. Audible sound warning at least fifteen seconds in duration in the event of a power loss.

c. Eight hard-wired microphone inputs.

d. Adequate input sensitivity to accommodate dynamic microphones. If condensor microphones are required, they should be phantom powered.

e. Portability of equipment.

f. A speaker jack which is separate from the jack for the headset used for off-tape monitoring.

g. An index display counter accurate within two digits in search or playback situations.

3. Required Cassette and Tape Features.

a. Recording tape or cassette must be compatible with the recording machine.

b. Cassette Materials. The following are required features:

Type:	Standard Philips
Body Material:	Medium Impact, High Temperature Polystyrene
Window:	Hard Clear Plastic
Bond:	Screw Bond Joining Top and Bottom
Slip Sheet:	Polyolefin or Silicone Impregnated Paper
Guide Rollers:	Delrin

Tape Hubs:	Delrin
Roller Pins:	Stainless Steel
Pressure Pad:	Phosphor Bronze & Felt

c. Tape:

Length C90:	423 Feet +5 -0 Feet
Tape Type:	High grade, low noise, music quality, ferric oxide formulation, with mylar back; must be coated with dark color, must have very low shedding characteristics; such as the TDK 'ADC' series' cassettes, the 3M Scotch 'AVC' series cassettes, or their equivalents
Leader:	Must Be Clear (less than 10% grey)
Tape Oxide Transluscence:	Equal to or greater than 80% grey

d. Cassette Cases: one-piece clear soft plastic "soap dish" style with snap closing.

Mr. KASTENMEIER. Also before calling the first witness, I would like to yield to my colleague, the gentleman from California.

Mr. MOORHEAD. Thank you, Mr. Chairman. I would like to thank you for scheduling this hearing.

I believe that H.R. 4450, introduced by our full Committee Chairman and Mr. Fish, is important legislation. Last Congress, when this subcommittee signed off on the Senate amendment regarding the use of electronic equipment in the courtroom, I don't believe that anyone understood that to mean that a year later the Administrative Office would begin the process of replacing U.S. court reporters with electronic equipment.

The Federal Judicial Center made its study, followed quickly by its adoption by the Judicial Conference, followed quickly by the drafting of legislation, followed quickly by the implementation of these regulations. Mr. Rodino, Mr. Fish and I all wrote letters to the Judicial Conference asking that their implementation be delayed until we had time to review their study. This they could have done without any difficulty, but they chose to go forward, forcing the introduction of H.R. 4450.

As pointed out on the Senate floor by the author of the amendment, Senator Howell Heflin—and I quote:

> A 1-year test period with a mandatory evaluation by the Judicial Conference will provide Congress with the basis for determining what is the best system for court reporting * * * Congress should take care in instituting a new mechanism which has not yet been appropriately examined compared to an existing and proven system.

Currently there are nearly 240,000 District Court filings and more than 28,000 Court of Appeals filings, and many of these filings will necessitate a record. A properly made record is the basis for the protection of rights, and something as important and as fundamental as replacing court reporters, without so much as even a hearing, is a little difficult to understand. Maybe court reporters should be replaced, but if that is the case, then this subcommittee ought to make that decision in the first instance and not the Administrative Office of the U.S. Courts.

I also ask, Mr. Chairman, that the statement of Hon. Hamilton Fish, ranking Republican on the full Committee, be introduced into the record.

Mr. KASTENMEIER. Without objection, the statement of Chairman Peter Rodino and of the Honorable Hamilton Fish, Jr. will both be received and made part of the record.

[The statements of Mr. Rodino and Mr. Fish follow:]

STATEMENT OF THE HONORABLE PETER W. RODINO, JR.

Mr. Chairman, the purpose of today's hearing is the consideration of H.R. 4450, which I introduced on November 17, 1983. The goal of the bill is to delay, at least until January 1, 1986, the implementation of certain regulations related to electronic recording of court procedures developed by the Judicial Conference of the United States.

Section 401(b) of the Federal Courts Improvement Act of 1982 authorized the Judicial Conference to experiment "with the different methods of recording court proceedings." It should be remembered that the modification to section 401(b) was a last minute amendment to a major court reform measure. It was at the final stages of negotiating differences between the Senate and House versions of the Federal Courts Improvement Act that the method of providing a record and subsequent transcript in U.S. district courts came into question. The demands upon the federal

judicial system require that all methods of improving service and cutting costs be considered carefully and this was the intent in approving section 401(b). The Senate Committee on the Judiciary clearly expressed a desire that the experimentation mandated by this section provide further information to Congress to aid it in making any policy changes in court reporting procedures.

Much of the motivation for this last-minute amendment derived from a draft report issued in December 1981 by the U.S. General Accounting Office, alleging significant cost savings potential from the use of tape recorders in U.S. District Courts. Although that report has since been largely discredited, its impact is still keenly felt. The federal judiciary has not remained silent concerning the allegations in the GAO report. On December 17, 1981, the judges of the United States District Court for the District of New Jersey passed the following resolution:

Whereas certain members of the United States District Court for the District of New Jersey have had considerable experience with the electronic recording of proceedings before the court and administrative agencies of the State of New Jersey by virtue of their prior service as judges of those courts, and

Whereas the aforementioned judges have recounted the experience with electronic recording as a method for recording and transcribing court proceedings as being disastrous, and

Whereas the Judges of the United States District Court for the District of New Jersey have met and discussed the General Accounting Office Report on Court Reporting and the report, "Court Reporting Services in the Federal Courts", disseminated by the Administrative Office of the United States Courts,

Be it *Resolved* That the Conference of Judges of the United States District Court for the District of New Jersey is unalterably and unequivocally opposed to the utilization of electronic recording devices in its courtrooms as a method of recording and transcribing court proceedings.

The Judicial Conference met in September 1983, shortly after the experiment with tape recording conducted by the Federal Judicial Center was completed. Prior to that meeting, I and some of my colleagues requested of the Chief Justice that the Conference delay promulgation of rules until such time as the Congress had an opportunity to consider fully the implications of such a major change to the Federal judicial system.

However, based on the FJC experiment, the Judicial Conference adopted regulations, effective January 1, 1984, authorizing the use of tape recording at the option of each judge. It should be emphasized, however, that it was not Congress' intent that individual judges would have the option to use a tape system for some proceedings and a court reporter for others; rather, they must opt to use either a tape recorder *or* a court reporter for all proceedings heard by that judge.

It appears that the study conducted by the Federal Judicial Center is not without weaknesses. Evaluations of that study conducted by Coopers and Lybrand and the Resource Planning Corporation tend to cast doubt on the methodology, sampling techniques and cost-evaluation techniques employed by the FJC. In addition, no evaluation or study was conducted of computer-aided transcription, which, when used in conjunction with a trained court reporter, offers great improvements in the production of transcripts as well as ancilliary benefits associated with transcripts being in computer-readable form. More than one-third of all federal court reporters have purchased and are currently using this powerful aid to transcript production. Introduction of tape recording into the federal courts, even on a judicial-option basis, may well inhibit the further implementation of a superior technology.

The Committee on the Judiciary has a responsibility to protect the rights of litigants in our judicial system. While it is vital to insure that the courts are as efficient and cost effective as possible, it is critical that litigants' rights are not sacrificed in the process. As long as there remains a reasonable question as to the overall efficiency, effectiveness, and significant cost savings by substituting tape recorders for court reporters, such a change should not be made. A two-year delay in the implementation of the Judicial Conference's regulation will give Congress an opportunity to assess fully the pros and cons of potential technologies for preserving the court record and producing accurate transcripts.

STATEMENT OF THE HONORABLE HAMILTON FISH, JR.

Mr. Chairman and members of the Subcommittee, as a cosponsor of H.R. 4450, I would like to join with my colleague, Chairman Rodino, in encouraging prompt and positive action by the Subcommittee on the legislation before you. While the work by the Federal Judical Center began the job of considering the best method by

which the record should be captured and produced in Federal district courts, more extensive research, particularly into the capabilities of computer-aided transcription, needs to be conducted, analyzed and disgested before a host of dedicated professionals are replaced, perhaps to the detriment of the federal court system.

As a lawyer, I am familiar with the capabilities of computer-assisted legal research and litigation support and the boon this has been to speeding up preparation of litigation. From what I understand, computer-aided transcription allows attorneys to integrate depostion and other pretrial transcripts into their computerized data base. Then, the can have the computer search and retrieve complete and accurate information from the entire data base, in a matter of minutes. I believe that further study is necessary to determine whether the Federal judicial system could benefit from a similar capability.

Court reporters have a long history of service to the Congress and the Federal courts of this country. Those who compose the body of Federal court reporters are among the most qualified of that profession; they are thoroughly trained and are required to have years of experience and national certification before they are eligible for employment in the federal courts.

A 1983 study by the Conference of State Court Administrators indicates that of the 29 states responding to this part of their survey, 90% use machine shorthand as the predominant method of taking the record. Over the past twenty years, many states have conducted studies of the efficacy and cost efficiency of using tape recorders instead of court reporters. Studies in Idaho, Iowa, New York, and Utah, just to name a few, resulted in the same policy decision—shorthand reporters were retained as the best method of preserving the record and producing timely transcripts.

Clearly, the whole field of court reporting requires and deserves further study. The expanded availability and reduced cost of computer-aided transcription demands further evaluation of its potential contribution to the overall efficiency of the court system. To make a major change in the system, based upon the conclusions of one, perhaps faulty, study would be precipitous. The rights of indivdual litigants, the need to promote efficiency and stabilize costs in the federal court system now and in the future, and to protect a group of almost 600 dedicated professionals with a history of service to the judiciary requires that more careful study and evaluation take place before radical surgery is performed.

Mr. KASTENMEIER. I thank my colleague for his comments.

Now I would like to call forward our first panel of witnesses. First we have Dr. Gordon Bermant and Dr. Russell Wheeler, who will present the views of the Federal Judicial Center.

TESTIMONY OF GORDON BERMANT, DIRECTOR, INNOVATIONS AND SYSTEMS DEVELOPMENT DIVISION, FEDERAL JUDICIAL CENTER; AND RUSSELL WHEELER, DEPUTY DIRECTOR, CONTINUING EDUCATION AND TRAINING DIVISION, FEDERAL JUDICIAL CENTER

Mr. BERMANT. Thank you, Mr. Chairman. I am Gordon Bermant.

Mr. KASTENMEIER. Dr. Bermant, you may either proceed from your statement or, if you would like, you can summarize your statement and make your printed statement a part of the record.

Mr. BERMANT. With your permission, sir, we would just like to incorporate the statement in the record, rather than my reading it here.

It might help if I said just a few words to supplement your opening statement about the nature of our involvement and our current involvement. As the research and development arm of the third branch, we were requested by the Judicial Conference to undertake the study that was required by the legislation. I point out that we are a research agency. We are involved neither with policy formulation nor policy implementation. Our role here, therefore, is to respond to questions about research. That is where our competence is. Nevertheless, criticisms of the report and charges about the consequences of its implementation reflect back on the work and, as a

result, it may be necessary for us to take a somewhat broader view than we ordinarily would have done.

It is probably also important to distinguish those matters which are at issue from those which are not. There is certainly nowhere at issue a question of the importance of accurate, timely, and low-cost recording and transcribing.

The Federal Judicial Center has no interest at all in replacing court reporters. Nothing in the report goes to the necessity or the desirability of replacing court reporters. The task before us was to determine whether or not there is an accurate, timely, and cost-effective alternative to the standard official court reporting mechanism. We determined, and believe today, that the study that we performed showed that there is, given the caveats and conditions established in the report.

I am sure it is obvious to everyone, but perhaps bears repeating, that the legislation being discussed here is purely permissive. It requires no district judge to make any change whatsoever. Any judge, any court, content with its current situation, is perfectly free under the current legislation to maintain its current operation. What the legislation does is to allow Federal district judges, in their discretion, operating under the guidelines suggested by the conference, to move to an alternative if, in their judgment, that alternative is desirable.

It is a question, therefore, about whether or not Federal district judges are truly able to make this judgment. In my view, clearly they are. They have more experience in their courtrooms and with their needs and the needs of their bars than virtually anyone else. At that level, therefore, I simply want to emphasize that it seems to us that what is being described here is a matter of permission rather than mandate. That, it seems to me, is a matter of some critical importance.

We take no particular position with regard to the emphasis on the relevance of questions on computer-aided transcription here. We have no brief against computer-aided transcription. In my role as the chief officer in the Federal Judicial Center responsible for the introduction of technology into the U.S. courts, I am perhaps as well aware as anyone of the needs for high technology in the courts. I am well aware of the state of current technology. One can only be impressed by the rate at which computer-aided transcription has advanced over the last several years. Without going into the details of any particular statement for it or against it, it is nevertheless largely an irrelevancy in the current context, for a number of reasons that may come up. But the major point is, the study shows that, irrespective of the means of transcription, the use of tape recording as a means of making the record is, under the conditions prescribed, more than adequate and is actually capable of producing a superior record to that ordinarily received.

The reports commissioned by the Stenograph Corp. and by the National Shorthand Reporters Association to rebut the study as published fail, in my view, Mr. Chairman, to reach the core of the study. It was interesting for us to note that the nature of the criticism has shifted from the first round to subsequent rounds. I take it that the absence of a critique of the form that was first submitted indicates that the obvious opportunity to verify our work that

was made available either resulted in a failure to substantiate the criticisms of the accuracy analyses, or, for whatever reasons, attempts to cast those analyses into doubt were simply not undertaken. I take it, therefore, there is no further issue about the accuracy analyses.

The question of timely reporting was not really much in contention throughout the period of criticism of the report.

When it comes to cost savings, I find—and I believe a close examination of the documents will show—that the criticisms levied by RPC and Coopers & Lybrand are in the nature of claims rather than in the nature of arguments. There are claims that we have overestimated some things, underestimated others, and simply omitted certain categories of cost. When those claims are analyzed more closely, they are found to be without merit.

In conclusion, the conclusions that we reached at the time of the study have not, by virtue of any subsequent criticism, been cast into any substantial doubt. The Judicial Conference has acted in order to permit Federal district judges to proceed. In our view, that was a completely sound and reasonable thing to do based on the evidence they had before them. We have no reason to make any but the most minor amendments to the report as published. Those amendments are included in our statement, but I would be happy to go over them or any other matter of interest to you or other members of the committee, at any length you desire.

Thank you.

[The statement of Mr. Bermant and Mr. Wheeler follows:]

Statement of

Gordon Bermant and Russell Wheeler

before the

HOUSE COMMITTEE ON THE JUDICIARY

SUBCOMMITTEE ON

COURTS, CIVIL LIBERTIES AND THE

ADMINISTRATION OF JUSTICE

HONORABLE ROBERT W. KASTENMEIER, CHAIRMAN

March 8, 1984

Mr. Chairman:

We appreciate the opportunity to discuss with you the Center's research on audio recording as a court reporting method in United States District Courts;* the research was undertaken for the Judicial Conference of the United States pursuant to Section 401 of the Federal Courts Improvement Act of 1982 (P.L. 97-164, 96 Stat. 57). We participated in this research as the director of the Center division that executed the project, and as the contact person for outside groups interested in the project, respectively.

Members of the Committee on the Judiciary have received copies of the report and, we understand, have also received copies of various critiques of the report prepared subsequent to its release. At your invitation, Mr. Chairman, Center Director A. Leo Levin commented on those critiques by his letter to you of February 17, 1984, to

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*J.M.Greenwood et al., A Comparative Evaluation of Stenographic and Audiotape Methods for United States District Court Reporting (Federal Judicial Center 1983)

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which he attached a detailed memorandum of background and analysis that we had prepared. Copies of the letter and memorandum are attached to this statement for reference.

The basic objective of the Center's research, consistent with the design of the statute that mandated it, was to determine whether audio recording can serve as an acceptable alternative to the official court reporting methods in place at the time of the study, in particular, steno-based reporting. Such a determination could provide the basis, not only for the Judicial Conference to decide whether and in what circumstances to permit the use of audio recording by individual judges, but also to help district judges determine whether to use the technology. The Center analyzed the operation of audio recording in the courtrooms of twelve federal judges, and evaluated its performance with that of the official court reporter on the three critical dimensions of transcript accuracy, timeliness of transcript delivery, and cost to the government.

The basic conclusions of the Center's research, as stated in the report (at xiii), are as follows:

> Given appropriate management and supervision, electronic sound recording can provide an accurate record of United States district court proceedings at reduced costs, without delay or interruption, and provide the basis for accurate and timely transcript delivery.

These conclusions, as elaborated in the report, follow directly from the data gathered during the project, and provide the

Conference and federal district judges with information on the capabilities of audio recording and the necessary conditions for its successful use.

We would be pleased to answer any questions you might have about the design or conduct of the study, the conclusions presented in the report, or any other aspect of our work.

THE FEDERAL JUDICIAL CENTER
DOLLEY MADISON HOUSE
1520 H STREET, N.W.
WASHINGTON, D. C. 20005

A. LEO LEVIN
DIRECTOR

TELEPHONE
202/633-6343

February 17, 1984

Honorable Robert W. Kastenmeier
Subcommittee on Courts, Civil Liberties,
and the Administration of Justice
2137 Rayburn House Office Building
Washington, DC 20515

Dear Mr. Chairman:

I am grateful for the invitation, conveyed by a member of your staff, to comment on criticism of the Federal Judicial Center's test of audio recording as a court reporting method. Specifically, we have been invited to respond to reports prepared by contractors retained by the National Shorthand Reporters Association and the United States Court Reporters Association, among others, who would have Congress repeal the statute that now allows individual federal judges to use audio recording, if they so choose, subject to regulations promulgated by the Judicial Conference.

We consider the specific points of criticism unfounded and the implications totally unwarranted. This letter, and the accompanying memorandum, will attempt to explain why. There are good reasons to set the record straight. First is the vital public interest in accurate, timely, and economical methods of recording and transcribing federal court proceedings. Then, too, we are very much interested in the Center's reputation with respect to the quality and integrity of our work. Thus, I am doubly grateful for this opportunity to comment. Please know that I and members of the Center staff will be pleased to provide any additional information you and your colleagues may wish.

A word of background is in order. As you know, last September the Judicial Conference promulgated regulations, authorized by 28 U.S.C. §753(b) as amended, allowing federal district judges to use audio recording as an official court reporting method. The Conference acted after reviewing the results of the Center's statutorily mandated study, A Comparative Evaluation of Stenographic and Audiotape Methods for United States District Court Reporting, released in early July. The study found that the audio recording court reporting method could produce more accurate transcripts in timely fashion and at less cost than stenographic reporting methods.

Honorable Robert W. Kastenmeier
February 17, 1984
Page Two

Conference members had been sent a brief critique of the Center's study, prepared by the Resource Planning Corporation (RPC) for the National Shorthand Reporters Association (NSRA) and also a longer critique prepared by Coopers and Lybrand for the Stenograph Corporation, an equipment vendor. We understand that these documents were also provided to members of the Congress. Later, NSRA released a longer RPC critique, dated October 12, which was sent to us in early December by a federal judge who had participated in the Center study.

I have attached to this letter a lengthy memorandum prepared by Dr. Gordon Bermant, director of the Center's Innovations and Systems Development Division and by Dr. Russell Wheeler, presently deputy director of the Education and Training Division and formerly assistant director of the Center. That memorandum analyzes in some detail the allegations contained in these two contractors' reports. By way of summary, however, and as developed below, let me stress now that:

-- the Center provided or made available to these contractors extensive project information to facilitate their review of our study;

-- the RPC criticism of the Center report is based largely on the failure to recognize that the nature of the statutory charge under which the Center proceeded required a feasibility study, which is precisely what the Center undertook and completed;

-- the various criticisms of the Center's cost calculations are uninformed.

An initial word is in order about RPC's complaint that the Center was uncooperative in providing information with which to review our study. I confess that this complaint is rankling because of the considerable amount of staff time and other resources that the Center committed to make project data available to RPC. Those data, when taken together with the report's detailed tables and appendices, went well beyond the limits of any reasonable obligation we might have had to facilitate an independent review of our research.

The Center's letter of August 12 to RPC specifies what was assembled and provided as soon as possible after completion of the project. The Center met RPC's request for copies of:

-- the over 800 audio cassettes, as well as 15 audio tape reels, from which the total population of audio-based transcripts was produced;

-- over 10,000 pages of documents including the pages of audio-based transcript in the sample analyzed, marked and unmarked, and the matched steno-based transcripts;

-- the audio operators' log notes;

-- the summary sheets showing the results of the expert panels' "functional relevance" analysis of transcript accuracy, and

-- the tally sheets used in the overall accuracy analysis.

The Task Force wanted more, much more. Additional information was provided orally in a subsequent meeting between RPC and Center personnel held on September 14, at which meeting RPC conceded that portions of its earlier request for data had been unwarranted and confirmed that they had been provided all the information they wished, save for certain field reports prepared for the Center with the expectation that their contents would not be divulged. (Duplicates of the material provided to RPC have been on file in the Center for analysis by other interested parties.)

I am bound to note that RPC apparently made no effort to use the transcript pages, audiotapes, and other material we provided to review our comparative analysis of transcript accuracy, which may well be the most important analysis in the report. Or, if they did reanalyze these raw data, they chose not to report what they found. Furthermore, in correspondence of August 12 and again in the September 14 meeting, the Center offered to make available to RPC, at cost, the total population of transcript pages produced during the study, so they might put to the test their objections to the transcript page sampling method. RPC declined this offer.

RPC does not challenge the Center's published findings about the accuracy and timely delivery of audiobased transcripts in the project courts. Rather, RPC would dismiss these conclusions -- and would ask the courts and the Congress to dismiss them -- because RPC objects to the manner in which the courts, the equipment, and the audio

operators were selected to participate in the study and the method of sampling the transcript pages for the comparative analysis of transcript accuracy.

We believe RPC's stated refusal to confront the conclusions compelled by a careful evaluation of the data is based on a misconception. The attached memorandum explains in some detail, and with technical precision, why we consider their position to be fundamentally flawed. In this letter, I will do no more than summarize the purpose of the research, how it was accomplished, and why the procedure we followed was entirely appropriate.

In section 401 of the Federal Courts Improvement Act of 1982, Congress, in essence, directed the Judicial Conference to determine whether audio recording could be used as an official court reporting method, and authorized the Conference to permit district judges to use audiorecording, assuming it was warranted. The Center's study for the Conference analyzed the feasibility of audio recording in the courtrooms of twelve district judges, from Brooklyn to San Francisco, from Madison, Wisconsin, to Opelousas, Louisiana, with varying levels of transcript demand, bilingual proceedings, and other salient characteristics. Its analysis of the data produced the following conclusion:

> Given appropriate management and supervision, electronic sound recording can provide an accurate record of United States district court proceedings at reduced costs, without delay or interruption, and provide the basis for accurate and timely transcript delivery.

The report says to the Congress, to the Judicial Conference, and to individual district judges: audio recording can serve well as an official court reporting method:

-- provided there is due attention to the availability of competent transcription services and care in selecting audio operators,

-- provided that the tape recorders used are acquired from approved equipment lists, and

-- provided that the court ensures attention to the other necessary management and supervision needs documented in the study.

These considerations are, of course, vital to the process of implementing audio recording for judges who elect to use it.

We are faulted for not having conducted what is technically a "survey" to determine how audiorecording would perform in all federal courts. Of course, had the Congress mandated that every judge shift to audio recording, contingent upon some sort of study, the Center would have had no choice but to undertake a survey, undergirded at every point by the principles of stratified random sampling, so to allow it to generalize from a set of sample courts about how audiorecording would perform in all district courts. Congress took the more sensible course embodied in the statute, and the Center proceeded accordingly.

I stress this difference between a feasibility study and an effort to generalize from the behavior of randomly selected actors because it is fundamental; RPC's failure to make this distinction and, indeed, incorrectly characterizing the nature of the work the Center in fact did (at p.9), is critical. The point was put to me succinctly by a member of the Center staff as follows: "In essence, RPC has produced a classic strawman, garbed it in the verbiage of social scientific inquiry, and then presented a standard demolition of the strawman."

Randomness, of course, was necessary in selecting a sample of audio-based and steno-based pages for the study's accuracy analysis. A word is in order about that sample selection, given RPC's allegations that the Center's analysis might have overlooked gaps in audio-based transcripts. The attached memorandum shows in some detail that there is no merit to the RPC charge, and, as noted above, RPC declined the invitation to test the charge itself. In fact, our review of the transcripts points strongly to the conclusion that at least some steno-based transcripts produced during the study routinely contained fewer words on each page of transcript, resulting in more transcript pages for the same number of words -- thus increasing the cost of transcripts. The examples of transcript padding cited in the attached memorandum are worthy of mention.

Finally, the RPC document and that produced by Coopers and Lybrand for the Stenograph Corporation charge error in the Center's conclusion that audiorecording is considerably less costly to the government than steno-based reporting.

There is little point in my repeating here the attached memorandum's point-by-point analysis of these charges.

The attached memorandum shows, by reference to project data and aggregate data compiled by the Administrative Office of the United States Courts, that our cost estimates are, if anything, high. We have been very conservative in estimating savings.

As a final example, RPC and Coopers and Lybrand charge that the Center underestimates the management burden, and thus costs, that clerks of court would assume in supervising the audio operators. To the contrary, experience in the test sites, as explained in the report, shows that the supervision of the audio operators was generally not burdensome, certainly no more so than the supervisory tasks necessary for the management of the stenographic reporter system.

The criticism does point to two oversights in the report's cost projections, which however minor should be acknowledged: training costs and the possible impact of changes in the value of money. The attached memorandum treats both of these matters and demonstrates that they have only minimal impact on our cost projections.

Again, Mr. Chairman, we would be happy to supplement this response or to discuss these matters with you in more detail at your convenience.

Sincerely,

/s/

A. Leo Levin

ALL:ps
Attachments

Federal Judicial Center

Memorandum

TO : Director A. Leo Levin

DATE: 1/12/84

FROM : Gordon Bermant and Russell Wheeler

SUBJECT: Comments on the NSRA/USCRA Responses to Our Study of Court Reporting Methods

As you know, the National Shorthand Reporters Association (NSRA) and the United States Court Reporters Association (USCRA) have circulated comments on our report A Comparative Evaluation of Stenographic and Audiotape Methods for United States District Court Reporting, which was published in July of this year. A relatively brief memorandum by Resource Planning Corporation (RPC) and a somewhat longer document by Coopers & Lybrand, were distributed to the members of the Judicial Conference of the United States when the Conference met in Washington in September. Resource Planning Corporation subsequently presented NSRA/USCRA with an extended version of its earlier document, dated October 12, 1983, entitled "An Analysis of the Federal Judicial Center's Evaluation of Stenographic and Audiotape Methods for United States District Court Reporting." This document was distributed by the NSRA during November. We received a copy (from a district judge to whom it had been sent, not directly from NSRA) on December 1.

We have been invited, through Bill Weller of the Legislative Affairs Office, to offer comments on these responses to the House Judiciary Committee, which may hold hearings on the question of court reporting methods as early as February. This is of course a welcome opportunity to demonstrate, if a demonstration be required, that the comments offered by RPC and Coopers & Lybrand are not inimical to the integrity of our report or the validity of its conclusions.

The present memorandum comments on each point of apparent substance raised in the RPC and Coopers & Lybrand documents.

The RPC and Coopers & Lybrand Comments

The RPC divides its comments into three sections. The first section purports to criticize the choices of courts, court reporters, transcription services, and transcript samples employed in the study (Chapter 2: Analysis of FJC Sampling Methodology); the second seeks to find fault with the study's comparative cost analyses (Chapter 3: Analysis of FJC Costs), and the third complains that the Center did not honor all of RPC's requests for information beyond that published in the report (Appendix: Correspondence Relating to Requests for Additional Study Data). The Coopers & Lybrand (C & L) comments are organized in approximately the same fashion, but the emphasis is placed much more heavily on questions of costs.

This response treats the questions of sampling, accuracy, and costs in that order. The first sections refer only to RPC. At the conclusion of the section on accuracy, the C & L treatment of sampling is described. In the subsequent sections on cost, in which reference to both consulting firms is required, appropriate abbreviations are used to distinguish the identity of the document referred to. Our reponse to the consultants' requests for additional information is contained elsewhere. We turn first to the RPC comments on sampling and the accuracy analyses.

Sampling and accuracy: an overview

RPC's presentation of sampling methodology is so misleading and flawed that it becomes an embarrassment to the discipline of applied social science. In particular, the consultants

- totally confuse the critical difference between an experiment and a feasibility study

- completely overlook the importance of prototyping and evolution in any technical development

- presume and insist, through a misapplication of the concept of representativeness of a sample from a population, that their own ignorance about the federal courts is the norm that should guide the methods employed by the Federal Judicial Center in conducting its applied policy research

- raise false fears that the methods employed in the study produced biased results, even though the Center made available to them the information with which they could have eliminated those fears.

In sum, this is shoddy work, which appears to be aimed at sowing confusion in the minds of people who may not have the time to look carefully at the Center's report and its conclusions.

What follows is a detailed demonstration of the inadequacies of RPC's understanding of the Center's study.

Sampling and accuracy: details

[The numbers contained in square brackets refer to the page numbers in the RPC report]

There are signs, in some of their early statements, that the consultants are mildly uneasy about the task they are about to undertake, because they quickly disavow any substantive goal or content in their effort:

> "It should be noted that we were not asked by USCRA/NSRA to provide, nor are we in a position to offer, an assessment of the relative merits of audiotape versus stenographic reporting. Our examination of the FJC study and resulting conclusions do not address this issue. Nor do our conclusions specifically address policy questions such as what actions the federal judiciary might take with regard to court reporting processes." [1]

Neither do they wish to attack the care or thoroughness with which the study was presented, for they describe the discussion contained in report as "comprehensive and meticulous." [1]

If the criticism is not addressed to the study's conclusions, nor at the thoroughness and care of the report, what is its target? It is the relatively abstract question of methodology, namely, whether the scientific "rules of the game" followed in the study were appropriate. Note, however, that the consultants are very careful to avoid questioning the factual conclusions. The bulk of the argument goes to whether the study has biased its conclusions through its method of choosing the courts in which the study was conducted. Variations on this theme are wrung for certain features of the study that were consequences of the study site selection, namely the identities of the audio operators, equipment, and, to a lesser degree, the location of audio transcription services for each study site. The final point concerns the way in which transcript pages were chosen for analysis; it is not so closely tied to the concern with study site selection.

Study site selection. The consultants first offer a tutorial on sampling theory [7-8], which is intended to introduce the concept of a representative sample of a population of unknown characteristics. As part of this effort, they incorrectly cite a 24-year old F.R.D. article and are apparently unaware of a much more pertinent publication of the Center (the correct F.R.D. citation is 25 F.R.D. 351; the pertinent publication is our 1981 Experimentation in the Law: Report of the Federal Judicial Center Advisory Committee on Experimentation in the Law). Having missed the relevant literature and constructed a suitable straw man, they then demolish it, setting up the portentous conclusion that "Based on the procedures used in drawing the sample in this example, we are in no position to draw any valid conclusions about the population ....This does not say that we cannot render an intuitive

judgment but that judgment would not be based on any valid scientific evidence." [9, emphasis in original]

The apparent crux of the argument is, therefore, that the study sites and important features related to them were not representative of the district courts as a whole. This is what the consultants would like the reader to believe. A careful reading shows, however, that when push comes to shove, they are hiding behind obfuscating draftsmanship, using scientific terms and trading on their ordinary meanings. When the fuzz is shaved away, the actual crux of their argument is that if any practical considerations operated in regard to the selection of the study sites, all subsequent results and conclusions were necessarily rendered invalid . In other words, according to the rules that the consultants would have the reader believe are forced by scientific method, the study could not have been undertaken in the real world.

Here is the operative passage: "Regardless of whether the sampling design used calls for a simple random sample or a stratified sample, the only way to ensure that the sample is representative of the population from which it is drawn is for selection to be truly random. This means that each and every element in the population must have an equal opportunity of being selected for the sample. If the sample is not drawn in this manner, it cannot be assumed nor demonstrated to be representative of the population under study." [10, grammar and emphasis as in original]. The consultants go on, in a paragraph truly remarkable for its fatuousness, to claim that the selection of courts on a purely random basis "would have been quite simple."[11]. The consultants subsequently allow that there might have been some difficulty in gaining cooperation from the courts and judges chosen randomly, and that the study sites were "presumably" chosen with an eye toward the willingness of the courts to participate in the study. Then comes this sentence: "Although the FJC may have ensured study cooperation, they did so at the cost of sample validity and may unintentionally have encouraged bias (e.g., the courts which volunteered may have done so because of existing problems with their reporters or other factors which may have biased the study)." [12]. Stripped to its essentials, this argument reduces to the following absurd assertion:

> The FJC had to place its equipment in courts willing to undertake the study. Though they took several steps to guarantee representativeness, they committed a fatal error by working with courts who had expressed a willingness to cooperate in the study. No one can know why a court was willing to accept the study. Therefore, we can not trust the study's outcomes or its conclusions.

The depth of the absurdity of this position is hard to fathom, for it implies that the results could have been trusted only if some courts had been selected and forced to participate against their own inclinations to do so.

In a stunning non sequitur the consultants next claim that the variability in accuracy for both steno-based and audio-based

transcripts, across the study sites, casts suspicion on the selection of the sites. As they have no basis for comparison, their concern hangs in the air, ungrounded.

Audiotape personnel. The fallacy inherent in the RPC approach to the Center's study is apparent in its analysis of the court people who became the audio operators. The argument, which is presented on pages 12-13, is that the operators were unrepresentative because they were not chosen randomly from among current employees and because at least some of them had educational backgrounds greater than the minimum standards established in the audio operator job qualification statement drafted early in the study. The consultants also fault the study because some audio operators, who were found to be unsuitable for the task, were replaced early in the study. Further, they maintain that this replacement would not be likely to happen under "normal court personnel practices"[13].

Contrary to the consultants' assertion, it is not a flaw in the design of a feasibility study to acquire the most competent staff possible consistent with likely budgeting limitations operating under conditions of actual implementation of the innovation under test. That is what was done. RPC appears to argue that the test should have adopted an absurd personnel policy, namely, choosing people at random with no regard for their likely aptitude to do the job required. This mistake pervades their position. It is based on the misguided notion that sensible and prudent administrative steps should not be taken in the conduct of the court's business, even in the testing of innovations as well as later, at a time when, if warranted, the innovation becomes standard operating procedure. It is quite surprising to find these consultants asserting that incompetent personnel operating in the courtroom would not be replaced under normal conditions. But in this case, as elsewhere, they display profound ignorance of the reality of administrative practice in the federal courts.

Equipment. The consultants charge that the study did not test each brand of recording equipment advertised as being designed specifically for court use. They ignore the statement in the report (Report, page 24) that the cassette machine chosen for the study had previously been compared to all other available brands and been found to incorporate more required and desirable features than any other available machine. Nevertheless, perhaps it would have been somewhat nicer to have enough study sites and related resources to accomplish this. Indeed, the Center study's results are limited to conclusions about the brands of equipment selected. There is no reason to believe, however, that the choices of equipment misrepresented what will be available to the courts on a larger scale, should the request for large numbers of machines arise.

Transcription companies . The consultants charge that the transcription companies employed for the study were not representative of all transcription companies that might offer their services to the courts in the event of wider adoption of ESR as an official recording method. And indeed they may not have been, nor should they have been. The facts of the matter are, in this case, just as they were in the

discussion of audiotape personnel: it would have been absurd to design a feasibility study without reference to sensible administrative policies. If there are some transcription companies offering poor services, the Center is not obliged to include them (or risk including them by placing them in a population from which they might be chosen in a blind selection process) in a study of how the courts might implement an ESR option in the accepted alternatives for court reporting. The transcription companies were chosen with an eye for reliability and trustworthiness. Other companies, equally meritorious, were not chosen because they were not needed. As expected, the geographical locations of these companies correspond roughly to the major markets for their services. Court sites for the study were not chosen with that requirement, however, so, inevitably, tapes from some of the courts were mailed to relatively distant transcription sites. As the study abundantly demonstrates, this presented no serious problems for the smooth transaction of transcription business. Moreover, in the event of a broader national demand for transcription services, we may have confidence that the marketplace will provide quality services at locations more convenient to the court sites that would wish to use them.

The question of transcript selection. The final question raised about the Center study's sampling methodology addressed the method by which transcript pages were selected for analyses of their accuracy. The consultants charge that the study's method prevented the discovery or reporting of audio-technology failures that resulted in losses of audio-based transcript. The charge is based on the implicit assumption that no other information about the administration of the recording and transcription processes, and no safeguards for careful transmission of all transcript pages, were available during the months of the study's operation. This assumption is quite false, and, in fact, the safeguards taken and the procedures used to insure accurate counting of all failures, both of steno-based and audio-based technologies, were described to RPC representatives at the time they visited the Center for a thorough discussion of the various issues confronting them.

Nevertheless, there is always an outside chance that some audio-based failure was not recorded, or that some important failures in the audio-transcription process were not picked up during the study. Therefore, a subsequent audit of the corpus of study materials was conducted after the results were published. A description of that audit now follows.

The audit covered transcripts and audiotapes of 49 proceedings from the population of proceedings collected for the study. It is important to understand how these proceedings were chosen for the audit, and, indeed, what is the definition of "proceeding." A proceeding is the transcript collected for a single day in court. Thus, usually, a single case transcript consists of a number of proceedings. The total population of audio transcript pages collected during the active portion of the study is reported as 17,815 pages (Report, page x). The associated steno-based transcript is reported as 18,615 pages (letter Wheeler to Crawford, September 15, 1983). These pages are contained in

189 proceedings from 82 cases heard in 11 of the 12 project courts (Report, page 33).

Page counts of audio and steno transcripts were made for each of the 189 proceedings. Out of 189 pairs, the steno transcript contained more pages than the audio transcript in 110 pairs. The page counts were identical in 18 pairs, and in the remaining 61 proceedings, the audio transcript contained more pages than the steno transcript.

There are three pertinent further facts about this distribution of differing page counts between steno and audio transcripts:

1) Of the 110 pairs in which steno pages outnumbered audio pages, 101 came from five of the project courts: Massachusetts, New Mexico, ED New York, ED Pennsylvania, and WD Wisconsin. And of this number, 57, over half, came from ED New York. The other four courts contributed 11 proceedings each to this list.

2) In 28 pairs, steno-based transcript was 20 or more pages greater than audio-based transcript. Twelve of these were from the Eastern District of New York.

3) The most likely locations in which to find gaps in the audio-based transcripts are for the proceedings in which the steno-based transcript pages most greatly outnumber the audio-based transcript pages. Moreover, because relatively large differences between the page counts were clustered in just a few courts, there is reason to suspect that systematic practices there may have accounted for these page differences.

We therefore audited each of the 28 transcript pairs with the largest page count differentials. In the time remaining, we audited 21 additional pairs with slightly smaller page count differentials. In total, we audited 49 transcript pairs. These contained 6880 pages of steno-based transcript and 5787 pages of audio-based transcript.

It is important to remember that the sampling procedure used in the the Report was perfectly capable of locating any audio-transcript gap of one-half page or less. It is also important to recall that the report already lists obvious equipment failures that prevented the recording of certain proceedings (Report, page 74-75). The allegation against the sampling procedure is that it was incapable of discovering other large gaps, namely, those of one-half page or more but not counted in the report as equipment failures. Therefore, the allegation continues, we have underestimated failures in the tape recording or transcribing processes.

We examined these 49 transcript pairs, containing 37% of all steno-based transcript pages, with the specific purpose of determining whether there were gaps in audio-based transcript of one-half page or more. All gaps thus discovered were then reviewed by reference to transcriber's notations on the transcript, audio operator's lognotes, and the audiotapes themselves, to find an explanation for the gap if possible.

The following categories of explanation were possible:

1. Equipment malfunction or operator error during recording, either reported or not on the operator's log notes.

2. Inaudibility of the record on otherwise properly functioning tape recorder.

3. Failure of an audio operator to forward appropriate tapes for transcription.

4. Given an audible tape, inaccurate instructions given by the court to the transcriber, or mistaken executions by the transcriber of accurate instructions from the court.

5. Inaccurate or misleading instructions given to the court by the official reporter as to the portions of the record ordered for transcription.

6. Record created away from the project courtroom or associated chambers.

We neither assumed nor discovered that large page differentials were always associated with gaps in the audio record or transcript. In proceedings where there were no audio-tape transcript gaps, we had to search for other explanations for the differences in page counts. Indeed, sometimes a large page count difference needed an accounting based on more than one explanation. We treat this material in the final section below. Now we turn to a detailed analysis of each gap discovered during the audit. We proceed on a court-by-court basis, beginning with ND California, which contributed one transcript pair in which the steno-transcript was 16 pages longer than the audio-transcript. [The meaning of the asterisks is explained below.]

ND California (11/17/82): 16 page difference: 15 page gap. Category 6, conference in Judge Burke's rather than Judge Peckham's chambers.

Massachusetts (11/3/82): 25 page difference: 24 page gap. Category 4, an audible side-bar conference was not transcribed because the transcriber believed side-bar conferences were off the record.

(11/4/82): 19 page difference: 2 page gap. Category 4, as above.

(11/8/82): 22 page difference: 4 page gap. Category 4, as above.

(11/15/82): 31 page difference: 1 page gap. Category 6, voir dire in the courtroom lobby. Judge Zobel did not wish to permit structural changes to allow adequate microphone placement.

(11/16/82): 25 page difference: 77 page gap. Category 6 as above.

(11/17/82): 25 page difference: 21 page gap. Category 6, as above.

(11/18/82): 22 page difference: 2 page gap. Category 6, as above. Anomalous relationships between differences and gaps accounted for by inclusion of opening statements in audio, but not steno, transcript. [In other words, audio-transcript contained the opening statements but not the voir dire, while the steno-transcript contained the voir dire but not the opening statements.]

New Mexico (11/17/82): 58 page difference: 52 page gap. Category 5, official court reporter did not specify that testimony of witness Plummer was to be transcribed.

ED New York (11/16/82): 28 page difference: 11 page gap. Category 4, first day of daily copy coverage. Transcriber failed to transcribe 11 pages of audible material on one tape.

***** (11/17/82) 29 page difference: 2 page gap. Category 1, audio operator fails to record brief pretrial colloquy between attorney and court in a matter not pertaining to the instant case.

***** (1/7/83): 35 page difference: 1 page gap. Category 1, automatic transfer between reels malfunctioned.

ED Pennsylvania

***** (11/17/82): 14 page difference: 11 page gap. Category 2, a side-bar conference between Judge Huyett and a juror almost entirely inaudible on the tape.

(11/30/82): 14 page difference: 23 page gap. Not categorizeable. Chambers conference, unclear as to whether audio operator was instructed to tape the conference. Anomalous relationship between difference and gap accounted for by inclusion in audio transcript, but not steno transcript, of colloquy between judge and juror re possible contamination.

WD Wisconsin

***** (11/4/82): 24 page difference: 4 page gap. Category 1, new tape not installed in time to catch end of witness testimony.

(11/15/82): 88 page difference: 68 page gap. Category 6, testimony taken in non-project courtroom.

(11/18/82) 12 page difference: 13 page gap. Category 4, operator sent only one of two tapes for transcription.

***** (1/27/83) 13 page difference: 2.5 page gap. Category 2, poor audio quality record of side-bar conference.

***** (1/28/83) 18 page difference: 13 page gap. Category 1, operator fails to install new tape in a timely fashion.

Thus, 19 proceedings were identified as containing gaps in the audio transcript of one-half page or more. We have placed asterisks next to each proceeding in which the gap was caused by an equipment malfunction or certain critical error by the operator that produced a permanent loss of the record. The total page count for these errors of hardware or operation is 33.5 pages worth of stenographic transcript, which is two-tenths of one percent of the total stenographic transcript output. All other irretrievable gaps were due to judicial decisions about the locations of proceedings or project equipment. In every other case where a gap appeared, there was nevertheless a complete and audible audiotape record.

We note in conclusion that of these 19 proceedings, 15 occurred during the first month of the five-month operation in each court. With the exception of one court, therefore, problems associated with recording proceedings and communicating with transcribers were quickly solved. Persistent problems in that court resulted in the loss of 15.5 pages of equivalent steno-based transcript.

The reader will have already noted that there were many more proceedings with large difference between steno transcript and audio transcript page counts than there were proceedings with audio-transcript gaps. Project staff had noted this throughout the accumulation of transcripts during the project — indeed, it was this apparent anomaly that contributed to the decision to employ an audio-based transcript page count in the sample to begin with. Given the obvious large differences remaining in page counts after all gaps had been accounted during this audit, staff undertook to examine, in a small way, some word counts and other features of the formats of steno- and audio-based transcripts. Because the ED New York produced so many proceedings in which large page-count differences arose, staff examined the transcript formats in some of these proceedings with some care. Here is a summary of the analysis:

Using an appropriate sampling procedure (arbitrary starting places, pages sampled using a Fibonacci sequence), staff sampled 30 steno-based pages (10 from each of 3 proceedings) and equivalent audio-based pages (proceeding dates 1/3, 2/9, and 2/10). Word counts were as follows:

Total words in 30 stenotranscript pages: 5147
Average: 171.6

Total words in 30 audiotranscript pages: 5997
Average: 199.9

There were more words on 23 of the audio member of each pair of 30 pages. These differences are well beyond the level of chance expectation. The audio transcriptions were strictly in accord with Judicial Conference guidelines for format.

In a large proportion of the transcripts audited, the bulk of the page differences appeared clearly to be accountable by reference to the format differences similar to those described above for ED NY. For

example, one official reporter submitted transcript typed with a nine-pitch ball, rather than the ten-pitch ball required by the Judicial Conference. There were a number of what seemed to be excessively generous margins — staff did not quantify these, but they were quite obvious to the eye. Again, the audio transcribers were consistently faithful to the Judicial Conference transcript production guidelines.

There was a tendency on the part of official reporters to elaborate in various ways, either directly in transcript material or in "para-transcriptions", i.e. comments by the reporter in the body of the transcript that add to the page count. As an example of the first type, an official transcript employed twenty-one lines to move from the first line of the morning's proceedings to the first "Q" by an attorney; the audio transcript occupied seven lines to cover the same portion of the proceedings. (See Attachment 1.) This created transcript bulk of more than one-half page. Similar luxuries were observed in examples of the second type: "Whereupon the jury entered the courtroom and the following transpired in the presence and hearing of the jury", while the audio notes simply the presence of the jury.

This audit did not intend to subject the steno-based transcripts to critical scrutiny for the sort of material has just been described. Had this task been undertaken, abundant examples of wasted space and excessive luxury of para-transcription language could have been documented in the official transcripts. This effort is presumably not required. The excesses were not observed in all official transcripts, but only in some.

Attachment 1 Appended Here

EXA: Audio

AUDIO

THE COURT: Good morning, members of the jury.

THE JURY: [In unison] Good morning.

THE COURT: We are ready to proceed. Mr. Fackenth
sir?

MR. FACKENTHAL: Yes, sir.

CONTINUED DIRECT EXAMINATION

BY MR. FACKENTHAL:

Q Mr. Del Pizzo, at the conclusion of yesterday's testimo
I had asked you whether you had had an opinion of the deduc
bility of certain items taken by Mr. John Somers for his 19
tax return. I believe you said you had an opinion and that
you thought that those deductions we were talking about, wo
be disallowed and you were in the midst of answering that
question. Will you continue, please, if you have anymore
comments about the 1978 deductions by Mr. John Somers in
respect to the Lawyers of Hell manuscript.

MR. BAYLSON: Your Honor please, I'd like to rene
the objection I made yesterday which your Honor overruled
and just so the record is clear, I have a continuing objec
and secondly, I think Mr. Fackenthal, as a matter of form,
should redirect something more specific to the witness tha
just let him ramble on.

THE COURT: Sustained. You have a continued
objection. I ask that you phrase a more discreet question
rather than seek a very generalized answer.

STEND

PROCEEDINGS - 10:15 A.M.

(All counsel and parties being presen
the jury not being present, the following transpire
open court:)

THE COURT: Good morning.

Are we ready for the jury?

MR. LEAR: Good morning.

MR. ARMBRUST: Good morning.

MR. BALYSON: Good morning.

THE COURT: Would the jury be brought i

(Whereupon, the jury entered the court
the witness, John R. DelPizzo, having been previousl
sworn, resumed the stand and testified further, as
follows in the presence and hearing of the jury:)

THE COURT: Good morning, members of t
jury.

We are ready to proceed. Mr. Fackenth
sir?

MR. FACKENTHAL: Yes, sir.

CONTINUED DIRECT EXAMINATION

BY MR. FACKENTHAL:

Q Mr. DelPizzo, at the conclusion of yesterday's testimony, I had asked you whether you had an opinio of the deductibility of certain items taken by Mr. J Somers for his 1978 tax return.

DART

A note on the availability of this information to RPC: A full description of the material made available to RPC is contained at the end of this memorandum. It is worthwhile to note here, however, that the materials on which FJC staff conducted the post-study audit just described were available to RPC, and known by RPC to be available to them. Every page of transcript used in the study, as well as the larger number of pages collected but not contained in the sample, were on file at the FJC, and available for reading and studying just as rapidly as the task of copying the originals, and placing them in a location suitable for public access, could be accomplished. These were the pages that formed the basis of the audit just described.

The C & L Comments on Sampling: The other consulting firm retained by the NSRA/USCRA to criticize the study was the accounting firm of Coopers & Lybrand. Coopers & Lybrand limit their comments on accuracy to a few generalizations in which they state that they would have preferred that we use another method for establishing accuracy (the Delphi method, which in fact would have been virtually useless for our purposes) and a complaint that not enough information was available to their representative. C & L comment that courts are so heterogeneous that it is difficult to stratify a sample so as to be absolutely sure that it is representative of all courts (a reasonable observation, but one that does not strike at the heart of the feasibility study that was conducted), and they conclude their section on accuracy analyses by stating that they do not take issue with the way in which the study applied its methodology. They argue, however, that the relative cost figures provided in the study are unreliable because of some problems in the sample of court sites. This problem is addressed directly in the next section of this report, which deals with each of the questions regarding the study's cost analyses that were raised by the court reporters' consultants.

Costs: An Overview of the criticisms:

The details of each charge made by the consultants (referred to hereafter as RPC and C & L, with appropriate page numbers following these abbreviations) are not always clear and sometimes must be inferred. One way to organize the criticisms is into two groups: alleged misrepresentations or misestimations of costs, and alleged omissions of cost categories or appropriate analyses. Six criticisms may be found in the first category, and five in the second. In general, the RPC and C & L consultants pick at the edges of the Center's analyses without going to their core. Though many of the allegations are misleading or groundless, there are two points of criticism that are germane: the Center's omission of estimated training costs for audio operators, and the the absence of an accounting for the changing value of money over the time of investment in a generation of tape recording equipment. What follows here is a treatment of each of the eleven allegations.

Both RPC and C & L refer occasionally to earlier published studies of court reporting. The present document will refer to these publications using the following abbreviations:

GAO: Federal Court Reporting System: Outdated and Loosely Supervised.
Washington: General Accounting Office, June, 1982

RPC/GAO: Analysis of the GAO Findings regarding Electronic Recording in the Federal Courts.
Washington: Resource Planning Corporation, May, 1983

ALASKA: Electronic Court Reporting in Alaska.
Office of the Administrative Director, Alaska Court System, July, 1979

RPC/ALASKA: A Financial Analysis of Electronic Reporting in Alaska Prepared by the Resource Planning Corporation.
Vienna, Virginia: National Shorthand Reporters Association, June, 1978

Alleged misrepresentations or underestimations.

1. The conservatism, relevance, or reasonableness of the cost assumptions: There are numerous sentences in RPC [20, 21, 28], and one statement in C & L [3-2] claiming that one or more of the assumptions behind the Center's cost bases were not prudent, or were irrelevant or unreasonable. These claims are not backed up with anything specific, however, so it becomes difficult to respond to them in detail. Already mentioned above, in the section comparing RPC and C & L in respect to their treatment of the Center's accuracy analyses, is C & L's concern about the variability among courts in relation to reported average values. Precisely what error C & L believes the Center has made in this respect is not clear, though the Center will surely admit that there are large differences between courts in many important respects, and no sample short of the whole population is likely to have covered the extremes of every imaginable dimension of variability between courts. But this is not a matter of serious practical concern.

Although these matters are treated more fully below, it may be worthwhile to state here, in a relatively general way, the fact that the Center's report did not underestimate audio system reporting costs nor overstate steno-based court reporting costs. Moreover, except for the omission of training costs (covered fully below), the report was probably quite conservative in its cost estimation, because it:

. overstated the percentage of time most audio operators would need to spend on court reporting activities in a typical district courtroom

. overstated the base salary that would be paid to most audio operators responsible for court reporting duties

. overstated audio system reporting costs by including substantial equipment, supplies, and personnel administrative costs associated only with the preparation of transcripts, as part of the court-borne reporting system costs

. understated stenograph court reporter costs by excluding substantial contract court reporter services (greater than $850,000 in Fiscal Year 1982) used to supplement existing full-time court reporters, while at the same time including supplemental audio operator services (backup operators) in audio recording system personnel costs

2. Audio operator cost estimates, including fringe benefit costs: RPC and C & L occupy more space with criticisms of the Center's treatment of audio operator costs than with any other single topic. [RPC: 13, 25 through 29; C & L: 3-4, 3-5]. It is totally appropriate to scrutinize this part of the Center's report most carefully, for these personnel costs, and in particular the differences between costs for audio operators and those for stenograph reporters, account for a large proportion of the differences in overall cost of the two systems. Each of the detailed points raised by the consultants is considered here.

CONTINUED

1 OF 3

Neither RPC nor C & L dispute the Center's estimated base salary for audio operators of $18, 944. Both claim, however, that the Center's estimated allocation of 60.4% of audio operator time (hence cost) to strictly court reporting duties is a serious underestimate of the time that would actually be required to perform the operator's tasks. However, this claim overlooks or ignores the very cautious, conservative approach the Center followed in projecting the audio operator's base salary and the proportion of time expected to be devoted to court reporting duties.

The base salary used in the analysis was at the top end of the pay scale (JSP 7-4). This salary would normally be obtained only after several years of work experience, and represents a base salary equal to the highest salary paid to a primary audio operator participating in the feasibility study. Indeed, this salary is probably greater than the mean salary that would be paid operators under current implementation plans. And in fact, in its response to the GAO report on court reporting, RPC stated that a base salary of $14, 000 was a realistic and reasonable remuneration for U.S. District Court audio operators. [RPC/GAO 19]

Insight into the hours required for in-court recording effort may be gained through statistics collected by the Administrative Office of the U. S. Courts (AO). According to the AO's report on Average Time in Attendance and Pages of Transcripts of United States Reporters for 1982, a reporter in a typical district court will spend 728 hours per annum recording court proceedings. A typical official reporter will record proceedings on 165 court days a year (out of 250 plus 10 paid holidays). Assuming a 50-week year for the reporter, the reporter is required to be in court fewer than 15 hours per week (728/50); given all court days, the reporter is required to be in court, on average, fewer than 3 hours per day (728/250); given just the average number of days on which the reporter's services are demanded, the reporter is required to be in court fewer than 4.5 hours per day (728/165). Finally, AO statistics report that only about one-third of official reporters actually record as many as 785 hours of proceedings per annum.

These figures represent typical federal district courts, but the study sites had greater than typical trial activity. For example, the courtrooms used for the study averaged 788 hours per annum activity, as opposed to the typical 728 hours per annum. What this means, of course, is that estimates of reporter or audio operator time required to fulfill recording requirements, based on these study sites, are overestimates of the typical case. Hence cost figures for audio operators will be similarly high. Yet these are the bases for the Center's cost estimates of audio operator requirements. Taking all this together suggests, therefore, the following conservative conclusion:

. the basic service of recording court proceedings (as distinguished from transcript production), irrespective of the method used, is not a full-time job. The Center could legitimately adjust its 60.4% time estimate downward by a few points, to more accurately reflect current typical official reporter hours of recording work.

C & L makes a considerable point out of the Center's alleged failure to account adequately for variability around the average of a number of important cost variables. One example is the variability of audio operator salaries. The substance of the C & L concern is shallow, however, for the following reasons:

. During the study, audio operators working more than 30 hours throughout the study's duration were graded no higher than JSP 8-1. The salary for that grade is roughly equivalent to the salaries for JSP 7-4 and 7-5 (for 1984, 8-1 is worth $18,891; 7-4 is worth $18,851; and 7-5 is worth $19,422. This means that the cost projections based on the study are, if anything, perhaps on the high side of what we should expect, because, as already noted, the salaries of the operators participating in the study may have been higher than would be the national average, given widespread implementation of audio recording.

. In a comparative vein, the range of salary from the middle of the JSP 5 grade to the middle of the JSP 7 grade is very close to the range of salary between minimum and maximum rates for official reporters. Thus, for both forms of recording, the variabilities in potential costs were adequately accounted for and conservatively projected.

C & L asserts that the Center ignored the manpower requirements associated with peak periods associated with seasonal variation and demands for the various degrees of rapid transcript production (this is a variant on the complaint that the Center paid insufficient attention to variability around average values). This assertion is incorrect. The study extended for more than five months of court time (not the four months frequently stated by RPC) including the peak court periods of mid-October to late March. Many of the study sites experienced long and/or complicated civil and criminal jury trials, and there were many court days of considerably greater than average duration. Several courts had substantial demand for daily and hourly transcript production. Under stenograph conditions, these demands often require the cycling of several official reporters throughout the court day, in order to sustain the attention required for that task. With audio recording, by contrast, the same operator can maintain the system, including the log notes, throughout a court day of any duration. Indeed, peak manpower demands for audio operator services were included in the 60.4 percent allocation of audio operator services.

RPC asserts, incorrectly, that audio operators during the study were shielded from noncourtroom duties and even from some of the duties normally associated with the operator's job description. In fact the operators were required to handle all inquiries and communications regarding transcript orders; to duplicate tapes and log notes; verify transcript orders; transfer audio tapes and related materials to and from transcription companies; maintain files; monitor transcript production schedules; file and deliver completed transcripts and refile original records of proceedings; complete and submit administrative and management reports for the Clerk of Court and the Center; complete other duties as assigned by the Clerk of Court. Thus, the audio operator did perform all of the duties contemplated for that role. However, since

the stenograph reporter remained the official reporter during the experiment, it might be argued that the audiotape operator was shielded from performing certain tasks, e.g. completing readbacks/playbacks to the bench, counsel, or jury. These are not matters that impact in a meaningful way on any of the Center's cost estimates.

C & L complains that the role of the audio operator may become a specialist function, creating a strong bargaining position to demand higher salaries, and that the Center's study does not address this issue. In fact, the Center assumed from the outset that the role of audio operator was a specialized one, but one that was not intended to take full time and that, moreover, is relatively easily learned in contrast to the much more demanding discipline of becoming a mechanical shorthand reporter. There can be little if any legitimate doubt that the labor market for federal court audio operators is and will remain relatively full.

RPC charges that the audio operators employed during the study were overqualified and hence unrepresentative of the quality of operator available for a nationwide implementation of audio recording. This issue has been raised and discussed above, on page 5. Suffice it to say here that the Center suggested minimal audio operator selection standards, but the clerks of court had, and properly exercised, full authority to hire and assign deputy clerks to audio operator positions conforming to local court hiring and qualification standards for personnel in the JSP 5 to 7 grade range. More than two-thirds of the employees assigned audio operator duties had been court employees before the court was selected as a study site. In many of these district courts, approximately 50 percent of the deputy clerks in the JSP 5 to 7 grade range have at least some college education, and 25 percent have a college degree. In several of the larger metropolitan courts participating in the study, more than 75 percent of deputy clerks in this grade range have a college degree, and a significant fraction have a graduate degree. Thus, the RPC charges on this matter are without merit.

The Center's report did not claim, as the RPC report would have one believe, that a reduction in court reporting man-hours would follow from a switch to an audio-based reporting system. Neither RPC nor C & L accurately portrays the true relationship between court reporter base pay and work responsibilities. At present, the official court reporter receives full base pay for taking the official record of court proceedings (requiring an average of 15 hours/week), typing or arranging for the typing of court-ordered transcript, and tending to a few administrative duties. Official reporters receive additional remuneration for preparing transcripts ; audio operators, on the other hand, neither prepare transcript nor receive additional remuneration for their duties away from audio recording.

In response to criticisms that audio recording has not produced savings in other court contexts, it is sufficient to note that the GAO report lists substantial cost savings, ranging from 43 percent to 55 percent, in four state court systems that are using audio-based instead of steno-based court reporting systems[GAO: 32]. That report also estimated, in advance of the undertaking of the Center's study, that a switch to audio-based court reporting would result in a 55 percent reduction in annual court reporting operating expenditures if implemented in the federal district courts[GAO: 31].

As a final item under this heading, C & L asserts that the Center made a false assumption in respect to the percentages of salary that go to fringe benefits. This assertion is incorrect. Fringe benefits provided to court employees including court reporters and deputy clerks are approximately a fixed percentage of the base salary associated with those jobs. The Center's report fully describes the benefits available to reporters and deputy clerks, including the greater sick leave allowances for the official reporters. Since official reporter salaries are almost twice as large as audio operators' projected base salaries, the government's costs going to the reporters' fringe benefits are also much higher than they would be for the audio operators.

3. Allocations and costs of space: C & L[3-6] and RPC[29,30] maintain that the Center's study incorrectly presents the cost savings attributable to reduced space requirements for audio operators relative to the requirements of current official court reporters. The amount of space within the courtroom to be devoted to the recording function is not at issue; the issue is rather the amounts of space required as office accommodation elsewhere in the courthouse.

In accordance with Judicial Conference policy, the stenograph reporters are provided at least 250 square feet of space to conduct their official business away from the courtroom(Court Reporter's Manual. Guide to Judiciary Policies and Procedures, Volume VI, Chapter VI: Space and Facilities); the national average is in fact more than 300 square feet. On the other hand, an audio operator is a deputy clerk hired and assigned by the Clerk of Court. During the Center's study, the audio operators were assigned space and furnishings comparable to the the space and furnishings supplied to other deputy clerks. Accessory equipment and supplies required for the audio operator's responsibilities were easily stored in standard cabinets and files already available in the courthouse. Unlike stenograph reporters, the audio operators do not need to be assigned additional space in which to house transcript preparation facilities (Of course, in the event of hourly transcript demands, space for transcript typists should be provided in or near the courthouse, irrespective of the method of recording the proceedings). There are sound administrative and managerial reasons to place the audio operators in space adjacent to, or part of, the regular deputy clerk space, rather than setting them apart as is currently done with the stenograph reporters. Therefore, the savings claimed in the Center's report to be derived from space reallocations to audio reporters are feasible and reasonable, even conservative.

4. Capital equipment and equipment maintenance costs: Neither RPC nor C & L criticizes the Center report's capital equipment cost estimates. They do criticize the omission of an analysis employing discounting procedures to account for probable changes in the value of money over the course of the next five years or so. That topic is considered below in the section on alleged omissions in the report.

In regard to hardware maintenance cost estimates, C & L[3-8] asserts that the Center's figure is too low (12% of purchase cost per annum). C & L cites the Alaska experience, in which maintenance costs approximated 17% of purchase cost per annum, as being a better guide to an accurate estimate. The use of the Alaska figure is unrealistic, however, for the following reasons:

. Alaska has the highest cost of living, and the lowest degree of industrialization, among the 50 states; all goods and services, but especially technical ones, are more expensive there than just about anywhere else

. Many state court locations in Alaska are geographically isolated, thereby increasing the costs associated with transporting either equipment or personnel associated with maintenance

. Alaska's audio recording equipment was relatively old at the time the Alaska study was conducted; it had been in continuous use since 1973

. The scarcity of commercial audio equipment repair companies in Alaska has caused the court to employ repair technicians; this is a relatively expensive method by which to maintain audio tape recorders

Therefore, the Center's estimate, which includes a built-in escalator for labor costs associated with equipment maintenance, is not legitimately criticizable by virtue of its relationship to the Alaska figure.

5. Audio system installation expenditures: RPC[31] and C & L[3-8, 3-9] argue that the Center's estimate of $3000 for the average installation cost of an audio recording system is too low. RPC presents a figure of $5000 as an alternative, based on their reading of the GAO report. C & L correctly avoids this move, but states that it has no confidence in the way in which the Center arrived at its $3000 estimate; as before, their concern stems from their assumption of extraordinarily wide variability between courts on virtually every dimension.

The RPC adherence to a figure of $5000 is incorrect because it assumes a requirement for carpeting — this was the basis of the GAO estimate. No carpet needed to be installed in any of the twelve experimental sites. Nine of the sites were already carpeted, and the acoustics in the other three did not require carpeting in order to reach a quality that allowed clear audio records to be made. C & L offers no concrete procedure to improve on the Center's estimate. Finally, the $3000 figure that the Center suggested is, in fact, 3 times greater than the average spent in any of the 12 test sites (Report, page 67, note h).

This factor gives the Center's estimate a sufficient degree of conservatism. The consultants' comments on installation expenditures are therefore without foundation.

6. Audiotape supply expenditures: While RPC accepts the Center's estimates for the projected costs of audiotape, C & L raises the need for a greater disaggregation of estimation (again to account for large individual differences between courts) and a more careful explanation of the assumptions the Center used in coming to its conclusions.

The Center purchased a relatively small number of cassettes, with special labels for experimental purposes. Though the quantity purchased allowed the Center to acquire the cassettes at less than retail prices, there is good reason to believe, based on consultation with GSA and examination of vendor price schedules, that further reductions in price would be available under conditions of a national implementation of audiotape recording. The unit price used for projections in the report ($1.75/cassette) is sure to be a conservative estimate.

Alleged Omissions of Important Cost Categories.

1. Omission of training costs: RPC[26,27] and C & L[3-2] criticize the Center's report for neglecting to include the costs of training in its cost projections. This criticism is well-founded and points to an oversight in the report, but not in the available data.

As a matter of fact, during the study the manufacturer of the cassette equipment provided up to two days of equipment training, on site, at no additional cost to the government. The Center supported three additional days of training by persons who perform this service professionally.

The Center's best estimate is that, for each audio system to be installed, court personnel will receive up to five days of training by a person or persons employed by or under contract to the Center. Training costs per installation will average, on a continuing basis, approximately $1000 once every three years. These costs are made up of trainer services, estimated at $125/day x 5 days, and travel costs of $375. Table 21 of the report now shows an average annual cost per audio system of $18,604 (Report, p. 66). Annual training costs would add approximately $333 to this number, bringing it to approximately $19,000, which is an increase of slightly more than 2 percent. In relation to the annual cost of either an audio or a stenograph system, this increase is de minimus. Nevertheless, it should have been included in the report as published, and the court reporters' consultants were correct to point to its absence.

2. Omission of Supervisory and Management Costs: RPC[26,27,28] and C & L[3-2] complain that the Center omitted a consideration of additional supervisory and management costs associated with adoption of an audiotape reporting system. Both critics suggest that additional

supervisory personnel will have to be employed, because, among other reasons, audio operators will require more supervision than stenograph reporters.

In fact, the Center had not disregarded supervisory and managerial costs. The consultants overlooked the discussions in the report (page 60, and in particular footnote 89 on that page) concerning the supervision required for audio recording systems. When the clerks and other supervisory personnel involved in the study were queried about the matter, almost all replied that there would be no change, or at most a minimal increase, in total managerial time required, given the advent of an audio recording system. The clerks believe that specific supervisory activities and responsibilities would change from those required to supervise stenograph reporters; but no additional supervisory personnel would be required. Most of the administrative and logistical details associated with the audio recording system were assigned during the study — and would be assigned in the event of permanent adoption of audio recording in a court — to the audio operators themselves.

The Center's report makes clear that supervision of audio operators is in general not very burdensome, certainly no greater than the burden of maintaining a district-wide court reporter management plan as is now required. The Center's report did not deal with these costs directly for either form of reporting system, on the reasonable assumption that there would be no significant costs developed over and above those already incurred in managing the stenograph court reporters. It is worth noting that management problems have forced a number of the larger district courts to assign additional supervisory personnel to the stenographic court reporter system.

Therefore, the suggestion made by RPC, that additional managerial time and personnel will be required in the advent of court-wide adoption of audio reporting, lacks merit.

3. Omission of comparative assessment of transcript costs: Both RPC and C & L fault the Center's report for omitting a survey or analysis of audiotape versus stenotape transcription costs [RPC: 20; C & L: 3-1, 3-1, 3-12]. C & L made specific reference to the possibility that stenotype transcripts produced in a computer-aided system (CAT) might prove to be less expensive than other forms of transcription, irrespective of the medium of recording.

The Center's decision not to include detailed consideration of transcript costs was intentional — but the report is probably insufficiently clear or precise in explaining the rationale behind this correct decision. To begin with, as the report states, transcript page rates are set and regulated by the Judicial Conference. Since precise production costs and profit margins of transcription services, whether for audio or steno records, are held as proprietary information by the service providers, the Center chose not to make formal inquiries during the course of the study.

Audio transcription companies did inform the Center that existing Judicial Conference transcript fee rates are very equitable and ensure a

profitable return on investment. Also, federal court transcript rates are higher than the prevailing official transcript rates in most state courts and federal administrative agencies.

In its report, the GAO states that prevailing rates for transcripts from audio records are equal to or less than prevailing rates for transcripts from steno records. Moreover, when audio transcript rates have been subject to competitive bidding, the resulting fees have been less than those allowed by the Judicial Conference (e.g. U.S. Tax Court, U.S. Supreme Court, numerous administrative agencies).

The Center agrees with C & L's observation that the outcome of accepting audiotape recording systems into the district courts may have a material impact on the price structure of available transcription services. The existing evidence and prevailing trends suggest that additional transcript cost savings will follow from a filling-in of the market offering services to the federal courts. In courts with substantial demand for high volumes of expedited or daily copy, transcript savings to litigants (compared to costs for steno-based transcript under these tighter deadlines) might exceed the government's savings in taking an audio, instead of a steno, record.

There have been several published reports containing analyses of the efficacy of computer-aided transcription (CAT). These include the Federal Judicial Center's Computer-Aided Transcription: A Survey of Federal Court Reporter Perceptions (1981); the National Center for State Courts' Users' Guidebook to Computer-Aided Transcription (1977) and Computer-aided Transcription in the Courts (1981); and the National Shorthand Reporters Association's Reducing Transcript Delay: A Guide to Reporter Productivity (1983). All of these studies reported that CAT can reduce some of the labor-intensive activities involved in preparing steno-based transcripts. None of the reports suggests, however, that CAT has reduced or will reduce court transcript fees to litigants; and some of the reports found that CAT costs are higher than other conventional transcription costs. The NSRA report mentioned that the particular CAT approach most frequently used now does not necessarily reduce the transcription production time or manpower effort, compared to several other stenograph transcription methods, i.e. note readers and dictation.

Finally, therefore, there are no serious problems with the Center report's treatment of transcription costs. The issues that must be faced in regard to transcript page charges are appropriately the province of the process of implementation of an audio-based system on a operational basis.

4. Omission of transcript costs to the government: C & L[3-2, 3-11] claims that the Center underestimated the costs of an audio reporting system by neglecting to include the transcript production costs that the court would bear; in the present steno-based system, the court (judges and magistrates) may order transcript from official reporters at no additional cost to the government.

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Almost any way these costs are calculated, the additional impact to the government is quite a small percentage of the savings to be realized. The major point, however, is that an audio-based system permits the government, and parties, to listen to the record before ordering transcript, and then save money by tailoring their transcript requests to fit their detailed needs. For example several judges and attorneys who served as panelists and evaluators during the experiment commented that the availability of audiotapes as an official record could substantially reduce the number and length of transcripts ordered by the government or other parties. Most parties cannot review or comprehend the official stenographic notes of court reporters; they must, therefore, order a transcript at prevailing rates. The availability of audio tape permits parties, or the court, to review the record first. Parties, or the court, may also choose to have the transcript prepared by typists already employed by them, thereby reducing the costs of transcript production even further.

5. Omission of capital budgeting forecast: RPC and C & L argue that the Center should have included a study of the effects of changing values of money over the period of investment in audio equipment.

The procedures suggested by the critics are particularly appropriate for major capital expenditures. Though the investment in audio equipment is surely not trivial, the proportion of total system expenses going to capital investment is relatively small — therefore, the effect of elaborate discounting procedures on total estimated costs is also quite small . Thus, when the procedures recommended by C & L are applied, the change in the Center's original estimates is only 2 percent, i.e. the original estimate of a 55 percent saving is reduced to a 53 percent saving.

This completes the summary of the specific complaints made by RPC and C & L.

Mr. KASTENMEIER. Thank you.

Does Dr. Wheeler have any additional comments?

Mr. WHEELER. I have nothing to add at this point, Mr. Chairman.

Mr. KASTENMEIER. Well, maybe this morning I am learning more about transcription and reporters than I would want to know. I was reluctant to get into this subject, and the interest of this 14-member subcommittee is evidenced by the fact that there is only one member before you. I don't say that in criticism of you or anyone else, but obviously there are important matters going on.

Do I understand that the contest is really in terms of a technical assessment between three systems—conventional reporting, electronic transcription, and reporting with CAT, computer-aided transcription? Are those the three common forms of reporting judicial proceedings that are currently being utilized in this country?

Mr. BERMANT. There are fundamentally at issue two means of taking the record, creating the record. That would be by stenotype or by tape recording. There is, then, the subsidiary issue. Given that the record has been taken by stenotype, what advantages accrue when that stenotype record is placed into the computer for the production of the transcript.

It is our view that that issue is largely irrelevant to what is before us, because the concern is not whether or not CAT speeds up the court reporter's work. It is almost clearly the case that it does. That's not at issue.

Mr. KASTENMEIER. That is not the issue.

Mr. BERMANT. No, sir; what is at issue is whether or not timely, accurate, and cost-effective transcripts can be produced otherwise—in fact, can be produced in such a way that they are at a remarkably smaller cost to the Government and to the parties, equally rapidly, whether on an ordinary, expedited, daily or hourly basis, with accuracy that equals or exceeds that produced by any other method.

The conclusion of the study is that under appropriate conditions of management, with proper care for administration, the use of audiotape as a means of producing the record—which parenthetically at this point means that the means of transcript production would not be computer-aided because the technology to move from voice to computer output is not there, and we certainly wouldn't argue that that's a significant need at this point—that the use of ordinary transcription with a tape-recorded record is more than sufficient. The study shows that, under certain circumstances, it is superior as a means of producing an accurate transcript.

Mr. KASTENMEIER. Is there any written transcribing taking place? You mentioned stenotyping as contrasted to tape recording, and then stenotyping with computer-aided transcription. Is there any handwritten——

Mr. BERMANT. Yes; Gregg or Pitman shorthand. I am sure the members of the association would have the details on that. It is my impression that in the Federal courts—we heard rumors from time to time that there might be someone who was still using hand recording, but we found none. Certainly, to the best of my knowledge, none was represented in our study.

Mr. KASTENMEIER. I was just trying to get the parameters of the types of devices and the various methods used.

Mr. BERMANT. It is my impression that that is a fast-disappearing art, if not already totally disappeared.

Mr. KASTENMEIER. To get some view of the future, looking forward, you say it is unlikely that tape recordings can be computer-aided in terms of transcription.

Mr. BERMANT. No, sir; I would think it is more than likely that it's a certainty. But it is not essential for today's purpose or for any need to project the costs or the benefits of this system to include it in any calculations whatsoever. It is a technology that is over the time horizon, but these time horizons shrink so fast that it would be impossible to know when it would come.

Mr. KASTENMEIER. Let me ask you this. Even though it is not at issue, does the fact of the speed of transcription with the aid of computers, respond to any need that the courts have? Is expeditious transcription a necessity of the courts?

Mr. BERMANT. Surely, it is. I needed to think for a moment because of your use of the word "expeditious", because it becomes a technical term. One form of transcript demand is the so-called expedited transcript. That is within 7 days of the proceeding. So when you said "expeditious", I assumed you were speaking generically.

Certainly, generically, expeditious transcript production is of paramount importance. As you know, the Federal Rules of Appellate Procedure set transcript demand deadlines, and there are also costs associated with each of those.

Mr. KASTENMEIER. But your position is that speed of receipt of transcripts wasn't the criteria which you were called on to apply with respect to the examination of stenotyping versus tape recording.

Mr. BERMANT. No, sir; not precisely. The study showed that transcript production from audiotape records was just as fast as transcript production based on a stenotype record, given all the methods of transcript production that were used. In these real 12 courtrooms, facing real demands, the audio-based transcript came back at least as fast as the steno-based transcript. There was no advantage to starting with the steno-based transcript.

Now, it would be unrealistic to say that in all circumstances a perfectly automated, totally accurate computer-assisted transcription would not speed up manual typing. Clearly, it would. In Mr. Dagdigian's statement, for example, there is reference to the situation in the Southern District of New York where there apparently is a lot of effective computer-aided transcription. Where that occurs, and where the court continues to use that, there is nothing in our position that would argue against its continuation.

Mr. WHEELER. May I just supplement that, Mr. Chairman? In our study, we analyzed transcript production on a daily basis, an hourly basis, as well as expedited and ordinary. The audio transcript came back within the guidelines, within the prescribed regulations, in almost every circumstance. So we subjected the method to all those various different kinds of deadlines and it performed successfully in each case.

Mr. KASTENMEIER. In a recently published article, Judge Daniel Huyett suggested that reporters who use computer-aided transcription should be preferred, as well as reporters who use note readers. What are your thoughts on that statement?

Mr. BERMANT. Yes, sir. I am aware of that paper by Judge Huyett and I know the table. There is a report by the National Shorthand Reporters Association that describes the relative effectiveness of notereaders and CAT. I believe it would probably be the case that it would depend on the notereader and on the skill of the CAT operator, in terms of a comparison of those two. Averages might fluctuate as a function of the skills of the various operators.

Mr. WHEELER. Judge Huyett was not speaking to notereaders or CAT as simply an either/or preference. Judge Huyett was one of the judges in the test site in the third circuit, and he has asked to have the audio equipment installed for its use on an official basis, so he was not stating those two as the only alternatives.

Mr. KASTENMEIER. I will now yield to the gentleman from Illinois, Mr. Hyde, who has just arrived.

Mr. HYDE. Thank you, Mr. Chairman.

As I understand it, the direction in which we are asked to move is, through attrition, to gradually have the shorthand reporters, stenotypists, the individual court reporter, slowly fade away as a result of the electronic age; is that correct?

Mr. BERMANT. If the technology meets the test of time, inevitably, through attrition, there would be a reduction in the Federal court reporter force, yes, sir.

Mr. HYDE. I have a problem of understanding how the electronic recording will distinguish between several people talking at once and nobody really taking charge. There are two groups of people in society who are the most authoritative; one is the photographer and the other is the court reporter, who shuts up people and gets them to talk louder and generally has much more control over the proceedings than the judge or the foreman of the jury.

As someone who has tried cases, and not nearly as successfully as I would like, and, hence, has had to rely on many a court reporter, I think the ideal situation is the shorthand reporter, the stenotypist, backed up by the recording device to check on inaccuracies and all that. But multiple shouting and talking, the need for backup systems and who is going to back up whom, it would seem to me the electronic recorder could back up the shorthand reporter much more effectively than the other way around. That is probably just because I'm old fashioned and I'm not "Atari" enough. But I do think the shorthand reporter has a utility in controlling multiple talking, shouting, in identifying who is who, much easier than the machine can, and generally providing a sounder record with the backup from the electronic machine. That's just a personal view.

Do you have any comment on what I have said?

Mr. BERMANT. The equipment used in the study and the equipment that is to be used in any implementation is four-channel equipment that allows very strict separation of channels. It is not a single recorder.

Mr. HYDE. What about filming the proceedings? I know we aren't to use television cameras and newspaper pictures in a trial. But if we are going to record the voices, and we were going to have a problem—not insuperable, but a problem—in identifying, why

don't we go all the way? Why don't we take a perfect film of the trial and then whoever is shouting can be identified visually as well as orally?

Mr. BERMANT. I would love to—I mean, this is a topic of great interest. I think the short answer, and it must be brief, is that to the extent we are moving to a transcript, to the extent that the audio technology is sufficient, as it has been proven to be, given appropriate training of the audio operator, there has been perhaps not a thorough enough reflection on the importance of the audio operator in this system as proposed.

It is not an unattended system. Newspapers throughout the country, as this study was going on, had headlines of "Man Versus Machine." That is simply not correct. It is not man versus machine. It is not anything versus anything, to begin with. There is no contention here——

Mr. HYDE. In other words, the operator of the machine could perform the same function as the shorthand reporter in identifying——

Mr. BERMANT. Precisely. That has always been the case. Of course, as you know very well, the control of the courtroom is in the hands of the judge. If the judge delegates to the audio operator the responsibility for standing up and being heard when chaos appears to reign, there will be no problem, any more than there is now. There is a human being in charge of the recording, any newspaper headlines otherwise notwithstanding. It is not a man versus machine issue. It is not a dehumanization of a courtroom process. That's a misconception of what we are talking about here.

Mr. WHEELER. Congressman Hyde, there are tape recorders also used in State systems and in magistrates courts. It is not always the case, for example, in the State systems that the tape recorders are accompanied by an audio operator who is there to note who is speaking, and I think that may give rise to some of the misperception that the tape recorder is incapable of catching overlap, for example. When an audio operator is there, I think the study shows rather clearly that it is quite capable of picking up those rather subtle distinctions to which you refer.

Mr. HYDE. Are these machines mobile so that as the judge calls counsel up to admonish them or whatever, the sound can come up there if it's appropriate, but away from the jury?

Mr. BERMANT. There is a microphone at every important location. There is a microphone on the bench, for example, and side-bar conferences can be coped with quite easily under these circumstances.

One has to pay attention. Every technology requires a new kind of paying attention, and this is no exception.

Mr. HYDE. I can just see the operator, as happens at football or basketball games, when the coaches are huddled there talking to the team, and this fuzzy arm is stuck in there to catch what they're saying.

Well, I certainly have an open mind on this. I don't want to continue with an anachronistic way of doing things because it has always been done that way. But I am pleased that attrition is the method of phasing this new system in totally, if, indeed, it does happen.

I thank the Chairman. I have no further questions.

Mr. KASTENMEIER. I might observe that though this morning we don't have a great deal of shouting and so forth, that we have a reporter using tape recording. He is not using stenotyping. He is making occasional notes, but this is an oral recording which is apparently suitable.

This was not arranged as far as I'm concerned. We here in the Congress accept whatever reporter is available and is assigned to the committee. But I parenthetically point that out for the record.

Mr. HYDE. Mr. Chairman, if you would yield, what if he were taking shorthand notes and having—I notice he sits there and enjoys the proceedings, or it looks like he is enjoying the proceedings. But what if he were taking shorthand as well and the machine was on? I suppose if the machine is good enough we wouldn't need the shorthand.

Mr. KASTENMEIER. I guess it is a matter of technology, his own expertise, and a knowledge of what the machine is capable of doing for later transcription. If he took shorthand notes at the same time, it would probably just be a duplication of effort.

There is one thing I would like to pursue further with the witnesses. Actually, my district was one of those districts—if we're looking at new technology—which was used for the center's experiment. My district contains the U.S. District Court for the Western District of Wisconsin in Madison. In a letter to Judge Walter McGovern, Judge Barbara Crabb of the western district observed that—this was electronic versus stenotype. She had a number of questions, but she did state that the experiment was extraordinarily well conceived and executed.

She said,

> I was not able to participate in the comparison of transcripts so I am not qualified to comment on the quality of the transcripts provided by the electronic recording. However, during court proceedings themselves, electronic recording seemed to work satisfactorily

And so forth.

She did present a number of questions.

> What is the nationwide availability of high-quality transcription services such as those used in the experiment? Are those services that do exist equipped to expand their services and maintain the same level of performance?

She asks a series of questions, which I think we might share with you, not for reply this morning because there are a number of them, but perhaps for a written reponse at a later date.

We also, though, have a letter from William E. Foley dated March 5, 1984, a copy of which along with its addenda you have read. I wonder what your reaction to that letter and its attachments is. Are there any errors or omissions? Do you agree——

Mr. BERMANT. I'm sorry, Mr. Chairman, I have lost the reference. Whose letter is it?

Mr. KASTENMEIER. This is William Foley's letter.

Mr. BERMANT. Oh, Mr. Foley's letter regarding implementation. I'm sorry.

I know that there has been, since the date of the study, a considerable amount of work, including the formation of an ad hoc committee of the Judicial Conference to oversee the development of

guidelines. Those guidelines have been formulated and they are part of Mr. Foley's submission to you. These are very thoughtful guidelines aimed at minimizing the possibility of mishap in the introduction of this system. I think we are all aware that this is underway and I am in substantial agreement with the guidelines as proposed.

The Administrative Office surely has a lot of work ahead of it should this be adopted. Any technology requires very careful implementation. Nothing is easy. Everything must be done with a great deal of care and thoughtfulness.

Mr. WHEELER. May I add to that, Mr. Chairman?

Mr. KASTENMEIER. Yes.

Mr. WHEELER. The Center's report was very careful to state that audio recording could be successful, could produce an accurate and timely and less costly record, provided there was adequate management and supervision. That was not a caveat that was inserted casually. That was a very important caveat. It goes to your question, for example, about transcription services.

Now, I note the Administrative Office, in Mr. Foley's report, says, "We believe that sound management is the key to success in this new court activity and prudence dictates that each phase be carefully implemented." That is, I think, a well taken recognition of the fact that there may be some districts in which adequate transcription services are not available and it would be irresponsible in a situation like that to provide a judge with the opportunity to use electronic sound recording. So the implementation phase the Administrative Office is overseeing with sensitivity to the availability of transcription services and the suitability of the courtroom for audio recording. It picks right up on the Center's report. Indeed, it gives well-taken emphasis to that stress that we had on the importance of careful analysis of the particular situation before the technology can be implemented.

Mr. KASTENMEIER. Two very quick questions. One, I think there is a bill which calls for deferring the effective implementation date of this part of the Federal Courts Improvement Act until January 1, 1986.

Do you oppose that bill or support that bill? Do you have a position on that?

Mr. BERMANT. We would find no need for that bill. We find no need for any delay. All the required work has been done, all the steps are in place.

Mr. KASTENMEIER. Are there any other studies or reports that could be sought or commissioned which would be useful in this connection that aren't available currently?

Mr. BERMANT. Experience will be the best teacher from this point on, Mr. Chairman.

Mr. KASTENMEIER. Does the gentleman from Kansas have any questions?

Mr. GLICKMAN. I do. I am not sure that they have been asked, but I probably could ask one.

One of the things that concerns me a little bit about moving ahead real quickly on taping is that we not underestimate the full cost and time involved with taping and transcribing, how quickly that could be done, whether anybody has actually put numbers

down to determine what are the total, both direct and indirect, costs of this kind of thing.

I wonder if you might respond to those questions.

Mr. BERMANT. I think that what Russell Wheeler said just a moment ago probably pertains to this. There are certainly going to be regional differences in the availability of transcript services at the present time. Any clerk of a court, any judge, any district executive, will as a matter of administrative prudence look very carefully at the local situation before moving ahead. That is appropriate and the Administrative Office is prepared to move in that direction.

On the other hand, we do know from the study, and we do know from our survey of available transcription companies, that we by no means tapped the entirety of the available transcription labor pool for the course of the study. We were given many documents in confidence because they went to, for example, the market share of some of these transcription companies who are already producing, if memory serves, in some cases millions of pages of transcripts a year from administrative hearings and State court proceedings.

There is a considerable market there and labor availability, and I think it will inevitably fill in as the opportunity arises.

Mr. GLICKMAN. Let me go back to another part of that question, though, my concern about the costs of preparing typed transcripts and trying to see cost data. I want to see what the relative comparisons are.

Mr. BERMANT. Please help me if I'm not being responsive. The cost per page, the cost per transcript page, is a figure set by the Judicial Conference. It is our understanding that those charges are now more generous—the prices are more generous than those available, say, from administrative agencies or State courts. Getting Federal court transcribing business will be a desirable thing to do on the part of transcription companies. It is a favorable rate of return on the record.

Mr. GLICKMAN. Well, I think I need to hear a little more about this from reading your testimony in greater depth. Again, I want to state for the record that I am concerned about the cost as well as speed of obtaining transcribed notes of testimony, and I don't want to see us get prejudiced through some way of trying to move into appropriate technology that may end up taking us longer and costing us more.

Mr. BERMANT. Surely.

Mr. WHEELER. The Center's report, Congressman Glickman, does address the issue of timeliness of transcript delivery in 12 pilot courts and the data are laid out, as you would expect them to be, in the report, copies of which are available, as well as the cost to the Government of transcript production. So there is a good bit of data available already and it is in the report.

Mr. GLICKMAN. Thank you, Mr. Chairman.

Mr. KASTENMEIER. Thank you, gentlemen, for your testimony this morning.

Mr. WHEELER. Mr. Chairman, do you wish us to respond to the items in Judge Crabb's letter?

Mr. KASTENMEIER. Yes, we would. We will make a copy of that available.

U.S. DISTRICT COURT,
WESTERN DISTRICT OF WISCONSIN,
Madison, WI, July 18, 1983.

Hon. WALTER THOMAS MCGOVERN,
U.S. District Judge, Western District of Washington,
Seattle, WA.

DEAR JUDGE MCGOVERN: As a participant in the electronic recording experiment, I would like to submit to you and the members of your subcommittee some of my impressions about the experiment and its implications.

First of all, I want to emphasize that I considered the experiment extraordinarily well-conceived and executed. It was evident that the Judicial Center personnel in charge of this project had given considerable attention to making the experiment as effective and fair as possible. The equipment that was used was of high quality, the procedures for training the operators were comprehensive, and the planning was thorough. Neither the installation of the system nor its operation proved any intrusion on the work of the court or on the conduct of any judicial proceeding.

I was not able to participate in the comparison of transcripts, so I am not qualified to comment on the quality of the transcripts provided for the electronic recording. However, during the court proceedings themselves, the electronic recording seemed to work satisfactorily. After some initial difficulties, the operator was able to play back trial testimony readily and never appeared to have any difficulty recording the proceedings. On one occasion only, a tape failed to record. Why that happened, I don't know, but it never recurred.

The inclusion of a monitor was an excellent idea. It should allay any criticism of the way in which the experiment was carried out.

I would suspect that the final conclusion from the experiment will be that electronic recording can work effectively as a means of reporting court proceedings. Whether electronic recording would be effective in the long run or on a large scale is a question that I do not believe the experiment answers. To be fair, I do not believe that the experiment was designed to answer that question. I am a little bit concerned, however, that the success of the program during an experiment might be taken as an indication that electronic recording would work effectively under all circumstances. Before that conclusion can be drawn, it would be necessary to answer questions left open by the experiment. Some of these questions are:

1. What is the nationwide availability of high quality transcription services, such as those used in the experiment? Are those transcription services that do exist equipped to expand their services and maintain the same level of performance?

2. How likely is it that courts would be able to obtain the same quality of recording equipment used in the experiment? Is there technical experience available to courts to help them with such installations? How much would it cost to install and maintain such equipment in every courtoom? What would be the cost of modifying courtrooms acoustically to enhance the recording capabilities?

3. How important is it that the recording technician take comprehensive notes of proceedings (names of witnesses, spellings of unusual words, etc.)? If it is important, how is it to be encouraged in a technician who has no responsibility for production of the finished transcript? During the experiment, the technicians were aware that their note-taking was being scrutinized by the monitor and that it would be reviewed as part of the evaluation of the experiment. Without that supervision and review, what incentive will the technician have to make comprehensive notes?

4. How easy would it be for courts, particularly small ones, to keep enough people trained and up-to-date as technicians to ensure that there will be a technician available for every proceeding?

5. What kind of salaries will be required to attract and retain persons who can perform both as recording technicians and as deputy clerks and who are willing to work overtime frequently and often without warning?

I raise these questions not in the interest of obtaining answers from your committee or from the Federal Judicial Center, but because I have some concern that the results of this very well-conducted experiment will be interpreted by some as proof that electronic recording should be the mode of reporting for all federal courts. My only point is that before that happens, we should know much more than we do now about the costs, the staffing, the effectiveness, and the overall feasibility of electronic recording on a large scale.

With best regards,

BARBARA B. CRABB,
Chief Judge.

RE: JULY 18, 1983, LETTER FROM CHIEF JUDGE BARBARA CRABB (W.D. WISC.) TO CHIEF JUDGE WALTER MCGOVERN, (W.D. WASH.), CHAIRMAN, SUBCOMMITTEE ON SUPPORTING PERSONNEL, JUDICIAL CONFERENCE OF THE UNITED STATES

Before turning to Judge Crabb's questions about audio recording, we want to restate for the record our full agreement with her stress on the continuing importance of comparative information on the conditions that ensure audiorecording's successful performance as a court reporting method. Indeed, as noted during the hearings, now that audiorecording is an official reporting method, and now that more stenoreporters are using computers to help them generate transcript from their steno-based records, it would be possible to take advantage of the data thus made available to continue to monitor the various kinds of official court reporting methods.

Although the Center's 1982–83 court reporting study [1] included three stenotype reporters using computer-aided transcription (CAT) (see p. 27), a realistic comparison of their work with that produced from electronic sound recording was impossible. In two of the courts, the CAT reporters rotated with non-CAT reporters in a way that rendered it impossible to break out CAT from non-CAT transcript. The third CAT reporter was the only official reporter at her court, but the nature of transcript demand there precluded transcript delivery to the project in time for accuracy comparisons; data on timeliness of transcript delivery and costs are reported (p. 54 and chapter 7), and although favorable to audiorecording, the data are not conclusive. (It is important to state that since its inception, CAT has been officially sanctioned by the courts and by the Administrative Office.)

We turn to Judge Crabb's questions about the availability of competent transcription services and audio operators, questions posed shortly after the completion of the Center's report and during the time of its initial distribution. Judge Crabb praised the project's design and execution but expressed concern that the "experiment might be taken as an indication that electronic recording would work effectively under all circumstances" (p. 2) and cautioned against interpreting the experiment's results "as proof that electronic sound recording should be the mode of reporting for all federal courts" (p. 2).

It is essential to understand that the statutory authority to use electronic sound recording is entirely discretionary rather than mandatory. Any judge who does not wish to use it does not have to use it. The statute, in other words, in no way insists "that electronic sound recording should be the mode of reporting for all federal courts."

The discretionary nature of statutory authorization shaped the Center's experiment and the report of that experiment; the report cautioned against injecting audiorecording into any court without careful attention to the conditions necessary for its successful performance. Indeed, in its concluding pages, the reported anticipated Judge Crabb's concern, noting that:

"[I]t would be unreasonable to expect the performance observed in the project courts in systems in which responsibilities and procedures were not clearly defined, or in which competence was not created through appropriate screening and training of personnel" (p. 80).

As noted during the March 8 Subcommittee hearings, a task of the implementation process is to ensure the proper management conditions to allow the audio technology to perform in other courts as it did in the pilot courts. In that regard, we noted with appreciation the following statement in Director Foley's report to Chairman Kastenmeier, sent by letter of March 5, 1984:

"Because we believe that sound management is the key to success in this new court activity, prudence dictates that each phase be carefully implemented."

Moreover, because implementation will proceed chambers by chambers, it is not necessary that conditions that will allow the technology's use be in place nationwide; rather it is necessary that the implementation process verify or establish those conditions whenever a judge elects to direct the use of audio recording.

With that basic approach in mind, we proceed to the five questions in Judge Crabb's letter, on which you have requested our views.

1. What is the nationwide availability of high quality transcription services, such as those used in the experiment? Are those transcription services that do exist equipped to expand their services and maintain the same level of performance?

We do not know the nationwide availability of transcription services; gaining that knowledge was not necessary for the test nor for the start of actual implementation. We do know that the Administrative Office will not approve installation of audio

[1] J.M. Greenwood et al., "A Comparative Evaluation of Stenographic and Audiotape Methods for United States District Court Reporting" (Federal Judicial Center, 1983).

recording equipment for a judge without verifying, in the words of the guideline promulgated on December 27, 1983, "that reliable transcription services are readily available." (The text of the guidelines was included with Director Foley's March 5 letter, referenced above and included in the record.)

Furthermore, the Administrative Office is developing a list of approved transcription services through questionnaires to firms and individuals of which it becomes aware. Those services are offered the opportunity to take a transcription test; if they pass that test, they will be placed on an initial one-year probationary period of service, during which time court and AO personnel will carefully monitor their performance.

2. How likely is it that courts would be able to obtain the same quality of recording equipment used in the experiment? Is there technical experience available to courts to help them with such installations? How much would it cost to install and maintain such equipment in every courtroom? What would be the cost of modifying courtrooms acoustically to enhance the recording capabilities?

The Center's report and the Administrative Office guidelines referenced above answer these questions. The guidelines include technical specifications as to the equipment to be used, and the Administrative Office staff will provide technical expertise to courts during the implementation phase. The report, in chapter 7, details the costs of installation, both on a per courtroom basis and on a nationwide basis (even though nationwide implementation is neither contemplated nor authorized on any but a discretionary basis).

Judge Crabb also asks about the costs of acoustical enhancement in the courtrooms. The report estimates (note h, p. 67) $3,000 as the cost per courtroom for necessary facilities modifications and equipment installation. This $3,000 figure is used in the report's cost projections (table 21, p. 66) rather than the approximate $1,000 installation costs observed during the project (table 29, p. 222), because project installations were temporary and thus facilities modifications were not as extensive or as costly as they might be in the case of permanent installations. (The Administrative Office advises us, however, that in none of the four permanent installations to date have costs for acoustical enhancements and installation reached $3,000.)

3. How important is it that the recording technician take comprehensive notes of proceedings (names of witnesses, spellings of unusual words, etc.)? If it is important, how is it to be encouraged in a technician who has no responsibility for production of the finished transcript? During the experiment, the technicians were aware that their note-taking was being scrutinized by the monitor and that it would be reviewed as part of the evaluation of the experiment. Without that supervision and review, what incentives will the technician have to make comprehensive notes?

The report makes clear that it is vital that the audio operator take comprehensive notes. We are confident that the clerks of court, as effective court managers, can create incentives for them to do so. The Administrative Office guidelines give the Clerk of Court responsibility "for the efficient and effective functioning of electronic sound recording," including "supervising audio operators." We do not doubt the ability of clerks of court to select diligent and conscientious employees to serve as audio operators, and to establish appropriate monitoring systems to ensure that they perform their duties. Moreover, transcription companies will routinely evaluate, for the court, the completeness of the logs and quality of the tapes, thus providing an additional basis for evaluating court personnel.

4. How easy would it be for the courts, particularly small ones, to keep enough people trained and up-to-date as technicians to ensure that there will be a technician available for every proceeding?

Especially because the audio operator skills are not highly complex, it should present no serious difficulty for the clerk of court to estimate the total hours of audio recording that will be required and to secure sufficient personnel to perform the task. The Administrative Office advises us that it will develop procedural and operational instructional materials to ensure that new generations of audio operators are able perform their tasks.

5. What kind of salaries will be required to attract and retain persons who can perform both as recording technicians and as deputy clerks and who are willing to work overtime frequently and often without warning?

The project experience suggests that suitable audio operators can be retained mainly in the JSP 5, 6, and 7 ranges. It bears emphasis that the audio operators' duties, while important, are not complex and do not require highly skilled personnel. Rather, they require dedicated personnel, and it is a task within the competence of clerks of court to identify such people to serve as audio operators. These needs are the same for all personnel who serve federal judges—secretaries, court reporters, courtroom deputies, bailiffs, and others.

Mr. WHEELER. May I ask one other thing. Would it be possible for Judge Huyett's article to be a part of the record?

Mr. KASTENMEIER. Yes. Without objection, that will be a part of the appendix to this hearing record.

[See app. 2 at p. 246.]

Mr. KASTENMEIER. Our next witnesses are Mr. Richard Dagdigian, who is an official court reporter for the U.S. District Court of the Northern District of Illinois, and a member of the United States Court Reporters Association. He is accompanied by Mr. James Keane, director, Coopers & Lybrand Litigation Services Group.

Gentlemen, come forward. You may proceed as you wish.

TESTIMONY OF RICHARD H. DAGDIGIAN, OFFICIAL COURT REPORTER, U.S. DISTRICT COURT FOR THE NORTHERN DISTRICT OF ILLINOIS, EASTERN DIVISION, ACCOMPANIED BY JAMES KEANE, DIRECTOR, COOPERS & LYBRAND LITIGATION SERVICES GROUP

Mr. DAGDIGIAN. Mr. Chairman and members of the subcommittee. My name is Richard H. Dagdigian. I am an official court reporter in the U.S. district court at Chicago, IL, and have been since 1966. On behalf of the National Shorthand Reporters Association and the United States Court Reporters Association, I wish to thank you for the opportunity to appear before this distinguished body.

I have been using computer-aided transcription for almost 2 years. Upon request, I provide a transcript of a day's proceedings to the bench and counsel before court begins the next morning. Although I am an experienced reporter, there is nothing unique or special about what I do. In fact, in the Southern District of New York, about 65 percent of the transcript orders are for delivery on a daily basis. That particular Federal Court produces about 500,000 pages of transcript each year. One district court at Foley Square in New York City produces about five times the amount of transcript as the whole State of Alaska, more than half of it on a daily copy basis.

I mention Alaska because it uses tape recorders in its court system and people have pointed to it as an example of how tape recorders can work in the Federal Courts. I think there is no comparison when one Federal courthouse, with 31 reporters, outproduces Alaska by a factor of 5 to 1, with more than half of the transcript ordered and delivered before court begins the next morning. There is no comparison at all.

The Southern District of New York is an example of the kind of service to the Federal Court system and the American public that some people are interested in replacing. I don't think that can be done without sacrificing efficiency, timeliness, and the rights of litigants. I wish this morning to tell you why.

I am one of about 6,000 reporters across the country currently using computer-aided transcription, which we will call CAT for short, in my everyday activity. The number of reporters, including reporters in the Federal system, who use CAT grows each month. Since many of you are attorneys, I don't need to get into the purposes and the process of transcript production, but the transcript is

the end product of what court reporters do, a fact that is sometimes overlooked.

The taking down of what happens in court, whether by a court reporter or a tape recorder, is just the start of what court reporting is all about. To the casual observer, it would seem that court reporting has changed little over the decades, and it might seem that the method of reporting, whether it is manual shorthand, machine shorthand, tape recording, videotape or whatever, makes little difference.

But the evolution of computer-aided transcription is changing these perceptions. Court reporting traditionally has been a labor-intensive, time-consuming process. It involves a lot of work by a number of skilled people to report the proceedings in court and prepare an accurate transcript.

For years, the transcript has been typed either by the reporter himself or by someone hired and paid to type from his dictation. Both of these methods take a lot of time, time from the reporter's standpoint and time from the point of view of those who are waiting for the transcript.

A third method, using transcribers who are trained to type directly from the reporter's shorthand notes, is far more efficient than self-typing, but competent notereaders are difficult to find and retain.

The problem with all of these traditional methods is the same problem that exists with audio recording. They all involve manual typing at the rate of about 8 to 10 pages an hour. Manual typing is the Achilles' heel of the traditional method of preparing transcripts, and it is the Achilles' heel of tape recording.

I read in the Kansas City Times last week that Judge Elmo B. Hunter and Judge Scott O. Wright of the U.S. district court there will be the first Federal judges to use tape recorders regularly and they will be sending their tapes from Kansas City to a company on the east coast for transcribing. Judge Hunter was quoted as saying that this could present problems for a quick turnaround. He added, "But once you create the business, no doubt local people will train and organize themselves to do the work."

Perhaps so, perhaps not. But who would these local people be? Would they be like the TIW Transcription Co., that defaulted last year on its contracts to prepare transcripts for the Montgomery County tape recording system and the White House? And how would they be trained? At whose expense? Would they be certified as being capable of researching citations or of otherwise being competent to prepare transcripts of complex, often highly technical testimony?

Federal court reporters are required to have a minimum of 4 years of court reporting experience and to pass a nationally-recognized certification examination before becoming eligible for appointment. Would tape transcribers be required to have the same level of experience and knowledge? And, most tellingly, to what end? They will still produce transcript, stroke by stroke, at the pedestrian rate of 8 to 10 pages an hour.

Manual transcription from a tape does not represent a technological breakthrough. It does not represent a step forward for the judicial system. Given the lack of a substantial cost advantage, it is unequivocally a step backward. The limits of typing speed are well established; the speed of computerized translation and printing of shorthand reporters' notes far exceeds typing at present and is getting faster all the time.

The rate of production for a CAT-equipped reporter varies, depending on his particular system's capabilities, his experience with it, the complexity of the subject matter, and his pattern of work. Our experience is that the CAT reporter can produce from 30 to 60 pages of finished transcript per hour. That is a technological breakthrough. It exists today and it takes advantage of the knowledge and experience of the court reporters already in place in Federal courts.

Moreover, computer-aided transcription offers the courts more than raw speed. There are ancillary benefits, such as keyword indexing and telecommunications, that can save time, effort, and money for both the courts and the litigants. We also are developing, in cooperation with CAT system vendors and court administrators, a method for providing court managers with up-to-the-minute courtroom status information to aid in their planning of court space, jury needs, and other administrative concerns. It is this kind of service and capability that would be lost to the Federal court system if the court-reporter cadre is dismantled.

When the U.S. General Accounting Office released its draft report of the Federal court reporting system in 1981, fewer than 1,800 shorthand reporters nationwide were using computer-aided transcription. The vast majority of them were deposition and meeting reporters who saw CAT as a way to increase their productivity and profitability.

Since 1981, the number of reporters overall on CAT has grown more than threefold, from fewer than 1,800 in 1981 to more than 6,000 as of August, 1983. And much of this growth has come among official reporters. Figures supplied by companies that sell CAT systems indicate that, as of August, 1983, more than one-third of the 551 Federal district court reporters are using CAT.

There are a number of reasons for this tremendous growth. For one thing, costs for CAT equipment and software have come down, just as computer costs have decreased in general. CAT is more affordable to more reporters than it was just a few years ago.

For another, the National Shorthand Reporters Association and the U.S. Court Reporters Association have been promoting the use of CAT through their publications and continuing education programs.

Third, reporters are finding that CAT really does stabilize their costs and make their work go faster. The old methods of typing their own transcripts or dictating their notes are gruesomely laborious and time-consuming compared to the speed of using CAT.

Finally, the growing use of CAT among Federal reporters is a result of the events of the past 3 years. The GAO report and the hearing conducted by Senator Dole in 1981 had a chilling effect on Federal court reporters. Although the GAO report has been largely discredited in matters of cost analysis and unwarranted assumptions, and although the flaws it identified in the system were almost exclusively matters of management that have been or are being corrected by the Administrative Office of the U.S. Courts, the

study put reporters on notice that merely continuing the status quo would be dangerous to our future security.

We looked more closely at computer-aided transcription. The closer we looked, the more clearly we saw that not only could it help us, but that the Federal system would be derelict in its responsibilities if it did not insist on the use of CAT. The growth in the Federal caseload demands such technology.

That is why the U.S. Court Reporters Association last year passed a resolution urging all Federal reporters to begin using CAT as soon as possible. That is also why USCRA recommended to the Administrative Office that it adopt a policy of hiring only reporters who are on CAT or are able to go on it. The Judicial Conference, meeting today and tomorrow, has this item on its agenda for consideration.

Federal court reporters—the best, most qualified people to prepare transcripts—are using state-of-the-art technology in ever-growing numbers. We are making sizeable financial commitments to respond to the growing demands of the court system. I might say, we are doing so in the shadow of a dark cloud of uncertainty about our futures.

The main message I want to leave with you this morning concerns the strengths and capabilities of the present Federal court reporter system. However, I would be a poor advocate if I did not share with you briefly what we know to be the limitations of tape recorders.

First, the problem of tape equipment failure is brought out in the FJC report itself. On pages 74 and 75 of the report, reference is made to malfunctions that total, by conservative estimates, 70 in-court hours. Using an average of 35 transcript pages per hour of court time, there were the equivalent of approximately 2,700 pages of taped proceedings that were not produced and could have been included in the sample selected for accuracy analysis. This fact alone clearly indicates a distortion in the comparative evaluation of accuracy.

There is something else you should know about tape recording. A lot of people who have to use it don't like it. Consider U.S. magistrates. The Magistrates Reform Act of 1979 made limited provision for court reporters. Most districts now direct Federal reporters to report magistrates' proceedings when they are not committed to their regular reporting assignments. So U.S. magistrates have logged a great deal of experience using tape recorders in lieu of court reporters.

The National Shorthand Reporters Association surveyed the 235 full-time magistrates last year. More than half, 136, responded. Our exhibits include a report of the survey, which indicates that an overwhelming majority of U.S. magistrates prefer reporters for accuracy, timeliness of transcript delivery, and in-court performance.

Surveys of attorneys who have experience with the systems in the District of Columbia and New Mexico, Massachusetts, and the Province of Ontario, all indicate an overwhelming preference for the use of court reporters over tape machines for both accuracy and timeliness of the transcript. Summaries of these studies are included in our exhibits, so I won't belabor the point by reciting statistics now.

These surveys of U.S. magistrates and attorneys, the doubts surrounding the theoretical cost savings of using tape recorders, the questions raised by the Coopers & Lybrand and the Resource Planning Corp. about the FJC study methodology, the existence and growing use of computer-aided transcription, and the overall efficiency of the present court reporting system, all raise doubts about the ability of a tape recording system to meet the needs of justice in the Federal courts.

The apparent effect of section 401(b) of Public Law 97-164—if not its intended effect—is to allow the replacement of 551 dedicated Federal court reporters with an inferior device whose suitability and cost-effectiveness in a Federal court environment remains in doubt. If that was not the intent of Congress when it passed the law—and I believe it was not—then in the interest of justice, Congress is obligated to delay implementation of the conference's regulations until such time as it is satisfied that the workings of the Federal judicial system will not suffer, perhaps irrevocably, as a result.

In conclusion, we would look forward to the opportunity of demonstrating for you firsthand the CAT concept of shorthand reporting, thereby enabling you to see firsthand what we regard as the truly advanced technology in this field.

Thank you.

[The statement of Mr. Dagdigian follows:]

STATEMENT OF RICHARD H. DAGDIGIAN

Good morning. My name is Richard Dagdigian. I am an official court reporter in the U.S. District Court for the Northern District of Illinois, Eastern Division. I have been a reporter since 1957 and a federal court reporter since 1966. I was president of the United States Court Reporters Association in 1979-80. I have been using computer-aided transcription for more than a year.

I appear here today in support of H.R. 4450, which as Congressman Rodino stated on November 17, 1983, "is a simple measure to delay the implementation by the Judicial Conference relating to the case of sound recording in lieu of shorthand or mechanical reporting."

When required, I provide a transcript of a day's proceedings in my courtroom to the Bench and counsel before court begins the next morning. Although I am an experienced reporter, there is nothing special about what I do. In fact, in the Southern District of New York, about 65% of the transcript is delivered on a daily basis. That particular federal court produces about 500,000 pages of transcript each year—one federal court at Foley Square in New York City producing about five times the amount of transcript as the whole state of Alaska, more than half of it on a daily-copy basis.

I mention Alaska because it uses tape recorders in its court system, and people have pointed to it as an example of how tape recorders can work in the federal courts. I think there is no comparison when one federal courthouse with 31 reporters outproduces Alaska by a factor of five to one, with more than half of the transcript ordered for, and delivered, before court begins the next morning. These is no comparison at all.

The Southern District of New York is an example of the kind of service to the Fedeal court system and the American public that some people are interested in replacing. I don't think that can be done without sacrificing efficiency, timeliness, and the rights of litigants. I hope this morning to tell you why.

I am one of about 6,000 reporters across the country currently using computer-aided transcription—CAT, for short—in my everyday work. The number of reporters, including reporters in the federal court system, who use CAT grows each month.

Since many of you are lawyers, I don't need to delve too deeply into the purposes and process of transcript production. But the transcript is the end product of what court reporters do, a fact that is sometimes overlooked. The taking down of what

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happens in court, whether by a court reporter or a tape recorder, is just the start of what court reporting is all about.

To the casual observer, it would seem that court reporting has changed little over the decades. And it might seem that the method of reporting—whether it's manual shorthand, machine shorthand, tape recording, videotape, or whatever—makes little difference.

But the evolution of computer-aided transcription is changing those perceptions.

Court reporting traditionally has been a labor-intensive, time-consuming process. It involves a lot of work by a number of skilled people to report the proceedings in court and prepare an accurate transcript. For years, the transcript has been typed, either by the reporter himself or by someone hired and paid by him to type from his dictation. Both of these methods can take a lot of time—time from the reporter's standpoint and time from the point of view of those who are waiting for the transcript.

A third method—using transcribers who are trained to type directly from the reporter's shorthand notes—is far more efficent than self-typing, but good notereaders can be difficult to find and retain.

The problem with all of these traditional methods is the same problem that exists with audio recording: They all involve manual typing at the rate of about eight to ten pages an hour. Manual typing is the Achilles' heel of the traditional method of preparing transcripts, and it is the Achilles' heel of tape recording.

In the Federal Judicial Center test last year, there were twelve test court sites in twelve states. The audio transcription needs of these twelve courts were served by just eight transcribing firms in just five states. In only one instance was a qualified transcription firm located in the same state as a test court. This fact does not speak well for the availability of experienced, qualified transcription services.

In fact, I read in the Kansas City Times last week that Judge Elmo B. Hunter and Judge Scott O. Wright of the U.S. District Court there will be the first federal judges to use tape recorders regularly. They will be sending their tapes from Kansas City to a company on the East Coast for transcribing. Judge Hunter was quoted as saying that this could present problems for quick turnabout. He added, "But once you create the business, no doubt local people will train and organize themselves to do the work."

Perhaps so, perhaps not. But who would these local people be? Would they be like the TIW transcription company that defaulted last year on its contracts to prepare transcripts for the Montgomery County court system and the White House? And how would they be trained? At whose expense? Would they be certified as being capable of researching citations or of otherwise being competent to prepare transcripts of complex, often highly technical testimony?

I was required to have a minimum of four years of court reporting experience and to pass a nationally recognized certification examination before I was eligible for appointment as a federal reporter; would tape transcribers be required to have the same level of experience and knowledge?

And, most tellingly, to what end? They will still produce transcript, stroke by stroke, at the pedestrian rate of eight or ten pages an hour.

Manual transcription from a tape does not represent a technology breakthrough. It does not represent a step forward for the judicial system. Given the lack of a substantial cost advantage, it is unequivocally a step backwards. The limits of typing speed are well established; the speed of computerized translation and printing of shorthand reporters' notes far exceeds typing at present and is getting faster all the time.

A computer can translate a reporter's notes at rates of 100 to 500 pages an hour, depending upon the type of system used. The final transcript can be printed at rates of more than 120 pages an hour. And, the reporter can be doing other work while the computer is translating and printing; he can be in court, reporting.

The overall rate of production for a CAT-equipped reporter varies depending on his particular CAT system's capabilities, his experience with it, and his pattern of work. Our working experience is from 20 to 60 pages per hour, from start to finish.

That is a technological breakthrough. It exists today. And it takes advantage of the knowledge and experience of the court reporters already in place in federal courts.

Moreover, computer-aided transcription offers the courts more than raw speed. There are ancillary benefits, such as keyword indexing and telecommunications, that can save time, effort, and money for both the courts and the litigants. We also are developing, in cooperation with CAT system vendors and court administrators, a method for providing court managers with up-to-the-minute courtroom status information to aid in their planning of court space, jury needs, and other administrative

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Since 1981, the number of reporters overall on CAT has grown more than threefold—from fewer than 1,800 in December 1981 to more than 6,000 as of August 1983. And much of this growth has come among official reporters. Figures supplied by companies that sell CAT systems indicate that, as of August 1983, more than a third of the 551 federal district court reporters are using CAT.

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Third, reporters are finding that CAT really does stabilize their costs and make their work go faster. The old methods of typing their own transcripts or dictating their notes for someone else to type are gruesomely laborious and time-consuming compared to the speed of using CAT.

Finally, the growing use of CAT among federal reporters is a result of the events of the past three years. Mr. Mondale last week referred to Senator Hart's showing in New Hampshire as being like "a cold shower" for him. The GAO report and the hearing conducted by Senator Dole in 1981 had a similarly chilling effect on court reporters. Although the GAO report has been largely discredited in matters of cost analysis, selective sampling, and unwarranted assumptions—and although the flaws it identified in the system were almost exclusively matters of management that have been or are being corrected by the Administrative Office of the U.S. Courts—the study put reporters on notice that merely continuing the status quo would be dangerous to our future security.

We looked more closely at computer-aided transcription. The closer we looked, the more clearly we saw that not only could it help us, but that the federal court system would be derelict in its responsibilities if it did not insist on CAT's use. The growth in the federal caseload demands such a technology.

That is why the United States Court Reporters Association last year passed a resolution urging all federal reporters to begin using CAT as soon as possible. And that also is why USCRA recommended to the Administrative Office that it adopt a policy of hiring only reporters who are on CAT or are willing to go on it. The Judicial Conference, meeting today and tomorrow, has this item on its agenda for consideration.

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The main message I want to leave with you this morning concerns the strengths and capabilities of the present federal court-reporter system. However, I would be a poor advocate if I did not share with you what we know to be the limitations of tape recorders.

First, the problem of tape equipment failure is brought out in the FJC report itself. On pages 74 and 75 of the report, reference is made to malfunctions that total, by conservative estimate, 79 in-court hours. Using an average of 35 transcript pages per hour of court time, there were the equivalent of approximately 2700 pages of taped proceedings that were not produced and could not have been included in the sample selected for accuracy analysis. This fact alone clearly indicates a distortion in the comparative evaluation of accuracy.

Then, the matter of cost. Mr. Keane will speak on the fallacies of the cost assumptions and other limitations of the Federal Judicial Center's report. The points made in the Coopers & Lybrand report are largely corroborated by a second analysis of the FJC study performed by the Resource Planning Corporation at the request of the National Shortland Reporters Association. The RPC study similarly faults the FJC cost analysis in areas of salary allocation, space allocation, system management, equipment procurement and maintenance, training, and cost to the government of transcripts from an audio system. Using what it considers to be more realis-

tic cost assumptions, RPC places the potential savings through the use of tape recording at a rather measly $3,700 per courtroom per year, as opposed to the $21,900 figure claimed by the FJC report.

Now, RPC freely admits that its cost analysis is an estimate. I am sure Coopers & Lybrand would say the same, and I am sure that the FJC, if pressed, would also admit that there is a margin for error in the figures it has developed. That is the nature of financial projections. But the RPC report puts this uncertaintly into context. I want to quote briefly from its discussion of benefits associated with cost:

"Whether an audio system saves an estimated $3,700 or $21,900 is meaningful only when its operational impacts are considered. The benefits of the existing stenographic system are known. The benefits of a switch to audio systems are not as clear. The FJC report states that audio systems will apparently provide the basis for accurate, timely transcript at reduced cost. In other words, the audio systems may perform acceptably, and cost savings will make them preferable. Based on our evaluation, it is impossible to conclude that the nonmonetary benefits of timeliness and accuracy will accrue with an audio recording system, and the costs of the opposing system are approximately equal."

This contention seems doubly true when you consider that computer-aided transcription is the only technology that offers not only improvement to the system now, but also potential for further improvement over time.

Something else you should know about tape recording: A lot of people who have to use it don't like it. Consider United States Magistrates. The Magistrates Reform Act of 1979 made limited provision for court reporters. Most districts since that time direct federal reporters to report magistrate's proceedings only when they are not committed to their regular reporting assignments. So U.S. Magistrates have logged a great deal of experience using tape recorders in lieu of court reporters.

The National Shorthand Reporter Association surveyed the 235 full-time magistrates last year. More than half—136—responded. Our exhibits include a report of the survey, which indicates that an overwhelming majority of U.S. Magistrates favor reporters for accuracy, timeliness of transcript delivery, and in-court performance. Again, these are Magistrates responsible for the operation of their courts.

Attorneys don't care for tape recording systems, either. Surveys of attorneys who have experience with taping systems in the District of Columbia, New Mexico, Massachusetts, and the Province of Ontario all indicate an overwhelming preference for the use of court reporters over tape recorders for both accuracy and timeliness of the transcript. Summaries of these studies are included in our exhibits, so I won't belabor the point by reciting statistics for you now.

These surveys of U.S. Magistrates and attorneys . . . the doubts surrounding the theoretical cost savings of using tape recorders . . . the questions raised by Coopers & Lybrand the Resource Planning Corporation about the FJC study methodology . . . the existence and growing use of computer-aided transcription . . . and the overall efficiency of the present court-reporting system all raise doubts about the ability of a tape recording system to meet the needs of justice in the federal courts.

The apparent effect of section 401(b) of Public Law 97-164—if not its intended effect—is to allow the replacement of 551 dedicated federal court reporters with an inferior device whose suitability and cost-effectiveness in a federal court environment remain in doubt. If that was *not* the intent of Congress when it passed the law—and I believe it was not—then in the interest of justice, Congress is obligated to delay implementation of the Judicial Conference's regulations until such time as it is satisfied that the workings of the federal judicial system will not suffer—perhaps irrevocably—as a result.

Mr. KASTENMEIER. Thank you.

Mr. Keane?

Mr. KEANE. Thank you, Mr. Chairman, and members of the subcommittee.

Let me move the pitcher of water away from the audiotape microphone so it can pick up everything that I say.

My name is James Keane—and I do pronounce it "Kane" rather than "Keene"—and I am the director of litigation services for the New York City office for Coopers & Lybrand, which is one of the world's largest public accounting and management consulting firms. Last summer I directed a multidisciplinary team in reviewing the Federal Judicial Center's study which you have heard about this morning.

We were not hired by any court reporters for this study, but by the Stenograph Corp., which is an audit client of our Chicago office. Stenograph is one of the major producers of CAT equipment—computer-assisted transcription software and devices. They hired us to perform an independent study and to scrutinize what had been submitted from a number of perspectives. Cost is a particular focus that we brought to the table, but we also looked at operations and economics and price. These are all very relevant issues. Rather than framing the issues narrowly at simply recording, we think a broad perspective is needed to understand the true cost impact of audiotape recording.

Now, the purpose of our review was to test the reasonableness of the Federal Judicial Center's assumptions and their conclusions. Our report was submitted to the Judicial Conference last September, and we ask that it be incorporated with my written statement in the record today, as well as the other materials that have been submitted to you.

Mr. KASTENMEIER. Without objection.

Mr. KEANE. Thank you.

I am here today to only give you an overview, and a brief one, of some of our major critiques of the study. I should add that we accepted some of their assumptions, many of their assumptions, as reasonable, and some of their conclusions as reasonable. We scrutinized every one of them. We questioned many, and there are several which we questioned very strongly. We also think that other conclusions would be reached if we looked at the data much more closely.

Our study team consisted of senior personnel from several groups within our firm—economists, accountants, Federal sector cost specialists, office productivity specialists, office automation specialists, and my own group, which specializes in the management of litigation and the automation of litigation-related data.

My own experience over the last 15 years has been that of a trial lawyer—I was a special prosecutor for political corruption in the midseventies in Maryland—and then, for the last 8 years, as a consultant to trial lawyers on adopting more cost-effective techniques to manage large-scale litigation and to adopt appropriate computer technologies to help them.

I have used audiotape media when I was a trial lawyer. I have been swamped by depositions when I was a trial lawyer. In my consulting role, I have established and developed major litigation support systems which have included CAT applications.

Based on our review of the study, with our experience and this rather broad perspective, we concluded that the Federal Judicial Center's study simply does not support the proposition that the Federal Government will realize any substantial savings by switching to audiotape recording. We found three fundamental shortcomings, and let me address only those major critiques today.

The first is that it understated significant cost items. Second, it omitted some very significant and potentially material cost items. Then there is a point which you have heard today is not supposed to be relevant, but we think is very, very relevant, and that is the

long-term impact on cost, comparing the difference of the labor-intensive techniques such as audio or manual stenographic transcription to the cost in a capital-intensive but labor reducting technique used by computer-assisted transcription. We think that goes to the core of the issue and that it is highly relevant.

The FJC study states that there will be potential savings in excess of $20,000 per year per courtroom by converting to audiotape recording. We do not believe this is a supportable conclusion and we recommend further study of the data that has already been gathered, there is a substantial amount of data, a properly stratified sample, and we believe this study would lead to different conclusions than what have been presented to you today.

Let me limit my comments to these three major points.

Mr. KASTENMEIER. I think, Mr. Keane, because there is a vote ongoing, and the second bells have rung, we will have to ask you to bear with us while we stand in 10-minute recess. We therefore will resume the hearing in approximately 10 minutes.

Mr. KEANE. Thank you, sir.

Mr. KASTENMEIER. The committee will stand in recess.

[Whereupon, the subcommittee was in recess.]

Mr. KASTENMEIER. The committee will come to order.

When the committee recessed a few minutes ago we were in the middle of Mr. Keane's testimony. You were about ready to discuss in a little bit more detail your three major critiques.

Mr. KEANE. Thank you, sir.

As I noted, we had three major points. I am going to simply highlight those: the understatement of some significant cost items, the omission of potentially material cost items, and then the entire CAT cost and price issue, which we think has a very significant and potential long-term impact over the ultimate price of transcription to courts, to the Government, and to the parties.

Now, on the understatement of costs, we want to focus particularly on personnel costs, because those are the largest cost factors and they, in turn, affect fringe benefits and space allocation. I think that the issue in the various documents exchanged between the Federal Judicial Center, this committee and other parties is whether or not it is reasonable to utilize, or to assign a percentage figure of utilization, to the audio operator's time; that is, in the test they observed 60.4 percent utilization and projected, in their costs, a similar 60 percent utilization of salary, of fringe, and of space for the audio operator. Our conclusions, based on a very careful review, is that this is not a reasonable number to use and, in fact, 100 percent should have been used. This would have a significant increase on the base cost of audio tape recording.

There are two very specific reasons why we say that it should be 100 percent. One is that we are really dealing with a specialist function, and that is a person who is assigned, under the new Administrative Office guidelines, to this job. If you have a budget item for personnel, you usually pay all of their salary in that budget item. That is only the context, because the test measured, during a 4-month period, one courtroom in particular District courthouses. What will happen in the future, as the pipeline fills with transcript orders and coordination with parties and litigants? It begins to occupy more and more of this person's time.

We can certainly assert to this committee that that person will never work at 100 percent productivity because clerical workers simply don't; 70 or 80 percent productivity is usually a reasonable measure if you're doing cost planning. To focus on 60 percent we think is unreasonable. We don't question it. We have concluded it is an unreasonable assertion.

The second reason we concluded that is because it does not take into account—not seasonal variations peak demand—but daily peak demand. What do you do when all five judges in a five-courtroom courthouse are in session all day? That other 40 percent of that person's time can't be spent doing docket entries or some other task that court clerks are required to do. I worked my way through college as a court clerk, so I know they can be very busy. They have to get their work out every week. If judges are in session and major trials are going on, you're going to have 100 percent utilization of these people as budgeted personnel. So we, therefore, have concluded that 60 percent is not reasonable and it has a dramatic impact, not only on salary, but on fringe costs as well as on space.

Now, our second point is the omission of material cost items. Again, as the issues have been framed and parties have exchanged their various views and discussed them, these come down to four categories: training, implementation—which is the transition to an alternative system, ongoing management time, and finally, the cost of transcription.

Now, the Federal Judicial Center, in reviewing our critiques, has conceded that training costs was an omitted item. They have asserted it is a minimal item. We assert to you that it is a material item for the reason that it does not only include the cost of the trainer, but the time you have to take out of your work force to be trained.

We also are concerned that only by looking at in-place court clerks who know legal procedures and who know courtroom operations, that training in the future, including the learning curve, will really eat into the time and efficiency of this new cadre of workers in the court setting. Consequently, we believe that is a material item and it certainly could have been quantified. You cannot do a cost analysis by saying "we will do some training." It could have been measured and it certainly would normally be projected in any kind of program budget development.

The transition costs equally are material and very significant, particularly under the new Administrative Office guidelines, which allow the court reporter to remain for 180 days. In the first year, that is a very significant cost. This is exactly what we are predicting would happen. You have hidden costs in transitions. It happens in every program. In every major project I have worked on, I usually throw in a 30-percent contingency factor, and I'm lucky if I keep within that. There is no contingency factor in here for transition problems, and they can be very significant.

Ongoing management time. The Center agrees that there is management time that should have been accounted for, but asserts that it is not material. On the contrary, if you were doing budget projections and you wanted to compare dollars to dollars, it is insufficient to say that it will not be a burden. It may be that the court clerk

will spend 2 percent of his time or 10 percent of his time managing this growing cadre of audio operators. We would like to see a number. And without that number, we do not think you can draw the kind of cost conclusions that have been drawn here. You don't have both sides of the ledger.

The other part of it that is completely ignored is the impact on judicial time, a very, very precious commodity in our system. In the transition period and ongoing management period, if we assign percentage numbers—2 percent, 5 percent—the number itself is not important, it is the absence of the number that makes us believe this is simply a deficient cost analysis because it leaves out a potentially material line item.

Now, the final area—and it leads into our questions about CAT—is the cost of transcription. The only cost that is mentioned in the cost analysis of the Federal Judicial Center's study are those small amounts of transcripts ordered by the judges—$272 per year, per courtroom. In the Administrative Office's annual report it mentions that Criminal Justice Act transcripts for defendants alone projected in 1983, are estimated, at $2.25 million. That is a pretty big number to be putting on this comparative ledger, and it is simply missing.

In addition to that, you have the Government ordering the same copy of those transcripts and paying for it as for the indigents. Then you have the Government ordering criminal appeal transcripts for nonindigents, and you have those situations where the Government is a party to civil proceedings. Knowing the magnitude of those costs, and then looking at what we're calling the long-term cost/price relationships, is the only way to get the full dimensions of what is the programmatic and budget impact of a transition over 5 and 10 years. We think we should use a very long-term planning horizon in order to understand what we're doing today.

Now let me address the third of our three major cost points, now in regard to CAT. What we are saying is that by not presenting any data whatsoever, or analysis, on the cost of preparing typed transcripts—this is missing from the study—you are simply placed in a position where you cannot assess the longer-term economics or the price of transcript.

Comparing audio to steno, which is what the study primarily did, it may not be that relevant an inquiry because both are labor-intensive systems. We are saying the computer-assisted transcription—and this is based on my firm's experience and my personal experience in working with this, as well as a number of studies that have documented this—that under proper operating conditions, CAT is an advanced technology that can reduce labor and is capital-intensive. That is important because people have to take out loans to afford these computers.

We talk about a tremendous variability in the profiles of the courts. This is a very important undergirding to our analysis because a large urban court, combined with a high demand for expedited transcript—which, by the way, is priced higher than regular transcript—really creates a totally different supply and demand relationship than in a small rural court that does not have the same characteristics. In fact, if you look at the profile from data that we have seen, you will see a skewed distribution of courts; that is, high

courts here and low courts here. The average court, in many regards, does not exist, or it is simply one strata of many. We think you have to examine the strata of different court sizes in order to understand what the cost-price relationships will be.

Now, we think that if this were analyzed, it would lead to very likely substantial differences in the long-term impact on raising or stabilizing the price of transcript. We are not asserting to anyone that it will reduce the price of transcripts. The reality is that labor costs go up in a labor-intensive system. But we have definite, strong evidence, gathered by the Government itself, that the cost of computers is declining. Indeed, the advent of micro-computer technology is accelerating this trend tremendously. We work with lawyers all the time who are now adopting micro-computers. Court reporters are using microcomputers and the costs are going down very quickly. This is a significant trend.

Our study and our report examined quantitative factors. I would like now to address some qualitative factors in closing my remarks.

My own experience over the last 8 years has been a full-time job of applying management techniques and computer technology in litigation across the country. My clients have included the U.S. Department of Justice, Fortune 1000 corporations, State agencies, and law firms, large and small.

What we are witnessing is a convergence of information management and technology in the litigation arena. It is a remarkable trend. Some of the tools that have been developed and are in use right now are computer-assisted indexing, search-and-retrieval systems, computer-based evidence—data that is only accessible in a computer format, and finally, computer-assisted transcription. So we see a demand, both economic and political, to reduce the cost of litigation.

Computers have demonstrated exciting prospects for controlling these costs and improving the productivity of court reporters and of judges and of trial lawyers. Until we see audio technology developing or catching up with these computer trends, perhaps in the year 2000, perhaps in the year 1990, with voice recognition devices that can hear eight people in the babble and robust environment of a courtroom, I believe that switching on a tape recorder will be a retrograde motion for the judicial system.

We would be very pleased to answer any questions that the committee might have. Thank you.

[The statement of Mr. Keane, with attachments, follows:]

STATEMENT OF JAMES I. KEANE

Mr. Chairman and members of the subcommittee: My name is James Keane. I am with Coopers & Lybrand in New York City and serve as the director of our Litigation Services Group. As you are aware, Coopers & Lybrand is one of the world's largest public accounting and management consulting organizations. Last summer, I directed a team of accountants, economists and consultants in legal information processing in reviewing the Federal Judicial Center's study of court reporting (FJC Study).

This independent review was done at the request of an audit client, Stenograph Corporation, which is one of the major providers of "computer assisted transcription" or CAT devices and software for court reporters.

The purpose of our review was to test the reasonableness of the FJC Study's assumptions about the costs and economics of audiotape and stenographic methods of recording and transcribing court proceedings.

Our report, which you have before you, was submitted to the U.S. Judicial Conference in September, 1983. At this time, we ask that it be incorporated in the record. I am here today to give you an overview of our findings and recommendations.

Our study team consisted of senior personnel from our Economics Studies Group, our Office Automation and Productivity Group, specialists in federal sector cost analysis and consultants, such as myself, in litigation management and automation. My own experience over the last fifteen years, as a trial lawyer and as a consultant to trial lawyers, includes the use of audiotape and steno based transcripts and extensive development of computerized litigation files, including CAT applications.

Based on our review, we concluded the FJC Study does not support its proposition that the federal government will realize substantial savings by switching to audiotape recording. Our finding is based on three fundamental shortcomings in the FJC Study:

1) It understated significant cost items,

2) It ommitted potentially material cost items, and

3) It failed to address potentially significant cost differences between the labor intensive transcript production from audiotape compared to a capital intensive system such as CAT which can reduce labor costs in the transcription process.

The FJC Study states that there will be potential savings in excess of $20,000 per year, per courtroom, by converting to audiotape recording. We do not believe this is a supportable conclusion, and we recommend further study of the data already gathered, supplemented by a properly stratified sample. We believe this would lead to different conclusions with regard to the cost and economics of court reporting and transcript production.

The full text of our report discusses our findings and recommendations in detail. Today, let me limit my comments to our major critiques.

1. The FJC Study underestimated significant cost items, particularly with regard to personnel costs. In assessing the reasonableness of the FJC Study's underlying assumptions for personnel costs, we disagreed with its conclusion from the test data that audio operators/court clerks will only spend 60.4% of their time in court reporting duties. The monitors in the study were test subjects who did not have a backlog of transcripts to order and control, nor were they required to meet peak manpower demands when all courtrooms were in session. The more reasonable and conservative estimate should have been 100% utilization for a specialist function. This, in turn, affects the related assumptions for fringe benefits and space.

2. The FJC Study omitted potentially material cost items. The FJC Study offered no estimates for the costs of training, implementation, ongoing management time, or the full cost of transcripts to the court or the federal government. In 1982, the Administrative Office of the Court projected $2.25 million in transcript costs for Criminal Justice Act defendants in 1983, and this excludes transcript costs for the U.S. Attorney's Office for all criminal trials as well as civil trials (where the U.S. is a party). This last omission is significant, because it deviated from the original FJC Study plan to analyze "the costs of preparing typed transcript...." pp. 101-102.

3. The FJC Study failed to address potentially significant cost differences between a labor intensive system such as audiotape transcript preparation and a capital intensive, labor saving system such as CAT. By not presenting any data or analysis of the costs of preparing transcripts, the FJC Study did not address the longer term economics of the price of transcripts. Comparing only audio to steno may not result in significant variations, as both systems are labor intensive in typing transcript manually. Computer-Assisted Transcription or CAT is an advanced technology which reduces labor but is capital intensive. The cost of labor rises, while the cost of computers has been declining. This points to potentially substantial

differences which are likely to have a long-term impact on raising or stabilizing the price of transcripts to the Government and the parties. This relative cost increase factor must be examined, because it could further offset any proposed savings from audiotape.

This last point contains a qualitative aspect we did not address in our limited review of quantitative factors. My own experience over the last eight years has been a full time job of applying management techniques and computer technology to litigation accross the country. My clients have included the U.S. Department of Justice, major corporations, state agencies and private law firms, large and small. What we are witnessing is the convergence of litigation information technologies. These include computer assisted indexing, search and retrieval systems, computer based evidence, and computer assisted transcription. There is a demand, both economic and political, to reduce the cost of litigation. Computers have demonstrated exciting prospects for controlling costs and improving productivity of judges, lawyers, and court reporters. Until audiotape catches up with these computer trends, perhaps through voice recognition, switching on an audiotape recorder is a retrograde motion for court reporting.

ELECTRONIC RECORDING OF COURT PROCEEDINGS: ATTORNEYS' SATISFACTION WITH AUDIO TECHNOLOGY

Jill Berman Wilson
Director of Research and Technology
National Shorthand Reporters Association

INTRODUCTION

The concept of using a tape recorder to record activities in a court is not a new one. However, four separate surveys conducted over the past two years clearly indicate that attorneys practicing in those courts using tape recording are unsatisfied with this alternative to court reporters. Furthermore, the findings indicate that the greater the level of experience with tape recording, the greater the dissatisfaction level among the users. The low level of satisfaction is consistent throughout the four surveys and across such areas of inquiry as in-court performance, completeness and accuracy of transcripts, and timeliness of transcript production.

As early as 1937, courts were experimenting with the use of wire recorders as substitutes for court reporters to preserve a verbatim record of proceedings. In that year, Congressman Hobbs of Alabama introduced legislation in Congress that provided for the use of electrical recording machines in one of the Federal Courts for the District of Columbia.[1] In 1945-46, three different electrical recording technologies were used in addition to manual reporting to preserve the record of the Nuremberg War Crimes trials -- the phonograph type, in which grooves were cut in a disc by the recording unit; the Soundscriber type, where a

leedle inscribes a disc instead of cutting it; and, the magnetized wire type where a magnetic "head" places electrical impressions on the wire.[2]

Since that time, the technological advances in tape recording have been dramatic. Courts are using taping systems with four, six, or even eight recording tracks, allowing for separate recording from multiple microphones. In 1960, upon attaining statehood, Alaska determined that it would use tape recording, in lieu of live court reporters, throughout its court system.[3] Since that time, other jurisdictions have considered the implementation of electrical recording. Although Alaska remains the only jurisdiction to use electrical recording exclusively, New Mexico and the District of Columbia are making extensive use of taping systems and may well implement taping on a jurisdiction-wide basis in the near future.

The goal of any reporting/recording system is the preservation of a verbatim record of court proceedings to assist in future proceedings or as the basis for appeal. Therefore, trial and appellate attorneys are the most frequent consumers of verbatim transcripts and thus are well-placed to comment on the performance of reporting and recording systems.

Over the past two years, surveys of attorneys have been conducted in four jurisdictions where electrical recording is used in general jurisdiction trial courts. The goal of these surveys was to gain information on the relative levels of satisfaction with live court reporters and electronic recording among attorneys who

practiced frequently in these courts and are frequent purchasers of trial and other transcripts. This report presents the results of those surveys.

BACKGROUND

District of Columbia

In 1978, with the completion of its new court facility, the District of Columbia court system began widespread use of 8-track electronic recording systems in a number of its new courtrooms. The Baird Corporation (then Baird-Atomic) had designed a centralized recording system modeled on the system used in Montreal. As of April 1982, 21 courtrooms were linked with the taping system.[4]

In early 1982, a survey was sent to 1248 members of the D.C. Bar and the Association of Trial Lawyers of America who were believed to practice frequently in the D.C. Superior Court. 117 responses were returned, of which 92 were "qualified" for analysis.[5] Although the response rate was low, those who did respond had significant experience within the court. 75% of the qualified respondents appear in the Superior Court at least once a month and 32% had handled more than 100 cases in that court in the two years previous to the study.

Ontario

In May 1982, the Chartered Shorthand Reporters' Association of

Ontario conducted a similar survey of attorneys regarding their levels of satisfaction with three methods of reporting used in Ontario trial courts -- shorthand reporting, stenomask, and tape recording. At the time the survey was taken, tape recording and stenomask had been in place in all courts in Ontario, with the exception of the Supreme Court Trial Division, for at least five years.[6]

Survey forms were sent to approximately 1400 attorneys in Ontario and 344 were returned. As with the Washington, D.C. survey, the first question on the survey form was designed to determine whether the respondent had actual experience with these different methods of record preservation. As a result, 310 responses were "qualified" for analysis. The CSRAO contracted with an independent consultant, W.G. Anderson, to conduct the analysis of the survey forms.[7] Although the relatively low response rate made it difficult to formulate reliable conclusions, Anderson commented that, "The results can be used where overwhelming support or concern was expressed for a particular system of transcription. The results of the survey do indicate such strong preferences, and therefore can be considered valid to draw general conclusions."[8]

New Mexico

Tape recording is used in New Mexico District Courts as a substitute for court reporters in all types of proceedings, with the exception of civil trials. New Mexico is also unique in that

it is the only state where the actual tape recording, not a transcript of the recording, is the record on appeal. In October 1982, the New Mexico Court Reporters Association contracted with Sandia Market Research Corporation to analyze a survey of trial attorneys in New Mexico; the survey instrument was virtually identical to the instrument used in the Washington, D.C. survey. 429 attorneys were surveyed; 339 responses were "qualified" for analysis.[9]

Massachusetts

In March 1983, the Massachusetts Shorthand Association decided to conduct a survey similar to the Washington, D.C. survey. However, in Massachusetts, tape recorders are used only in district courts while reporters continued to be used in superior courts. Since civil cases are not heard in district courts, only those attorneys regularly practicing criminal law in both district and superior courts were queried. In addition, MSRA added several questions to the basic D.C. instrument format to query how frequently malfunctions on the tape recording system had made it impossible to obtain a transcript of the proceeding.

The survey was sent to 886 members of the Massachusetts Bar Association (criminal division), the Massachusetts Defenders Committee and the District Attorneys' offices statewide. 265 responses were received; however, the analyst did not "disqualify" those who had not met certain criteria, i.e., all responses were included in the analysis. Among the respondents,

67% had appeared in District courts at least once a month over the two years prior to the survey and 65.4% had appeared in the Superior courts at least once a month during the same time frame.[10] Professor Robert Eng of Babson College conducted the analysis of the survey responses.

RESULTS

Although the questions varied slightly from survey to survey, several key questions were consistent throughout the four. In each survey, respondents were asked about their overall level of satisfaction with court reporters and tape recording systems, in terms of in-court performance, accuracy of transcripts, and timeliness of transcript production. Tables 1, 2, and 3 provide the survey responses on those issues.

Table 1

"In terms of in-court performance (i.e., play back, bench conferences, going on and off the record), please rate your overall level of satisfaction."

Percent Very Satisfied or Satisfied

	DC	Ontario	NM	MA
Reporter	94%	95%	95%	93%
Tape System	48%	34%	20%	20%

Table 2

"In terms of completeness and accuracy of the transcript, please rate your overall level of satisfaction."

Percent Very Satisfied or Satisfied

	DC	Ontario	NM	MA
Reporter	93%	77%	93%	95%
Tape System	37%	17%	20%	18%

Table 3

"In terms of the timeliness with which transcripts were produced, please rate your overall level of satisfaction."

Percent Very Satisfied or Satisfied

	DC	Ontario	NM	MA
Reporter	69%	44%	77%	71%
Tape System	28%	28%	NA	31%

It seems clear that in each jurisdiction, reporters were favored over tape systems for overall in-court performance, completeness and accuracy of the final transcript, and timeliness of transcript delivery.

Two other questions were consistent throughout the four surveys, although they were stated in slightly different form in the Ontario survey. Each survey asked the respondents to indicate their preference in a trial setting for court reporters, tape recording or neither, as the method of preserving the record. Table 4 indicates the responses received.

Table 4

"If given the choice, would you prefer that trials in which you appear be reported by a court reporter or by recording equipment?"

	DC	Ontario	NM	MA
Reporter	71%	76%	85%	90%
Tape System	12%	12%	7%	3%
No Preference	17%	12%	8%	7%

The final question that was consistent throughout asked the respondents their opinion of expanded use of tape recording in the jurisdiction where they practice. Table 5 presents the results of that question from each jurisdiction.

Table 5

"What is your opinion on expanding the use of recording equipment in lieu of a court reporter."[11]

	DC	Ontario	NM	MA
Strongly Disapprove/ Disapprove	54%	71%	75%	74%
No Opinion	24%	14%	13%	10%
Strongly Approve/ Approve	22%	15%	12%	16%

In two of the surveys, D.C. and Massachusetts, analysis of the data included cross tabulation of the question dealing with expanded use of tape recording to determine whether the respondents' opinions varied consistently with their levels of experience with tape recording systems. In both instances, the greater the level of experience with tape recording system, the less the respondents favored their expansion throughout the court system.

In D.C., of those respondents who appear in the D.C. Superior Court on a daily basis, 60% strongly disapprove or disapprove of the expansion of tape recording, while only 15% in the same category approve and none strongly approve. Of those who have handled more than 100 cases in that court over the two years prior to the survey, 70% strongly disapprove or disapprove, 26% approve and none strongly approve.[12] In Massachusetts, the results were virtually identical. Of those attorneys who appear in Superior Court on a daily basis, 77% disapprove or strongly disapprove of expansion of tape recording while 10% approve or strongly approve. Of those who handled more than 100 cases in the two years before the survey, 84% disapprove or strongly disapprove and 6% approve or strongly approve.[13]

There was one other interesting finding in the Massachusetts survey. In the questionnaire, the respondents were asked "Have you, because of electronic failure or other reason, been unable to have transcripts produced from district court electronically-recorded tapes?" (question 7a) and "If yes, how frequently?" (question 7b). 65% of the respondents answering this question (n= 227) said they had been unable to have transcripts produced from the tape, citing such reasons as "inaudibility", "blank tape delivered", and "inability to locate tapes." Of those who said they had encountered problems, 85% had run into problems between one and five times during the past two years, 8% had run into problems six to ten times, and 7% had been unable to have a transcript produced from the tape more than ten times in a two year period.[14]

CONCLUSIONS

There is little question that, in and of itself, none of these surveys establishes a generalizable conclusion that trial attorneys prefer court reporters to tape recording systems. However, taken as a whole, the consistency of findings among all four surveys, taken in jurisdictions using sophisticated tape recording equipment over an extended period of time in the regular conduct of court business, supports two conclusions:

- The primary consumers of trial transcripts overwhelmingly prefer reporter-based transcripts for accuracy, completeness, and timeliness;
- Reporters are far more effective in such in-court duties as reading back, reporting bench conferences, and going on and off the record.

It also seems clear, based on the cross tabulations performed on the data from D.C. and Massachusetts, that familiarity breeds contempt: The greater the experience with a tape recording system, the less likely the consumers are to recommend its expanded application.

FOOTNOTES

1. Foster, Annual Report, (1946), p. 171.
2. Ibid., p. 173.
3. RPC, A Financial Analysis (1978), p.
4. Polansky & Barthlow, 1982, p. 4.
5. The goal of this study was to query levels of satisfaction with the recording system in the D.C. Superior Court. One of the first questions on the survey was "On the average, how frequently have you appeared in the D.C. Superior Court over the past two years?" Those questionnaires where the respondent answered "never" (25 out of 117) were deleted from the final analysis on the assumption that their answers were based on general opinion and not on specific experience with this sytem.
6. Letter from Mark Nimigan, President of CSRAO, to Jill Berman Wilson, November 30, 1982.
7. Anderson, 1982, p. 1.
8. Ibid., p. 3.
9. In this instance, the criterion for qualification was appearance in the District Court at least once a month during the two years preceeding the survey. Sandia Research Corp, 1982, p. 1.
10. Bulgar, 1983, p. 3.
11. In the Ontario survey, this question was phrased in the opposite context, i.e., the respondents were asked if they would support the expansion of the use of shorthand reporting. 71.3% supported the expansion of shorthand reporting, 14.5% did not support expanded use of shorthand reporting, and 14.2% indicated that they had no opinion or provided no response. In Table 5, these figures were inverted for consistency with the rest of the table. Anderson, op. cit., p. 12.
12. Kajdan & Wilson, 1982, p. 4.
13. Eng, 1983, Table 3.
14. Ibid., p.2

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A REVIEW OF THE FEDERAL JUDICIAL CENTER'S EVALUATION OF STENOGRAPHIC AND AUDIOTAPE METHODS FOR UNITED STATES DISTRICT COURT REPORTING

Coopers & Lybrand
September 20, 1983

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Edward H. Kight
President
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Dear Mr. Kight:

At your request we have conducted a limited review of the 1983 study by the Federal Judicial Center entitled, A Comparative Evaluation of Stenographic and Audiotape Methods for United States District Court Reporting (FJC Study). The results of our review are attached for your consideration.

We specifically examined the FJC Study's statistical methodology and cost analysis of federal court reporting. We have not addressed the feasibility or potential costs of audiotape court recording in general, but only the validity of the Federal Judicial Center's interpretations and projections.

As issues evolve in the evaluation of court reporting, we believe it is important to acknowledge the very specific context of our review. We have made every attempt to articulate and document the basis for our observations within severe time limitations. We do not believe our conclusions would change in a more complete examination, but we would expand our analysis and examine a more complete range of issues in the light of available data. To the extent we were unable to examine all relevant work papers from the Federal Judicial Center, we disclaim responsibility for possible resulting misinterpretations.

We conducted our study to address key issues raised in the FJC Study prior to a meeting of the Judicial Conference on September 21, 1983. We have accordingly used an approach we believe is appropriate for an audience familiar with the issues under consideration.

It should be noted that our Chicago office conducts the annual independent audit of Stenograph Corporation through its parent company, Quixote Corporation. We have not utilized audit personnel or information in the conduct of this review.

Edward H. Kight
September 20, 1983 - 2

This is an independent report, and we have agreed that when released it must be released in full.

Should you have any questions please contact James Keane, Director of Litigation Services in our New York Office (212/536-3005) or Richard Cooper, Partner in charge of our Economic Studies Group in our Washington, D.C. office (202/822-4277)

Very truly yours,

Coopers & Lybrand

EXECUTIVE SUMMARY OF CONCLUSIONS

The FJC Study does not provide a comprehensive and coordinated estimation of the costs of an audio recording system. It is therefore impossible to state that substantial savings would accrue if the current court reporting system is replaced. This conclusion is derived from our specific statistical and economic analysis of the FJC Study. Four fundamental limitations exist:

Statistical

1. Data from the Administrative Office of the Courts on transcript production demonstrates that a court is not a homogenous unit. Therefore, it is invalid to even attempt to estimate costs for a so-called "average" court.

Economic

2. The assumptions in the FJC Study result in an underestimation of the selected cost items for an audio recording system.

   Even though audio recording personnel would be performing a specialist function, salary estimates and a number of related costs are reduced by assuming a 60.4 per cent utilization rate. This assumption is very significant because it has a direct and cascading effect on a number of relatively large cost items for audio recording systems.

3. The FJC Study is partial and inconclusive because it omits significant cost items, such as training costs, management implementation costs, and management administration costs.

4. There is no comparison of the cost differences between labor intensive systems, such as audio, and capital intensive systems, such as CAT. There are potentially substantial differences which are likely to have a long-term impact on raising or stabilizing the price of transcripts to the Government and the parties. This relative cost increase factor must be examined because it could offset any proposed savings.

For convenience we have repeated Tables 5 and 6 from the text following page 3-13. Table A shows the areas where we disagree with specific cost items or the omission of specific cost items. Table B shows our estimates for cost items that were included in FJC study and a "?" for omitted items. Given the time and data available it was not possible to estimate these unknown costs.

Table A

DEGREE OF AGREEMENT WITH FJC'S AUDIO RECORD...
COST ASSUMPTIONS/ESTIMATES

CATEGORY	NO DIFFERENCE	SOME DIFFERENCES	MAJOR DIFFERENCES	UNKNOWN
Personnel			*	
Benefits			*	
Space			*	
Furnishing and telephone	*			
Audio equipment	*			
Audiotapes		*		
Equipment maintenance	*			
Installation	*			
Court-ordered transcripts				*
Training				*
Management/Implementaton				*
Management/Administration				*
Transcription costs to the Government				*

Table B

COST COMPARISON FOR AN AUDIO RECORDING SYSTEM: SIX YEAR COST

CATEGORY	1ST YEAR	2ND YEAR	3RD YEAR	4TH YEAR	5TH YEAR	6TH YEAR	TOTAL
Personnel	11,442 (18,943)	11,900 (19,700)	12,376 (20,489)	12,871 (21,308)	13,386 (22,161)	13,921 (23,047)	75,896 (125,648)
Benefits	1,293 (2,141)	1,464 (2,423	1,646 (2,725)	1,841 (3,047)	2,048 (3,391)	2,269 (3,757)	10,561 (17,484)
Space	927 (2,955)	954 (3,042)	978 (3,120)	1,015 (3,198)	1,040 (3,276)	1,065 (3,354)	5,979 (18,945)
Furnishing and telephone	1,840 (1,840)	265 (265)	290 (290)	315 (315)	340 (340)	365 (365)	3,415 (3,415)
Audio equipment	10,200 (10,200)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	10,200 (10,200)
Audiotapes	1,050 (1,320)	1,050 (1,320)	1,050 (1,320)	1,050 (1,320)	1,050 (1,320)	1,050 (1,320)	6,300 (7,920)
Equipment maintenance	0 (0)	1,225 (1,225)	1,285 (1,285)	1,350 (1,350)	1,490 (1,490)	1,490 (1,490)	6,770 (6,770)
Installation	3,000 (3,000)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	3,000 (3,000)
Court-ordered transcripts	272 (272)	272 (272)	272 (272)	272 (272)	272 (272)	272 (272)	1,632 (1,632)
Training	?	?	?	?	?	?	?
Management/implementation	?	?	?	?	?	?	?
Management/administration	?	?	?	?	?	?	?
Transcript costs to the Government	?	?	?	?	?	?	?

(_ _ _ _) Coopers & Lybrand estimates

I. STUDY BACKGROUND

Coopers & Lybrand was engaged by Stenographic Corporation to conduct a limited review of the 1983 Federal Judicial Center Study entitled A Comparative Evaluation of Stenographic and Audiotape Methods for United States District Court Reporting (FJC Study).

Stenograph Corporation is a subsidiary of Quixote Corporation. It sells stenographic equipment, including computer assisted transcription (CAT) devices and software. Because of our experience in evaluating manual and automated systems for litigation data, we were asked to provide an objective assessment of the FJC Study findings and conclusions that audiotape recording is a cost effective alternative to stenographic court reporting.

Audiotape recording technology does not utilize stenographic devices or computer assisted transcription systems. Should the findings of the FJC Study be adopted, they would have a direct impact on court reporters and suppliers of stenographic devices.

Our Approach

Our review proceeded in two phases. In the first phase we used a multi-disciplinary team to examine issues and determine if sufficient reliable data were available to reach sustainable conclusions regarding the FJC Study. This review team consisted of senior staff: two Ph.d. Economists, two specialists in federal program cost evaluations, a specialist in office and clerical operations and an attorney with extensive experience in litigation and legal information systems development. This team concluded there were sufficient

questions about the FJC Study to warrant further investigation based on available literature and the partial availability of FJC Study's workpapers.

The second phase consisted of analyzing key points in prior studies of court reporting methods, examining the FJC Study in detail, selectively reviewing some of the raw study data, confirming our conclusions against the literature as well as our substantive experience in the various disciplines within the scope of study and, finally analyzing the results in the body of this report.

Because of time constraints and the unavailability of the complete FJC Study workpapers, we have only conducted a limited review.

Qualifications

Our firm and members of the analysis team have participated in a significant number of federal program evaluations. The engagement leader, James Keane, was a principal investigator in our Comparative Systems Analysis of JURIS, LEXIS and WESTLAW* for the U.S. Department of Justice, (1979). Mr. Keane was formerly an Assistant Attorney General of Maryland, and a Director of Research for Aspen Systems Corporation's Legal and Regulatory Information Center. In addition to experience as a court clerk, law clerk and litigator, he has over eight years consulting experience in developing manual and computer operations for processing litigation data.

*Contract JAOMF-79-C-0072, available in microfiche from the National Technical Information Service, No. TB80225899.

The staff economist who conducted the detailed analysis of statistics, costs and economics was John Beaumont of our London Economic Studies Group. Mr. Beaumont has been a Professor of Quantitative and Theoretical Human Geography in England and is currently assisting our U.S. offices in regional and national economic forecasts for public and private sector programs.

The senior economist on the team, Dennis Dugan was the former Chief Economist for the General Accounting Office. The review partners for the study were Alan Silverman, National Partner in Charge of our Litigation Service Group and a former Director of Litigation Analysis for the International Business Machine Corporation, and Richard Cooper, Partner in Charge of our Economic Studies Group in Washington, D.C.

II. STATISTICAL METHODOLOGY

Site Selection

The information in the FJC Study is obtained from a sample of twelve district courtrooms from the population of U.S. District Courts, many of which have multiple courtrooms. The representativeness of this sample is of paramount importance because it is the foundation from which the results and conclusions are derived.

> "Project sites were selected with an effort to obtain a range of court sizes, caseloads, case types, and volume of transcript demand, and to include some courts in which at least some reporters used computer-aided transcription (CAT) and some courts in which bilingual proceedings could be expected" (FJC Study, p. 22).

The FJC Study uses this cross section to analyze accuracy and timeliness of delivery but not to analyze costs, where they use a mean or "average" court. To understand the interrelationship between total transcripts and transcript type, we constructed a matrix of both factors in Table 1 from data for the test site District Courts (not courtrooms) available from the Administrative Office of the Courts. The table clearly demonstrates inherent variability. In the absence of detailed (fixed and variable) cost structures of individual courts, sole reliance on an "average court" can provide misleading results. No account is taken of the skewed distribution of court sizes in the country.

This failure to recognize explicitly Courts' heterogenerity is the fundamental weakness of the FJC Study's cost analysis. This shortcoming is very surprising given the earlier commissioning by the Federal Judicial Center of a 1971

PROFILE OF FJC's STUDY'S
PROJECT SITE COURTS

Table 1

District Court (locations within District)	Total Transcript Pages for Project Courts for 1982* ($ of Circuit Total)	Ordinary Transcripts	Expedited Transcripts	Daily Transcripts	Hourly Transcripts
PA(E)	154,106 (35$)	122,573	3,937	23,057	2,825
NY(E) (Brooklyn)	107,631 (15$)	18,981	4,265	62,626	20,966
MA (Boston)	88,376 (63$)	62,586	3,537	11,403	10,285
CA(N) (San Francisco)	72,759 (12$)	33,794	12,365	12,528	14,072
MO(E)	50,988 (19$)	49,753	871	40	-
AL(N) (Birmingham)	38,051 (7$)	34,067	932	1,540	166
TX(W) (San Antonio)	35,803 (8$)	23,450	9,666	56	2,631
WA(W) (Seattle)	35,755 (6$)	30,460	4,841	78	4
NW (Albuquerque)	31,566 (13$)	18,537	3,578	9,461	-
SC (Columbia)	21,286 (8$)	20,229	624	70	102
WI(W)	13,566 (4$)	11,122	1,151	1,174	-
LA(W) (Opelousas)	6,960 (2$)	6,240	579	141	-
National Total of Transcript Pages	4,390,334				

*These statistics are for courts and were not broken down by courtroom. They include transcripts of official court proceedings held before judges and magistrates. Totals also include Court-ordered transcripts.

II. STATISTICAL METHODOLOGY

Site Selection

The information in the FJC Study is obtained from a sample of twelve district courtrooms from the population of U.S. District Courts, many of which have multiple courtrooms. The representativeness of this sample is of paramount importance because it is the foundation from which the results and conclusions are derived.

> "Project sites were selected with an effort to obtain a range of court sizes, caseloads, case types, and volume of transcript demand, and to include some courts in which at least some reporters used computer-aided transcription (CAT) and some courts in which bilingual proceedings could be expected" (FJC Study, p. 22).

The FJC Study uses this cross section to analyze accuracy and timeliness of delivery but not to analyze costs, where they use a mean or "average" court. To understand the interrelationship between total transcripts and transcript type, we constructed a matrix of both factors in Table 1 from data for the test site District Courts (not courtrooms) available from the Administrative Office of the Courts. The table clearly demonstrates inherent variability. In the absence of detailed (fixed and variable) cost structures of individual courts, sole reliance on an "average court" can provide misleading results. No account is taken of the skewed distribution of court sizes in the country.

This failure to recognize explicitly Courts' heterogenerity is the fundamental weakness of the FJC Study's cost analysis. This shortcoming is very surprising given the earlier commissioning by the Federal Judicial Center of a 1971

study of court reporting systems by the U.S. Department of Commerce, National Bureau of Standards (NBS Report 10641, Project 431538, Volume 1). This report concluded that,

> "... it should be emphasized that the demands for transcript vary widely from one jurisdiction to another, among courts and types of courts within a jurisdiction, and from time to time even for individual courts" (p. 158).

The NBS study further concluded,

> "The initial step is to assess transcript requirements by individual courts or types of court within a system, including estimates of the number of pages of transcript produced annually, appraisal of the "appearance" requirements for the record, legal and traditional constraints, etc." (p. 20)

We believe that even a decade later these clear recommendations have not been addressed adequately.

Sampling

For practical reasons, sampling was undertaken prior to completion of the project; three equal size samples were drawn at fixed times. Each of the three sample periods was supposed to produce a proportional random sample of 835 pages; that is, the sample size of each court was to be proportional to the total number of pages produced by the court. The FJC Study also attempted to stratify the sample by different categories for transcript production schedules. While such information is summarized in Tables 23 and 24 of the FJC Study, insufficient information is available to be able to categorize the stratification of the sample by both Court and transcript production schedule. In Table 1 we have assembled

and stratified these factors with data from the Administrative Office of the U.S. Courts; tabulations on "Attendance and Transcripts of United States Court Reporters, Calendar Year 1982." This enabled us to examine whether courts are functionally homogeneous entities within the limited context of the cost analysis in the FJC Study. This is an important test given the implicit assumption that they are identical and it is legitimate to concentrate attention on costs per court.

To evaluate the overall accuracy of the transcripts, in the FJC Study, systematic samples were drawn from all the pages that were marked by proofreaders; in each of the three sampling stages, the FJC Study attempted to draw 24 pages for each court. When this approach did not result in at least 70 pages per court in total for three stages, they systematically drew additional pages to reach this level or until they exhausted all the proofread pages for a particular court. This resulted in only obtaining 29 to 33 pages in four courts.*

For the functional relevance evaluation, the whole sample of 2483 proofread pages was screened by legal assistants to isolate discrepancies that were likely to make a difference in potential uses of a transcript. The remaining discrepancies were considered by panels of federal judges and trial attorneys to determine which were functionally relevant. This sampling approach was not unreasonable and, subject to a audit of results, we can see no reason to question the thoroughness of the detailed review.

*Discrepancies in the calculations on Table 23 were explained in a letter to George H. Crawford, Esq. from Russell Wheeler, dated September 14, 1983: "The data for court G were inadvertently placed as well in the row for court A. Court A's total pages are 1,594 (8.9% of the column total) and its sample pages are 211 (8.5% of the column)"

We must raise a number of specific questions, mainly arising from a lack of detailed documentation of the sampling procedure.

- Since the primary sample was proportionate and resulted in a relatively small number of pages in the sample for some courts, it is surprising that the FJC Study attempted to make the overall accuracy sample size approximately constant (70 pages) for each court.

- Given the nature of the three sampling stages, each of the three samples may not provide a representative sample by transcript production schedule.

Methodology for Identifying and Coding Discrepancies

The simple counting of "discrepancies" is imprecise. The "functional discrepancies likely to make a difference" could have been disaggregated and weighted to indicate their relative significance in context. The relative importance of omissions, for instance, with respect to the omission of a speaker, is a particular point to question. Even with the very explicit rules in the FJC Study, it seems inappropriate to bring the different types of discrepancies under a single quantitative measure.

For example, the Delphi approach, which was developed at the Rand Corporation, is now a widely used qualitative method. It is a method for deriving a refined consensus from a group of people, such as a group of judges and attorneys discussing functional discrepancies. While the Delphi approach requires a group of experts, these experts do not convene to debate the questions together, but are kept apart from one

another to make their own individual judgments. While the Delphi approach does not necessarily produce a single solution, it does provide the opportunity to obtain the spread of opinion reflecting the various contexts in which discrepancies occur. It would have been more useful to extend the "likely to make a difference" category to reflect degrees of difference. Qualitative categories of responses are applied widely in perception and consumer behavior studies.

At this time we do not take issue with the way the FJC Study applied its methodology. Rather, from the actual methodology used, it is impossible to draw sound or substantial conclusions.

III. ECONOMIC ANALYSIS

In the FJC Study's estimates of costs for systems operation, there is no substantiation for two very important underlying assumptions:

- The economics of transcription production are the same for both the audiotape and current court reporting systems, including systems which use computer-assisted transcription (CAT)
- The revenue or market potential for transcripts or the long-term costs of transcripts are identical for both the audiotape and current court reporting systems

Thus, the FJC Study's cost analysis is a restricted comparison of selected cost items, and does not permit an examination of fundamental supply/demand or cost/revenue relationships for alternative systems.

In evaluating the FJC Study's estimates of the costs of alternative methods of court reporting, we assessed their underlying assumptions for:

- personnel costs
- facilities and furnishings
- audio equipment and supplies
- installation and facility modifications
- court-ordered transcripts

Even within the small number of Courts sampled in the FJC Study, we found important variations in audio personnel

salary costs, which are the major cost components. In any comparative cost analysis, it is misleading to apply mean statistics without indicating the potential magnitude of deviations.

In addition, a complete comparison of costs between the audiotape and stenographic reporting systems should estimate all the potential cost items. The FJC study has a number of significant omissions:

- training costs
- management implementation costs
- management administration costs
- transcript costs to the Government

There are no estimates for training audio personnel. This omission is suprising, given the proposed introduction of a new reporting system. This training would involve not only the mechanical operation of recording machines, but also an understanding of courtroom procedures.

The introduction of an audio based reporting system would also involve additional management time to install and test the system. Moreover, there is no cost estimate for management, administration and supervision in the FJC Study.

The FJC Study draws its estimate of a 54% cost savings for recording the proceedings without regard to transcript cost. It states,

> ". . . the costs incurred in the actual transcription of the audiotapes, and the costs incurred by the official court reporters in preparing official

Table 2

DEGREE OF AGREEMENT WITH FJC'S AUDIO RECORDING
COST ASSUMPTIONS/ESTIMATES

CATEGORY	NO DIFFERENCE	SOME DIFFERENCES	MAJOR DIFFERENCES	UNKNOWN
Personnel			*	
Benefits			*	
Space			*	
Furnishing and telephone	*			
Audio equipment	*			
Audiotapes		*		
Equipment maintenance	*			
Installation	*			
Court-ordered transcripts				*
Training				*
Management/Implementaton				*
Management/Administration				*
Transcription costs to the Government				*

transcripts, are not subject to comparison in this study. This is because costs for transcripts are met by parties (which may in somes cases be the government) according to fees prescribed by the Judicial Conference of the United States" (FJC Study, p. 59).

This is a critical assumption in the FJC study: transcript production under the alternative systems would be identical. This is not the case in the utilization of a capital intensive CAT system, where there is repeated evidence of reduced time and labor for transcript production under certain conditions. There is no evidence of transcription cost savings in the proposed labor intensive audio system; labor requirements are similar to current systems where CAT is not used.

Table 2 summarizes the range of disagreement we have with the FJC's audio recording cost assumptions/estimates. The cost items that are classified under 'major differences' and 'unknown' are the most significant.

To provide a review in an easily comprehensible manner, a systematic and individual consideration of each FJC cost item is presented.

Personnel costs: Salaries and Fringe Benefits

The FJC's 1984 estimates for personnel salary under an audio reporting system is $11,442. This is based on a 4% increase of the JSP 7-4 annual salary (October 1, 1982) of $18,215 and then a reduction to account for the 60.4% observed utilization of audio staff.

The FJC Study scales down this annual salary by the observed mean utilization rate from the sample, and

ignores manpower planning for peak times. This is not merely a clerical job, but an integral position in the judicial process that may well become a specialist function. This could well result in more power for salary bargaining.

The variation around the mean statistic of 60.4% is large (see Table 18, p. 62, FJC Study) and, in practice, different courts will have different levels of utilization. Moreover, the salaries of audio operators in the sample exhibit large variations. In the estimation of costs for a mean court, this once again ignores the large variation between courts. This compounds the significance of salaries as a component in the overall costs.

Using FJC Study data (p. 220), we constructed Table 3 to illustrate the variation of the annual salary of audio reporting personnel in the experiment. In contrast, the sampled annual salaries of court reporters did not exhibit significant variation, and the mean level of $33,724 was a reasonable estimate for 1984 (FJC Study, p. 68).

TABLE 3

MID-POINT ANNUAL SALARY SCALE OF AUDIO OPERATORS IN THE EXPERIMENTAL COURTROOMS

JSP LEVEL	ANNUAL SALARY (MID-POINT)	NUMBER OF PRIMARY OPERATORS	NUMBER OF SECONDARY OPERATOR
5	$14707	6	2
6	$16392	1	3
7	$18215	3	3
8	$20172	2	1
9	$22281	0	1
10	$24539	0	0
11	$26959	0	2

The more conservative estimate from their own sample should be $18,943 (and not 60.4% of this figure, $11,442).

The rate of increase in nominal salaries over the six-year period considered in the FJC Study, is 4% per annum for personnel under both systems. This assumes that the personnel costs differential between the two systems would remain constant. This assumption is open to very strong questioning because:

- The federal court reporters' base annual salary is only part of their aggregate, annual income.
- The audio recording personnel may become a full-time specialist profession that is able to obtain relatively higher salary increases.

This point requires greater depth of investigation because of the significance of salary costs in the overall cost assessment.

The FJC Study also assumes that fringe benefits are equal percentages of salaries, further compounding the original variations between the estimated salaries.

Facilities and Furnishings

The Study also examines costs for office and storage space, telephone, and office furnishings.

The FJC Study estimate of the 1984 office and storage space costs for the court reporters of $2,955 is reasonable. The corresponding cost estimate for an audio reporting system is based on the 60.4% utilization of a deputy clerk who on average has a space allocation of 162 square feet compared with 312 square feet for an official court reporter.

The FJC Study contains no detailed evidence to support this relatively large reduction in space costs under an audio based reporting system. Until there is empirical evidence to confirm this assumption, it is equally reasonable to assume the new court reporting personnel would move into the office space of their predecessors. Furthermore, proportioning the space costs in relation to time spent on different functions is questionable given the fact that reporting would be the prime function. Thus, in our analysis the more conservative estimate of office space costs for an audio recording system in 1984 is $2,955.

Over the six-year period of comparison used in the FJC Study, a $0.25 per square foot increase per year after the first year assumed, but this makes two, time independent assumptions: first, audio-based reporting personnel would not require the average space allocation of the existing court reporters; and, second, only 60.4% of the aggregate space costs are allocated to the audio-based recording function. Thus, in our study, it is assumed that over the six year period, the space costs for an audio recording system are identical to those of the current court reporter system. In fact, without additional information, this cost item is being ignored in a comparative cost analysis of alternative systems, although it is necessary to include it in the anaylsis to obtain comparable aggregate cost estimates.

The FJC Study's 1984 estimates for the annual telephone costs for the official court reporters system and the audio reporting system are $24 and $240, respectively. The rationale behind these assumptions and their forecasted changes over time is reasonable.

The final cost item under the heading, facilities and furnishings, is office furnishings. No information is

available to suggest a need to modify the FJC Study's estimates; they have been applied directly in our analysis.

Equipment Costs

Equipment purchase is a capital budget item that has to be paid in full at the beginning. In this type of assessment, equipment costs cannot be amortized over a specified period as an accrual accounting procedure. (Table 21 in the FJC report which presents the equipment cost for an audio reporting system in 1984 as $1,700 is misleading because the total equipment cost estimate of $10,200 has been spread over the assumed six-year useful life period; however, in Table 22 which presents the six-year cost projections, total equipment costs are incurred in the first-year). A more appropriate approach to examine alternative capital budget options is to employ a methodology that explicitly incorporates the time value of money, rather then simply applying estimated nominal costs.

Based on information and advice of various vendors, including price quotations, we accept the accuracy of the estimates used in the FJC Study.

Equipment Maintenance

The FJC Study excludes audio equipment maintenance for the first year because of full-year warranties. After this period, the study assumes an initial maintenance cost at 12% of total equipment costs and an additional 5% increase per annum to reflect increased labor costs. The 1979 report for the Office of the Administrative Director for the Alaska Court System on "Electronic Court Reporting in Alaska" cites annual equipment maintenance costs at 16.8% of equipment cost (pages 24-25). For a sensitivity analysis, if this figure is used to

estimate the equipment maintenance costs in conjunction with the 5% increase per annum for labor costs, the total equipment maintenance costs over the six-year period increases by $2,699 (specifically, the maintenance cost estimates for the six years would be: $0; $714; $1799; $1899; $1984; and $2083). Without the bensfit of further study on this issue, we have chosen to use the FJC cost estimate for this item.

Installation and Facility Modification

In the FJC Study, the estimated cost for installation and facility modifications resulting from the introduction of an audio reporting system is $3,000. This too would be a payment made in the first year and should not be amortized over the equipment's useful life.

On the surface, this estimate appears conservative. However, once again, the variations in observed installation costs for the twelve experimental courts around the mean of approximately $1,000 are extremely large. One court did not incur any installation costs, while the installation costs for another court were $2,500. Such heterogeneity points to the fallacy of exclusively using mean statistics for court cost estimates. There is no firm basis from which to evaluate the reasonableness of these assumptions. More detailed, court-specific studies are essential prerequisites for providing estimates for audio conversion. While it would be obviously incorrect to assume that all courtrooms would need carpeting or lowered ceilings with acoustical tiles, significant costs can be expected because of acoustic placement, equipment testing and management time.

The General Accounting Office Report assumed that the laying of carpet would be sufficient acoustical treatment. The General Accounting Office estimated that to carpet all 779 courtrooms would cost $3,803,760. This provides another benchmark for consideration: $4,883 is significantly higher than the FJC Study's estimate of $3,000.

There are no comparable costs for remaining with a stenographic reporter. Since there is no available empirical evidence for a more reasonable estimate on audio installation and facility modifications we have incorporated the FJC Study's estimate, stressing again that significant variations would probably exist in practice.

Audiotapes for Recording and Duplicating

Under a court reporter system, this cost item does not exist, or it is borne by court reporters who choose to use a back-up tape recorder. The FJC Study calculates the total number of all tapes used for both recording the proceedings and duplicating the original tape. Given a stated cost of $2 per cassette, it projects the annual total tape costs for each court by assuming the experiment's level of usage for a year. The mean projected annual tape costs are $1,320, but there is a large variation reflecting the different caseloads of the sampled courts.

In addition to the problems of deviations around the mean volume of transcripts, a more disaggregate approach is needed to accommodate categories of recognized court transcript production schedules in different courts. This disaggregation is important because these different schedules directly affect the tape costs.

As stated in the FJC Study,

> ". . . each (cassette) tape was capable of containing up to ninety minutes of recording and was purchased at a cost of $2 per cassette. In the two courts where daily or hourly copy was produced by an audio transcription company, cassette tapes containing up to twenty minutes of recording were used, on occasion; they were purchased at a cost of $2 per cassette" (FJC Study, p. 222).

Tape costs may vary by a stratification of the Courts by caseload and by transcript production schedule. A high volume Court with high levels of daily transcript would have significantly higher annual tape costs.

The FJC Study also reduces its actual estimate for 1984 tape costs from $1,320 to $1,050, because of claimed cost reductions of 12.5 percent through bulk purchases. It is not explained why there were not economies for the 3,270 cassettes used in the sampled courts. The FJC Study further reduces its actual figure by adjusting not to the mean level of demand for cassettes in the sampled courts (660) but to the national mean court reporter hours.

Thus, the Study's final assumption for this cost item is:

> ". . . the annual tape costs per system are estimated at 600 tapes per year at a cost of $1.75 per cassette" (p. 67).

The FJC Study questions the results of its own sample and, in so doing, the sample's representativeness. The justification

for reducing the estimated annual tape costs is not fully substantiated. Indeed, it would be difficult to argue against using the sample-based estimate of $1,320, particularly as these costs are assumed to remain constant over the six-year period.

Court-Ordered Transcripts (and Transcription Costs to the Government)

Providing court-ordered transcripts is part of a court reporter's base salary, and, is, consequently, not a cost to the Government. In contrast, under an audio recording system, this service would be paid by the court. The FJC Study estimates the average court's transcript charge will be a constant value of $272 over six years. We have no reason to question this estimate.

The Study however fails to consider additional transcript costs to the Government. Transcript costs are large and substantial direct costs to the Government in at least three categories:

- Criminal Justice Act transcripts for indigent defendants
- Criminal trial transcripts for the U.S. Attorney's office
- Civil trial transcripts where the U.S. is a party

The Administrative Office of the U.S. Court reported the following data for Criminal Justice Act transcripts in its 1982 report at page 502.

TABLE 4

TRANSCRIPT COSTS TO THE GOVERNMENT FOR CRIMINAL JUSTICE ACT DEFENDANTS

Financial Year	1978	1979	1980	1981*	1982*	1983*
Total Cost to the Government	1,564,449	1,451,384	1,816,955	2,000,000	2,075,000	2,250,000

*Estimate

Due to the time constraints we were not be able to obtain the corresponding information for U.S. Attorney's costs, though it is obtainable by a request under the Freedom of Information Act.

Data exist to extrapolate complete transcript costs and to undertake sensitivity analyses of the trade-off between costs of labor intensive and capital intensive systems. This general type of investigation was a planned component of the FJC Study, but no such analysis is presented. The outcome of such an analysis could have a material impact on the claimed savings.

The FJC Study's Cost Conclusions

The FJC Study's six-year cost projection for a court is $273,934 under a court reporter system and $123,753 under an audio recording system. The estimated cost saving is $150,181 or 54% per court.

This difference is excessive because:

- the FJC Study greatly underestimates some of the audio recording system's cost items

- all the cost items of an audio recording system are not examined.

Table 5, presents a direct cost comparison of the first year estimates for the FJC Study's audio recording system and our analysis. Our estimate is derived from our adjusted assumptions. Importantly, it indicates the first year cost estimates are greater than the corresponding costs for the current court reporter system. Moreover, there are significant cost items that have not been included in the FJC's Study. Within our time constraints, however, we have not been able to obtain estimates for these cost items.

Table 6 extends the results of our analysis to permit a comparison of the estimated costs of an audio recording system over a six-year period. Our total cost estimate for the FJC's selected cost items is $195,014, a 57 percent increase over the FJC's estimate. This estimate suggests a 29 percent saving through an audio recording system, although significant cost items which should be in a comprehensive cost investigation have been excluded.

Time Value of Money

The FJC's cost comparison approach fails to consider the time value of money. An alternative and widely used methodology is to calculate the net present value of the cash flows. This discounting procedure permits a comparison of alternative systems in current dollars, an important consideration for a large capital expenditure decision.

Table 5

COST COMPARISON FOR AN AUDIO RECORDING SYSTEM: INITIAL YEAR ESTIMATES

CATEGORY	FJC ESTIMATES	C&L ESTIMATES
Personnel	11,442	18,943
Benefits	1,293	2,141
Space	927	2,955
Furnishings and telephone	1,840	1,840
Audio equipment	10,200	10,200
Audiotapes	1,050	1,320
Equipment maintenance	0	0
Installation	3,000	3,000
Court-ordered transcripts	272	272
Training	?	?
Management/implementation	?	?
Management/administration	?	?
Transcript costs to the Government	?	?

Table 6

COST COMPARISON FOR AN AUDIO RECORDING SYSTEM: SIX YEAR COST

CATEGORY	1ST YEAR	2ND YEAR	3RD YEAR	4TH YEAR	5TH YEAR	6TH YEAR	TOTAL
Personnel	11,442 (18,943)	11,900 (19,700)	12,376 (20,489)	12,871 (21,308)	13,386 (22,161)	13,921 (23,047)	75,896 (125,648)
Benefits	1,293 (2,141)	1,464 (2,423	1,646 (2,725)	1,841 (3,047)	2,048 (3,391)	2,269 (3,757)	10,561 (17,484)
Space	927 (2,955)	954 (3,042)	978 (3,120)	1,015 (3,198)	1,040 (3,276)	1,065 (3,354)	5,979 (18,945)
Furnishing and telephone	1,840 (1,840)	265 (265)	290 (290)	315 (315)	340 (340)	365 (365)	3,415 (3,415)
Audio equipment	10,200 (10,200)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	10,200 (10,200)
Audiotapes	1,050 (1,320)	1,050 (1,320)	1,050 (1,320)	1,050 (1,320)	1,050 (1,320)	1,050 (1,320)	6,300 (7,920)
Equipment maintenance	0 (0)	1,225 (1,225)	1,285 (1,285)	1,350 (1,350)	1,490 (1,490)	1,490 (1,490)	6,770 (6,770)
Installation	3,000 (3,000)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	3,000 (3,000)
Court-ordered transcripts	272 (272)	272 (272)	272 (272)	272 (272)	272 (272)	272 (272)	1,632 (1,632)
Training	?	?	?	?	?	?	?
Management/implementation	?	?	?	?	?	?	?
Management/administration	?	?	?	?	?	?	?
Transcript costs to the Government	?	?	?	?	?	?	?

(____) Coopers & Lybrand estimates

To reflect possible changes in the cost of short-term government borrowing, the net present value calculations are made for a range of interest rates: 8 percent; 9 percent; and 10 percent (see Table 7). Using the 9 percent assumption for illustrative purposes, the net present value for an audio recording system would be $95,024 for the FJC's Study and our corresponding estimate is $147,737. These estimates should be compared with the FJC estimated net present value for a court reporter system of $202,436. Thus, even with the exclusion of very important and unknown cost items, our analysis shows that the projected cost reductions resulting from the introduction of an audio recording system are 27 percent rather than the 54 percent suggested by the FJC Study.

Time permitting, a further type of sensitivity analysis could examine the impact of the assumption about the audio equipment's useful life. If the estimate of six years is too optimistic, the costs of an audio recording system would be increased.

It must be stressed that the costs included in both the FJC Study and our analysis are estimates. The underlying assumptions have been stated explicitly, and it is explained why we believe the FJC Study has basic weaknesses in understating costs of an audio recording system. Moreover, the FJC Study demonstrates there is limited knowledge of the costs of audio recording systems.

Table 7a

OFFICIAL COURT REPORTER COST ESTIMATES (FROM FJC STUDY, TABLE 22)

	YEARS						
	1	2	3	4	5	6	TOTAL
Personnel	33,724	35,073	36,476	37,935	39,452	41,030	223,690
Benefits	3,811	4,314	4,851	5,425	6,036	6,688	31,125
Space	2,955	3,042	3,120	3,198	3,276	3,354	18,945
Furnishings and telephone	24	26	28	30	32	34	174
Total	40,514	42,455	44,475	46,588	48,796	51,106	273,934

NET PRESENT VALUES

	NPV at 8%	NPV at 9%	NPV at 10%
Personnel	170,841	165,606	160,616
Benefits	23,388	22,627	21,903
Space	14,515	14,075	13,656
Furnishings and telephone	132	128	124
Total	208,876	202,436	196,299

Table 7b

AUDIO RECORDING COST ESTIMATES
FJC ESTIMATES: NET PRESENT VALUE

	Net Present Value at:		
	8%	9%	10%
Personnel	57,965	56,189	54,496
Benefits	7,936	7,678	7,432
Space	4,578	4,439	4,306
Furnishings and telephone	2,854	2,797	2,742
Audio equipment	10,200	10,200	10,200
Audiotapes	4,854	4,710	4,573
Equipment maintenance	4,967	4,791	4,623
Installation (Facilities Modifications)	3,000	3,000	3,000
Court ordered transcripts	1,257	1,220	1,184
Total	97,611	95,024	92,556

(See Table 6 of this study for the base data)

Table 7c

AUDIO RECORDING COST ESTIMATES
C&L ASSUMPTIONS: NET PRESENT VALUE

	Net Present Value at:		
	8%	9%	10%
Personnel	95,962	93,022	90,219
Benefits	13,138	12,710	12,304
Space	14,515	14,075	13,656
Furnishings and telephone	2,854	2,797	2,742
Audio equipment	10,200	10,200	10,200
Audiotapes	6,102	5,291	5,749
Equipment maintenance	4,968	4,792	4,623
Installation (Facilities Modifications)	3,000	3,000	3,000
Court ordered transcripts	1,257	1,220	1,184
Total	151,996	147,737	143,677

(See Table 6 of this study for the base data).

CONTINUED

2 OF 3

The mere existence of such wide discrepancies in audio system cost estimates and the failure to include significant cost items mean that a much more detailed investigation of these issues is both desirable and essential before changing the current system.

IV. CONCLUSIONS AND OUTLOOK

Conclusions

The FJC Study does not provide a comprehensive and coordinated estimation of the costs of an audio recording system. It is therefore impossible to state that substantial savings would accrue if the current court reporting system is replaced. This conclusion is derived from our specific statistical and economic analysis of the FJC Study. Four fundamental limitations exist:

Statistical

1. Data from the Administrative Office of the Courts on transcript production demonstrates that a court is not a homogenous unit. Therefore, it is invalid to even attempt to estimate costs for a so-called "average" court.

Economic

2. The assumptions in the FJC Study result in an underestimation of the selected cost items for an audio recording system.

   Even though audio recording personnel would be performing a specialist function, salary estimates and a number of related costs are reduced by assuming a 60.4 per cent utilization rate. This assumption is very significant because it has a direct and cascading effect on a number of relatively large cost items for audio recording systems.

3. The FJC Study is partial and inconclusive because it omits significant cost items, such as training costs, management implementation costs, and management administration costs.

4. There is no comparison of the cost differences between labor intensive systems, such as audio, and capital intensive systems, such as CAT. There are potentially substantial differences which are likely to have a long-term impact on raising or stabilizing the price of transcripts to the Government and the parties. This relative cost increase factor must be examined because it could offset any proposed savings.

Outlook

As a basis for evaluation it is important to consider the original aims of the FJC Study. These are presented in their "Plan To Evaluate Different Methods of Recording Court Proceedings in United States District Courts". For the assessment of audio recording, it states,

> "The production of transcripts from electronic sound recordings will be analyzed as to the costs of preparing typed transcripts according to Judicial Conference guidelines; . . . It should be stressed, as alluded to above, that the comparative costs of electronic sound recording and live reporters for all phases of recording the proceedings and producing the transcript will be assessed throughout the project and reported fully in the project report. All cost items will be analyzed, including the comparative costs of equipment, the costs of all personnel needed to perform the various functions, of requisited supplies, as well as the cost of contracted services for transcription production". (Emphasis added, FJC Study, pp. 101-102).

The final Federal Judiciary Center's Study did not fully follow these guidelines. The Executive Summary to the FJC Study states

> "The project calculated the comparative costs to the government of audio recording and official court reporting systems; costs for almost all transcript production are met by the parties" (p. xii).

The Chapter on "Evaluation Criteria" refines this assertion further by describing the scope of the cost analyses as

> " .... the costs the government bears in maintaining a court reporting capability" (p. 9).

The FJC Study reveals strata of different courts, not an "average" court. Different strata of court will have varying needs because of their different characteristics. The basic problem with the FJC Study is it is not sufficiently detailed and wide-ranging to provide the foundation for coherent decision-making on the differing requirement of courts.

We believe that further study is essential. To permit a coordinated systematic and analytic evaluation, a stratified sample must be drawn which is representative of the Courts of the United States. It should not be unduly weighted to those courts where judges have expressed an interest in audiotape. The stratification should be based on explicitly defined functional aspects, such as case load, location factors, ratio of civil or criminal cases and various methods of court reporting. These characteristics of the stratification must be defined carefully in advance and supported by a pilot study of a few courts to validate the strata for expected consistency.

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In essence, separate sub-samples of courts should be examined. Only a discriminating study can help judges in making their collective or individual assessment of future requirements. For audio court reporting, such studies should also factor in the age, physical structure and audio characteristics of the courtrooms. For any type of system, an analysis should also address local court management practices and the practices or procedures of specific judges; these important factors can only be assessed qualitatively as they are not subject to the precision of direct quantitative analysis.

In terms of CAT's potential and long-term impacts on transcript fees there has to be an assessment of the transcript demand by different types of courts (in terms of the number of transcript pages, different schedules per year, per court, per judge, although this may vary per court throughout the year). The production schedule of transcripts must be disaggregated because the potential of CAT for a quick turnaround is one of its most positive features. In terms of economics, it is necessary to discuss both the demand and the supply sides. This interaction will be of paramount importance in determining the cost effectiveness of alternative court reporting methods, particularly when private sector requirements and incentives will determine the ultimate outcome.

Careful attention should also be given to management time and costs. The Judicial Conference responded to the General Accounting Office critique of court reporting problems by developing a management plan. Any system evaluation should include exact specifications of the roles and responsibilities of different actors in the process. It will otherwise be impossible to assess the potential cost impact of management time during implementation or the ongoing maintenance of any new system.

To maintain the FJC Study's stated accuracy level for audio recording will take entirely new management roles. These roles will be shaped by the type of errors "likely to make a difference" and how to minimize them. Any new study should re-evaluate the data already gathered with more discrimination and substantial conclusions than have yet been reached.

In terms of cost, the Federal Judicial Center's Study has serious shortcomings. Until these are corrected, any findings on accuracy will not demonstrate the cost effective feasibility of audio recording as a replacement for the current functioning court reporting system.

An Analysis of the Federal Judicial Center's Evaluation of Stenographic and Audiotape Methods for United States District Court Reporting

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October 12, 1983

EXECUTIVE SUMMARY

In July 1983 the Federal Judicial Center (FJC) released A Comparative Evaluation of Stenographic and Audiotape Methods for United States District Court Reporting. Because the nature and scope of this study are of significant concern to court reporters, the United States Court Reporters Association (USCRA) and National Shorthand Reporters Association (NSRA) retained Resource Planning Corporation to examine the FJC study methodology, findings, and conclusions. This report provides the results of that examination.

It should be noted that we were not asked by USCRA/NSRA to provide, nor are we in a position to offer, an assessment of the relative merits of audiotape versus stenographic reporting. Our examination of the FJC study and resulting conclusions do not address this issue. Nor do our conclusions specifically address policy questions such as what actions the federal judiciary might take with regard to court reporting processes. The purpose of our examination was limited solely to an assessment of the validity and rigor of the FJC study and its conformity with accepted research principles and practices.

Although the FJC report provides a comprehensive and meticulous discussion of the test conducted in 12 courts, we have concluded that there are significant flaws in the study methodology and assumptions which render it of questionable utility in projecting the test results to current or potential reporting processes in the district courts.

As the title of the FJC study indicates, the research draws conclusions about the accuracy and timeliness of stenographic and audiotape methods in the United States District Court. Thus, the activities (or the populations) being studied are the stenographic methods used in the district courts and the audiotape methods that would be used in the district courts. To be in accordance with the accepted minimum standards of research of this type, the samples that form the basis of the study must be representative of these populations. To draw valid conclusions concerning the stenographic methods used in the district

courts, the sample studied must be representative of the stenographic methods that exist in these courts; likewise, the sample must be representative of the audiotape methods that would be used in the district courts, if allowed.

Representativeness as used here can only be ensured through the use of proper sampling procedures. These procedures are well documented and form the generally accepted standards in virtually all fields of empirical research. These procedures were not used in drawing the samples analyzed in the FJC study. Although certain cross sectional factors such as geography and transcript volume were considered by the FJC in making their selections, given the sampling methods used we must assume, based on accepted scientific principles, that:

- The sample of courts studied is not representative of the district courts and in fact constitutes what is commonly referred to as a "self-selected" sample, which is normally assumed to be subject to systematic bias.
- The sample of stenographic reporters used in the study is not representative of the district court stenographic reporters.
- The samples of audio transcription firms, audio equipment, and audio equipment operators are not representative of the audiotape services that would be expected to be used in the district courts if allowed.
- Since the transcript samples used for the accuracy analyses were drawn from the audiotape transcripts, unrecorded and thus untranscribed proceedings resulting from equipment failure could not be included in the sample although there may have been a parallel stenographic transcript. Therefore, the sample of transcript pages analyzed is not representative of the stenographic transcript produced in the district courts, nor even of the courts included in the test.
- The statistical tests of accuracy are not only based on non-representative samples of transcript but additionally are in violation of the basic assumptions of the tests.

Based on the procedures used in drawing the samples in this study and analyzing the results, the FJC cannot draw scientifically valid conclusions about the accuracy or timeliness of stenographic or audiotape methods used in the district courts.

It cannot be overemphasized that we consider these criticisms to be fatal shortcomings. In fact, the Judicial Conference of the United States has indicated the importance of these issues by recommending in the Handbook of Recommended Procedures for the Trial of Protracted Cases, 25 F.R.D. 365 (1960), that factors important to an assessment of a survey or field study (which is the proper description for the FJC research) include that a representative sample was drawn from the population, and that the sample design was in accordance with accepted standards of objective procedure and statistics.

We have also concluded that the FJC cost analysis is both inappropriate and misleading, with the result that projected audiotape system costs are significantly understated. The FJC analysis substantially ignores audiotape cost factors such as training and system administration, undervalues others such as operator costs, and does not follow conventional capital spending analysis techniques for determining the effects of time on the value of expenditures. While we realize that cost projections are by definition imprecise to some degree, by replacing FJC cost assumptions with more reasonable and justifiable assumptions regarding likely audiotape system costs (as distinguished from test costs) and by following conventional capital spending analysis techniques, we estimate that an audiotape recording system is likely to cost 88% as much as a stenographic system rather than the approximately 50% estimated by the FJC. Stated in different terms, the FJC analysis estimates average annual potential cost savings resulting from use of an audiotape system to be $21,900, whereas we estimate such annual savings to be $3,700.

The above RPC conclusions have been reached solely on the basis of our judgment regarding the degree to which the FJC study was conducted in accordance with accepted research principles and practices. While we express no opinion on the substance of the policy decision facing the federal judiciary, we do not feel that the findings and conclusions of the FJC study form a valid basis for making such decisions.

1.0 INTRODUCTION

1.1 Purpose of This Study

In July 1983 the Federal Judicial Center (FJC) released A Comparative Evaluation of Stenographic and Audiotape Methods for United States District Court Reporting. The objective of the FJC study was to assess the performance of stenographic and audiotape reporting processes in terms of transcript accuracy, timeliness of transcript delivery, systems' cost, and ease of use.

Because the nature and scope of the FJC study is of significant interest to court reporters, the United States Court Reporters Association (USCRA) and National Shorthand Reporters Association (NSRA) retained Resource Planning Corporation (RPC) to examine the FJC study methodology, findings, and conclusions. This document provides the results of that examination.

It should be noted that we were not asked by USCRA/NSRA to provide, nor are we in a position to offer, an assessment of the relative merits of audiotape versus stenographic reporting. Our examination of the FJC study does not address this issue. Nor do our conclusions specifically address policy questions such as what actions the federal judiciary might take with regard to court reporting processes. The purpose of our examination was limited solely to an assessment of the validity and rigor of the FJC study and its conformity with accepted research principles and practices.

1.2 Summary of the FJC Study

The FJC undertook its assessment of audiotape recording in response to section 401(b) of the Federal Courts Improvement Act of 1982 (96 Stat.25, 56-57) which directed the Judicial Conference of the United States to "experiment with the different methods of recording court proceedings."

In June 1982 the FJC distributed an initial draft of a plan for conducting a study of audiotape recording in the district courts. After

revisions, the study plan was finalized in November 1982, and study preparations began. During the late fall of 1982, test courts were selected, equipment was purchased, study employees hired and trained, and attendant study procedures were established. In late December 1982, audiotape reporting systems were operating in 12 U.S. District Courts in parallel with the official stenographic processes. For approximately four months this parallel process continued. Each time a transcript was requested via the official stenographic process, a comparable transcript was ordered via the audiotape process. After reviewing and analyzing the results of the test, the FJC concluded that:

> Given appropriate management and supervision, electronic sound recording can provide an accurate record of United States district court proceedings at reduced costs, without delay or interruption, and provide the basis for accurate and timely transcript delivery.[1]

1.3 RPC's Study Approach

The FJC study was a research effort utilizing a test sample as the basis for making generalizations about a population. The study used the test experiences of 12 district courts to draw general conclusions about the suitability of audiotape and stenographic recording processes in United States District Courts. A major focus of our examination was the methodology and procedures employed by the FJC to select their test samples and project test findings to the population of the district courts. Section 2.0 of this report describes our findings in this area, with particular emphasis on our opinions regarding the FJC transcript accuracy and timeliness analysis.

A second major concern of our examination was the FJC cost analysis. The FJC report asserts that audiotape reporting can provide accurate transcript at substantially reduced cost. Section 3.0 of this report discusses our review of underlying FJC cost assumptions as well as their analysis methodology.

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1. J. Michael Greenwood, Julie Horney, M. -Daniel Jacoubovitch, Frances B. Lowenstein, and Russell R. Wheeler, A Comparative Evaluation of Stenographic and Audiotape Methods for United States District Court Reporting, Federal Judicial Center, July 1983, p. xiii.

In conducting our examination of the FJC study, our primary source of information was the study report, which we received on July 8, 1983. After reviewing the report, we determined that additional data and information were necessary for us to perform a comprehensive examination. We submitted a letter to NSRA on July 18 specifying the additional materials required, and the substance of that letter was transmitted to the FJC on July 21.[2] It was not until September 1 that the FJC provided any of the requested materials, and at that time only approximately 20% of the items requested were delivered. Because the information requested but not provided was critical to a thorough review, on September 2 we proposed to the FJC that a meeting be arranged for purposes of discussing the study. Such a meeting was conducted on September 14, with Gordon Bermont and Russell Wheeler of the FJC. Subsequent to that meeting our analysis was completed and this report prepared.

2. Correspondence associated with our requests for additional information regarding the study is provided as an appendix to this study.

2.0 ANALYSIS OF FJC SAMPLING METHODOLOGY

2.1 General

As the title of the FJC study indicates, the research draws conclusions about the accuracy and timeliness of stenographic and audiotape reporting methods in the United States District Court. Thus, the activities (or the populations) being studied are the stenographic methods used in the district courts and the audiotape methods that would be used. To be in accordance with the accepted minimum standards of research of this type, the samples that form the basis of the study must be representative of these populations. To draw valid conclusions concerning the stenographic methods used in the district courts, the sample studied must be representative of the stenographic methods that exist in these courts; likewise, the sample must be representative of the audiotape methods that would be used in the district courts, if allowed.

Given the importance of the concepts of representativeness and proper sampling methods to the evaluation of the FJC study, an illustrative example is needed.

Suppose we wanted to determine what proportion or percentage of the residents of Washington, D.C., are five feet tall or taller. Given that we cannot afford the money or time to measure the height of everyone residing within the city limits, we are forced to take a sample of residents and project the results of the sample to the full population. Since we know nothing about the distribution of height within the city limits, we decide to arbitrarily select one block in the city and sample the individuals within that block.

Since we have no reason to believe that any one block is different from any other block, we decide to select the block across the street from our office. Not only is this convenient but it is cost efficient. We randomly select 10 people to be candidates for the study. From these 10 individuals we take height measurements.

The resulting measurements are as follows: 4'2", 4'0", 4'6", 4'3", 4'10", 4'10", 5'1", 4'11", 4'11". Since only one of the ten individuals is measured to be over 5 feet, we conclude (obviously wrongly) that one out of ten, or only 10% of the population of the District of Columbia is five feet or taller. Unknowingly, we have taken our sample from a population of children since there is a school in the block across the street, the block selected for our study.

Given this example, there are a number of potential points where error can enter our study. At least one area of error involves the representativeness of our sample.

Since we do not know the real proportion of D.C. residents that are five feet or taller, it is impossible to estimate the amount of error in this study example. In fact, if the example were not so ludicrous there might be no reason to suspect even the existence of bias or error, except for the fact that certain basic principles of research were violated.

The primary means of eliminating this type of error is through the use of a random probability sample. Essentially, the accuracy of projections from samples to populations is a function of the confidence that can be placed in the representativeness of the sample. A sample is representative to the degree to which it reflects the characteristics of the population. Since the sample is taken because an estimate is needed on an unknown characteristic of the population, you often may not know that a sample is not representative.

Since we can seldom know when a sample is not representative, representativeness can only be controlled through the use of proper sampling procedures. The one conventionally accepted procedure is the use of a random probability sample. In a random probability sample, each unit in the population has an equal chance of being chosen and the selection of any one unit has no effect on the selection of any other. It is important to note that it is not sufficient to sample in a "random fashion," but rather this random procedure must allow each unit in the population an equal chance of being chosen. In our example, it

was not enough that our 10 candidates were chosen randomly, since each individual in the population did not have an equal chance of being chosen. Nor was it enough that the block that we selected to study was chosen without bias. Once we arbitrarily, or randomly, selected the block for our sample, every other resident of the District that did not reside on that block stood no chance of getting selected in the sample. Therefore, since the sampling procedure did not allow each individual within the population an equal chance of being chosen, the sample cannot be assumed to be representative of the population. It may be true that we do not know how the sample differs from the population. This does not matter. Given what we know about the procedures used, there is absolutely no reason to expect that the sample is in any way representative of the total population of District residents.

Based on the procedures used in drawing the sample in this example, we are in no position to draw any valid conclusions about the population of District residents. This does not say that we cannot render an intuitive judgment but that judgment would not be based on any valid scientific evidence.

As this example illustrates, representativeness can only be controlled through the use of proper sampling procedures. These procedures are well documented and form the generally accepted standards in virtually all fields of empirical research. In fact, the Judicial Conference of the United States has indicated the importance of such standards and procedures by recommending in the Handbook of Recommended Procedures for the Trial of Protracted Cases, 25 F.R.D. 365 (1960), that factors important to an assessment of a survey or field study (which is a proper description for the FJC research) include that a representative sample was drawn from the population, and that the sample design was in accordance with accepted standards of objective procedure and statistics.

Insofar as the FJC test is concerned, these issues relate particularly to three aspects of study sampling methodology:

1. The manner in which courts were selected;
2. The manner in which audiotape personnel, equipment, and transcript services were selected ;
3. The manner in which transcript pages were selected for inclusion in the accuracy analysis samples.

To the degree that these three test samples were selected in accordance with generally accepted research principles, the resulting test findings can be considered valid and representative of the populations under study. To the degree that FJC procedures in these areas do not result in representative samples, the FJC findings and conclusions based on these samples are invalid.

For each of the three sampling areas we provide:

- A statement of the principle(s) governing sample selection;
- A description of the methodology employed by the FJC;
- A description of the appropriate methodology that should have been used by the FJC; and
- An estimate of the impact of the FJC approach on study findings.

2.2 Court Selection

In order to select a sample of test courts which are assumed to be representative of the population of district courts, it is necessary to construct a scientifically valid sample. Such a sample might be randomly selected from the entire population of district courts or it might be randomly selected on a stratified basis (such as caseload, judges, or geographic region). Regardless of whether the sampling design used calls for a simple random sample or a stratified sample, the only way to ensure that the sample is representative of the population from which it is drawn is for selection to be truly random. This means that each and every element in the population must have an equal opportunity of being selected for the sample. If the sample is not drawn in this manner, it cannot be assumed nor demonstrated to be representative of the population under study.

The FJC makes no claim that the courts selected for inclusion in the test were randomly selected. They indicate that courts were chosen in one of three ways:

> Project courts were chosen for the study in one of three ways. Some were contacted because judges in those courts had already shown interest in research on alternative reporting methods, although they were not necessarily proponents or opponents of those alternatives. Some courts were suggested as appropriate project sites by members of the Judicial Conference Subcommittee on Supporting Personnel. Some courts were approached by Center personnel because their location, caseload, or volume of transcript demand offered particularly attractive opportunities for collection of important data. In such instances, Center personnel inquired about the court's interest in participation through discussions with the chief judge and the clerk of the court.[3]

Also with regard to court selection, the FJC stated that:

> Project sites were selected with an effort to obtain a range of court sites, caseloads, case types, and volume of transcript demand, and to include some courts in which at least some reporters used computer-aided transcription (CAT) and some courts in which bilingual proceedings could be expected.[4]

While it would seem that some effort was made to avoid a court sample significantly skewed in favor of very large or very small courts, clearly no effort was made to ensure that test courts were representative of the groups under study. When we asked representatives of the FJC about their court selection procedures they concurred that they were not random sampling methods nor any other form of probability sampling and therefore the sample could not be demonstrated to be representative.[5]

Selecting a representative sample of courts for inclusion in the test would have been quite simple. A simple random sample could have been drawn using a random number table or generator, and the sample could have been stratified by caseload, number of CAT reporters, transcript volume, or other factors. Although there would have been

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3. A Comparative Evaluation, op. cit., pp. 22-23.
4. Ibid, p. 22.
5. See section 1.3 regarding our meeting with FJC personnel.

no difficulty selecting a truly random sample, there might have been problems obtaining the cooperation of all courts so selected. It was presumably to ensure cooperative courts for the test that the FJC chose its sample by subjective means. Although the FJC may have ensured study cooperation, they did so at the cost of sample validity and may unintentionally have encouraged bias (e.g., the courts which volunteered may have done so because of existing problems with their reporters or other factors which may have biased the study).

Available data do not allow quantification of the impact of the court selection procedures on the study findings. However, even a cursory glance at the FJC accuracy analysis by court[6] indicates that there are gross differences in accuracy, regardless of the method used, from one court to another. For example, court B is shown to have had the stenographic version of test transcript accurate 62% of the time and audio version correct 38%, and court K shows the stenographic version correct 26% and audio version 74%. This fact alone demonstrates the impact of the exact composition of the sample to the study findings, and suggests the magnitude of effect that improper sample selection could have.

2.3 Audiotape Personnel, Equipment, and Transcript Service Selection

In order to ensure that the audiotape processes tested were representative of the audiotape processes likely to be installed in the future, it was incumbent upon the FJC to make all reasonable efforts to ensure that the three major system factors--personnel, equipment, and transcription services--were not unique to the test project, and that evident sources of potential bias in the sample were avoided.

When the FJC began the selection of audio operators for the test, an audio operator job description was developed which established the following audio operator characteristics:

> Must have high school diploma; some junior college or college desirable. Must have good hearing, good health. Must have legible handwriting. Must have sufficient maturity to work well with other court personnel; dress and manner appropriate for federal court setting. Must have some familiarity with legal concepts and procedures. Must be comfortable working with simple electronic equipment. Must have motivation to do job well; ability to formulate solutions to problems that may arise in the course of a new program.[7]

6. A Comparative Evaluation, op. cit., Table 5, p. 41.

These qualifications appear to be reasonable for an employee to be assigned a grade of JSP5-7 as anticipated by the FJC. Utilizing test operators possessing such qualifications would have presumably produced test personnel not unlike future audiotape employees. Given the stated job description and the grade anticipated, the FJC could have ensured representativeness by randomly selecting JSP5-7s that met the job qualifications from existing employees of the courts. In this way the sample of operators would be likely to be representative of the quality of employee that the court could expect based on actual experience.

However, in fact, the personnel screening and hiring procedures did not ensure representativeness, but rather nonrepresentativeness. As indicated in the FJC report

> Nine of the fifteen had some college education: two had graduate degrees, one was close to completing a law degree, three had bachelor's degrees, and another three had associate degrees (two years of college). The remaining six had high school educations.[8]

The FJC test personnel appear substantially overqualified as compared to established guidelines for audio operators.

In discussions with the FJC it was also noted that some of the operators originally selected were quickly fired and replaced due to problems relating to their job performance. Since this action is unlikely in light of normal court personnel practices, the sample of audio operators seems even less likely to be representative of the type of operator that the court could reasonably expect.

For these obvious reasons the test personnel cannot be considered to be representative of likely future audiotape operators.

7. Ibid., p. 159.
8. Ibid., p. 28.

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When the FJC began selecting equipment for use in the test they found

> Four audiotape recorders designed specifically, but not exclusively, for court proceedings were commercially available when the study began: the Gyyr ACR-7, the Lanier Advocate II, the Sony BM-145, and the Baird MR 600/8. Of these, the first three all record onto four tracks of an audiocassette. Of the four-track recorders, the Gyyr unit has the largest number of features specified by the Administrative Office, and this unit was placed in eleven project courts.[9]

A Baird 8-track system was installed in the twelfth court.

The FJC made no attempt to ensure that the test equipment was representative of the types of equipment that a court might purchase. As a result, the test can only be considered indicative of Gyyr (and, to a limited extent, Baird) performance. To the degree that future audiotape systems may allow or include other equipment, the FJC test is obviously not representative, nor even reasonably indicative of the equipment performance that could be expected in the courts.

Personnel and equipment are two key elements in an audiotape reporting system. The critical third element is the availability of a prompt, accurate, reliable transcript service. Thus, a major question to be answered in assessing whether audiotape processes are practical in the district courts is whether such services are likely to be available, and of the services available, is the test sample representative of these in terms of quality, cost, timeliness, etc. The FJC obtained transcription services for test courts via the following process:

> . . . those transcription companies with experience transcribing court and courtlike proceedings were considered for use in the project. Names and addresses of such transcription companies (defined here to include individuals) were solicited from officials in state courts and federal agencies that use transcription services. These transcription companies were sent questionnaires inquiring about the firms' experience, production capabilities, and transcription hardware availability. The final selection of transcription companies (see appendix E) was based on company production capabilities, transcription hardware resources, and proximity to project courts.[10]

9. Ibid, p. 24
10. Ibid, p. 25

The FJC selection process yielded eight transcription services for use during the test. For unspecified reasons, one of the eight had to drop out of the test altogether, and a second reduced its participation.[11]

The procedures followed by the FJC in obtaining test transcript services raise significant questions. Since the test was to assess likely future audiotape operations, the transcription services selected should be representative of those services likely to be generally available to the district courts. However, the FJC selection procedure, as clarified in discussions with the FJC research staff,[12] was designed to guarantee that the firm selected could handle the volume, accuracy, and time demands of the study. As will be shown below, little consideration was given to proximity to the court, and as indicated by FJC staff, smaller "mom and pop" services were not even considered for selection.

Although one of the FJC selection criteria was "proximity to project courts," the actual locations of selected services do not suggest a wide general availability of transcription services. For comparison purposes, the test court and transcription services are listed below (not necessarily matched in accordance with where transcript was actually sent, i.e., Albuquerque presumably did not send transcript to Eatontown):

Courts	Services[13]
Albuquerque, NM	Eatontown, NJ
Birmingham, AL	Jackson, MI
Boston, MA	Manasquan, NJ
Brooklyn, NY	Marina del Ray, CA
Columbia, SC	Orlando, FL
Madison, WI	Rockville, MD
Opelousas, LA	Sacramento, CA
Philadelphia, PA	San Francisco, CA
San Antonio, TX	Trenton, NJ
San Francisco, CA	
Seattle, WA	
St. Louis, MO	

11. Ibid, p. 25.
12. See Section 1.3 regarding our meeting with FJC personnel.
13. Eight firms were selected, one had two offices in California.

It should be noted that test courts were located in 12 different states. Transcript services were selected in five states. In only one instance (California) was a transcript service located in a state in which there was a test court. It would seem reasonable to assume that if acceptable transcript services were available in or near each court city, they would have been used during the test. In hopes of shedding additional light on the current and future availability of quality transcription services, we attempted to obtain additional information from the FJC.[14] We specifically asked for copies of all questionnaires obtained from transcription service firms. The FJC declined to provide such materials. Based on the data in the study report we must conclude that the services utilized during the test were carefully screened and selected and are therefore not representative of likely future services. Beyond that conclusion, it is also apparent that very few quality services are available, their reliability is suspect (two of eight chose not to continue in a four-month test), and they are not necessarily located in areas well suited to serve district courts.

2.4 Transcript Page Selection

As indicated in previous sections, the FJC test courts, audiotape operators, equipment, and transcript services are not representative of likely future district court stenographic or audiotape reporting processes. Therefore, the accuracy and timeliness analysis derived from an examination of work produced by those factors cannot be empirically valid. However, even if the FJC test courts, operators, equipment, and transcript services were assumed to be representative for purposes of discussion, problems exist with the sampling methodology employed for the accuracy analyses.

Given a study of the general type framed by the FJC, in order to assess the relative accuracy of transcripts produced via the stenographic and audiotape processes, it is necessary to first draw a random probability sample of transcript pages for examination. As indicated

14. See the appendix for copies of correspondence whereby we requested additional information from the FJC.

in Section 2.1, for this sample to be representative, it must be truly random, i.e., each page of transcript prepared by the audiotape and stenographic method must have an equal chance of selection (inclusion in the sample). To the degree that any pages were not available for selection, the sample is not representative.

In drawing the sample of transcript pages for inclusion in its accuracy analyses (both overall and functionally relevant) the FJC selected only from pages produced via the audiotape method. The result of such a sampling approach is quite clear. To the degree that an audiotape system failed to record a proceeding as a result of malfunction, operator error, inability to move in-chambers or off-site, the transcript pages of such proceedings could not possibly appear in the sample used to examine system accuracy. If a ten-page proceeding were recorded stenographically but not via audiotape, the transcript of that proceeding was not part of the population from which test pages were drawn. For purposes of assessing system accuracy, those lost pages were ignored. Thus, although the FJC accuracy analyses were ultimely reduced to such a precise quantitative basis that audiotape transcript was judged correct 58% of the time and stenotranscript 42% of the time (62% vs. 38% for the functionally relevant analysis), the accuracy sample methodology was designed in a manner which made it impossible to adequately compare accuracy by excluding equipment malfunctions and breakdowns or other causes of nonreporting.

Although it is impossible from the report or from discussion with FJC staff to quantify the impact of the FJC sampling method, we can determine the instances of equipment failure or malfunction.

The following equipment breakdowns resulting in unrecorded proceedings were reported by audio operators from eight courts in which they occurred:

5 minutes missed due to an extraneous noise in the system (court A)
5 court sessions on 5 separate days missed due to a series of equipment malfunctions (court D)
3-6 minutes missed due to a malfunction of a cassette transport (court E)
1 motion missed while equipment was being serviced (court H)
12-15 minutes missed due to a power failure in the building (court J)

> one-half day missed because of a defective microphone and 2-3 minutes missed because of a defective tape (court K)
> 10 minutes of in-chambers proceedings missed, and another in-chambers session missed due to a faulty microphone jack (court L)
> three momentary interruptions in recording (court M).[15]

It would have been relatively easy to avoid such bias. Separate samples could have been drawn from the audiotape and stenographic pages produced. For example, rather than select 2,483 pages of audiotape transcript and then compare them with the matching stenographic transcript pages, 1,242 pages of audiotape transcript and 1,242 pages of stenographic transcript could have been selected. The corresponding pages of each type would then have been examined and any omissions noted and counted in the analysis.

The FJC report only provides the number of audiotape transcript pages produced during the test. In attempting to further examine this issue we asked the FJC to provide:

> . . . specific identification (and quantification) of any steno-transcript pages for which no corresponding tape transcript pages were prepared (i.e., indication of any transcripts of proceedings produced via the steno process but not via the tape process) . . . a statement regarding how the 17,815 pages of transcript which form the universe of the accuracy sample relates to total transcript production during the test period.[16]

Although this information was requested on July 21, it was not until September 14 that the FJC indicated that 800 more stenographic pages than audiotape pages were produced during the period sampled. The precise impact of such omissions by the audio systems on the accuracy findings cannot be calculated without consideration of how much weight to attach to a missing page of testimony.

Finally, as Table 4 in the FJC report indicates, the transcript sample was used to make accuracy comparisons where the production schedule for the stenographic transcript was more stringent than its audio

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15. A Comparative Evaluation, op. cit., pp. 74-75.
16. Letter; Murray Zweben to Russell Wheeler, dated July 21 (see appendix).

counterpart. In fact, approximately 16% of the total stenographic discrepancies which did not match the tape occur where the stenographic transcript was produced on a daily or hourly schedule and the comparable audio transcript was produced on an expedited or daily schedule, respectively.

Therefore, not only were the samples drawn in a manner that permits systematic bias, the analyses that were conducted ignored the obvious lack of comparability of the samples.

3.0 ANALYSIS OF FJC COSTS

3.1 General

The FJC presents a six-year cost projection comparing anticipated expenditures under audio and live reporter systems which suggests that an average audio system would cost $10,000 less than an average stenographic system during the first year of operation, with projected savings from the audio system increasing annually thereafter from over $16,000 the second year to over $20,000 the sixth year.[17] The FJC further projects that if all federal district courts utilized audio systems rather than court reporters the annual cost reduction would be on the order of $12 million.[18]

In developing cost estimates the FJC examined the following major cost components: personnel (both salary and fringe benefits); office space and furnishings; equipment; supplies; maintenance; facilities modification and equipment installation. The FJC expressly excluded costs associated with transcript production, arguing that these costs are met by the litigating parties in accordance with fees prescribed by the Judicial Conference of the United States.

In making any cost projections, it is necessary to make assumptions about future events. For example, in estimating personnel costs, assumptions must be made regarding the number of employees required and the average salary to be paid. To the degree that the underlying assumptions upon which cost projections are based are wrong, the projected totals will obviously be wrong. Thus, it is critical when preparing cost projections to exercise extreme care in formulating cost assumptions. Three related questions should be asked when determining underlying cost assumptions:

1. Is there sufficient relevant evidence to support the assumptions? All cost assumptions should be based on the best available data after careful consideration of the sufficiency and relevancy of those data to the ultimate use of the projections.

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17. A Comparative Evaluation, op. cit., pp. 65-69.
18. Ibid. p. 69.

2. Are the assumptions conservative? Because cost projections are typically used in some type of decision-making process (i.e., budgeting, investing, capital spending), the principle of conservatism should be followed. Care should be taken not to develop assumptions which are likely to result in an over-statement of potential savings.

3. Are the assumptions reasonable? Whereas question number one relates to the quantity and quality of evidence supporting the cost assumptions, a general common sense review of reasonableness should also be exercised. Cost assumptions should appear reasonable in light of all available information regarding the issue under discussion. For example, substantial data may be available which suggest that the average cost of a home computer is in the $400-$600 range. However, more detailed examination of trends in the home computer market might suggest that any future projections regarding the costs of home computers should utilize a much lower cost assumption (perhaps $200-$300), because of improving technology and industry price-cutting.

In developing their cost assumptions, the FJC had substantial data available regarding the costs of the existing stenographic reporter system. However, relatively few data were available regarding the costs of audio systems in environments similar to the federal district courts. For the most part, the FJC relied upon cost data accumulated during their test. The critical issue to be considered in evaluating these data is the relevancy or projectability of test costs to non-test situations. To a degree the FJC ackowledged this issue by including some non-test cost factors in their six-year projections.

Because the cost assumptions are absolutely critical to the FJC cost projections, and thus to the entire FJC assessment of audio/steno systems, we have examined the assumptions underlying each major cost component. The results of our examination are discussed in Sections 3.3 to 3.9.

Prior to our examination of FJC cost assumptions, however, the FJC cost comparison methodology merits discussion.

3.2 FJC's Cost Comparison Methodology

In assessing whether the federal district courts should continue with their live reporter system or adopt audio recording, the federal

courts are confronted with a capital budgeting decision. The question to be answered is which of the two alternatives is preferable.

The FJC attempts to answer this question by (1) concluding from test data that transcripts produced from audio tapes are an acceptable substitute for steno transcripts, both in terms of accuracy and timeliness, (2) estimating future costs of both steno and audio systems, and (3) concluding that audio reporting is substantially less expensive and, therefore, preferable.

In conducting their analysis, the FJC arrays cost data in three ways:

- A comparative evaluation of steno and audio system costs incurred during the test,
- A projected comparative evaluation of average annual costs for steno and audio systems, and
- A comparative six-year cost projection of steno and audio systems, showing projected expenditures in the years they are anticipated.

All three of these FJC cost presentations are inappropriate and misleading when used for making capital budgeting decisions. The first two cost presentations allocate equipment costs and facilities modification costs over the estimated useful life of the equipment, i.e., if equipment is estimated to have a purchase cost of $10,200 and a useful life of six years, then $1,700 is allocated to each of the six years and considered the average cost. From an accrual accounting perspective, this may be correct (if straight-line depreciation is assumed); it rationally allocates expenses over the periods benefiting from these expenses (estimated useful life).

Developing average costs by allocating one-sixth of equipment costs to annual operating costs ignores the fact that equipment purchase outlays are up-front cash expenditures; they are not to be spread over a six-year period. The cost impact of paying cash for equipment is considerably different from the cost impact of spreading payments over six years. The first two FJC data presentations and associated analysis ignore this issue entirely. The third FJC cost presentation

(six-year projections) does not present average costs; however, it also fails to consider the time value of money. Probably the best way to identify the problems with the FJC cost comparison analysis is to describe the proper way to perform such an effort.[19] Six steps are required:

1. Identify the spending alternatives. In this case the two alternatives have been defined as (1) continue with the current live reporter system or (2) adopt electronic recording.
2. Determine the time period affected by the decision. In this case FJC assumes a six-year useful life for electronic recording equipment, thus six years is the proper analysis period.
3. Identify the amount and timing of cash flows associated with each spending alternative. Equipment purchase is a one-time cash flow related to the electronic recording system alternative. Annual cash operating expenditures can be estimated for each spending alternative.
4. Select an appropriate interest factor for use in determining the value of money over time. In this case the estimated cost of short-term government borrowing might be most appropriate (approximately 10%).
5. Using information developed in steps 1-4, determine the net present value of the cash flows of each spending alternative. By this discounting process, both alternatives can be compared in terms of current dollars.
6. Assess the costs of the two alternatives in terms of the benefits to be derived from each.

As discussed above, in their first two cost presentations the FJC presented averaged cost data, thus ignoring steps 3-5. In their third cost presentation, the FJC properly identified cash flows but failed to discount the cash flows in order to determine comparable net present values (i.e., ignored steps 4 and 5). The effect of the FJC approach to cost analysis is to understate the impact of initial cash expenditures required for audiosystem equipment and installation.

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19. It should be noted that RPC provided a similar cost analysis in a May 1983 critical review of a GAO study of electronic recording. The international accounting firm of Coopers & Lybrand has recently produced a review of the FJC study in which a cost analysis methodology similar to RPC's is utilized.

Following a discussion of the reasonableness of the various cost assumptions used by FJC, the above six-step approach to capital spending analysis is applied to the issue of electronic recording in the federal district courts. It should provide a realistic and reasonable means for assessing the cost impact of using electronic recording in the federal district courts.

3.3 FJC Assumptions Regarding Personnel Costs

In estimating the personnel costs to be associated with the operation of audio systems in the federal district courts, the FJC:

- Assumed that the only personnel costs involved in audio system operations were the recorder operators, i.e., that no training, managerial, or administrative costs would be required;
- Calculated the percentage of time spent by audio system operators on actual reporting matters as opposed to non-reporting, deputy clerk duties (60.4%);
- Estimated the average annual salary which would be offered to audio system operators if audio operations were authorized and implemented in federal district courts ($18,944);
- Applied the percentage of time spent by test audio system operators on reporting duties to the average annual operator salary likely to be offered in order to determine average expected audio system personnel costs (.604 x $18,944 = $11,442).

In assessing the validity of the FJC's projected annual audio system personnel costs of $11,442, it is necessary to consider the three questions raised at the outset of this cost analysis:

1. Is there sufficient relevant evidence to support the cost assumptions?
2. Are the assumptions conservative?
3. Are the assumptions reasonable in light of all available data?

3.3.1 Sufficient Relevant Evidence

The FJC report provides substantial empirical data regarding the salaries of test system operators and the percent of their time devoted to reporting activities. Because the FJC judges that the audio system test produced transcripts satisfactory in terms of accuracy and timeliness, it was concluded that the approximate employee salary level utilized in

the test is suitable for future audio system operations. Therefore, the FJC has estimated that an annual salary of $18,499 will be required for audio system operators in the future.

After reviewing the FJC materials, we concur that there are sufficient relevant data to support this cost assumption. However, we are not persuaded that there are sufficient relevant data to support the FJC assumption that only 60.4% of this annual salary should be used in calculating audio system personnel costs. Although test results suggest that audio system operators spent 60.4% of their time on reporting duties and 39.6% on deputy clerk activities, the relevance of these test statistics to full-scale implementation and operation of federal district court audio systems is questionable. During the test the audio system operators were not the official reporters, the steno reporters were. Presumably this means that the audio system operators were substantially shielded from many of the non-courtroom duties of the official reporters. For example, audio system reporters did not have to handle inquiries and communications regarding current and old cases/transcripts (or tapes). Because test audio system operators were dealing with a discrete 4 month time period, they had no case backlog to require time and attention. Instead, they could concentrate all their attention on courtroom reporting and mailing those few tapes to be transcribed to the transcription services.

In a non-test situation where audio system operators essentially replace official reporters, it seems reasonable to assume that more operator (reporter) time will be required than was the case during the test. The issue is how much more time. Should 70% of annual salary be allocated? 80%? 100%? The FJC has not provided data sufficient to support any of these percentages.

3.3.2 Conservatism

A switch by the federal district courts from live reporters to audio recording systems is likely to be irrevocable. Substantial expenditures for equipment, installation, acoustical modifications, administration, and employee training will result in sunk costs likely to preclude any

reconsideration of the issue. This will undoubtedly be true regardless of the results of the switch. Thus it is imperative not to overstate the potential advantages, including cost savings, of audio systems. Rather, it is critical that any error introduced into the analysis be on the side of conservatism so that if a switch is made there is minimal risk of its turning out to be a wrong decision. It should be remembered that the issue being addressed is not the replacement of a faulty, inefficient system. The FJC has not advanced the position that the live reporter system has major problems. No data has been presented to support such a position. Discussions regarding the replacement of live reporters with audio systems have tended to focus on potential cost savings. With this scenario in mind, it would seem preferable to err on the conservative side rather than project substantial cost savings and find the savings nonexistent and the resulting services inferior.

Assuming that operator salaries will be the only personnel costs associated with audio system operations is not conservative. Nor is assuming that no more operator time will be required under full-scale operations than under a test situation in which operators do not have the responsibilities of official reporters. A more conservative, and in our opinion a more reasonable, approach would be to:

- Assume that there will be additional (non-test) personnel costs associated with training operators;
- Assume that audio system operators paid approximately 56% as much as existing steno reporters will require more supervision than did the reporters; and
- Assume that full-scale operations will require a one-to-one replacement of audio system operators for official reporters (an assumption supported by the experiences of other states, see Section 3.3.3 below).

Because the estimated annual salary of audio system operators has been established as $18,944, it is easy to calculate the effect of a one-to-one replacement of operators for reporters. Rather than allocating 60.4% of salary costs to audio system operations, the entire $18,944 is allocated.

Attaching dollar estimates to audio system training and supervision costs is more difficult, given the limited data available. Apparently the test operators each received five days of individual training in equipment operation and reporting procedures. If the same five days of training were provided to each audio system operator hired in the future, and if the trainer had an annual salary of $30,000, the cost per operator would be approximately $677 ($30,000 + 17% fringe benefits ÷ 2,080 hrs/yr x 40 hrs training).[20] Presumably there will be some turnover among audio operators, and during the six-year period covered by our cost analysis additional training will be required for new operators. Assuming one change in each operator during the six-year useful life of the average system, an additional $677 will be incurred. For purposes of our analysis, we have assumed a repeat of training costs in year 3 of system operations.

If a switch to audio recording were to occur on a large-scale basis, i.e., not on an individual court basis, these training costs would probably be lower as a result of group instruction. However, the FJC report calculates average system costs rather than full-scale implementation, apparently in contemplation of gradual conversion. Under such circumstances the above training cost estimate would be appropriate.

No data are available for estimating audio system supervision costs. The FJC assumption that no additional administration will be required does not seem reasonable. The current reporters are professional employees who assume virtually total responsibility for the production of court transcripts. The FJC has compared the proposed audio system operators with deputy clerks. If they are deputy clerk-level employees they will receive substantially less in salary and presumably require closer supervision than existing reporters. To assume that

20. The FJC report indicates that for employees hired prior to January 1, 1984, an 11.3% fringe benefit rate is appropriate, and a 17% rate for employees hired subsequently. Presumably audio system employees will be new hires. Therefore, the 17% rate is appropriate.

additional supervisory duties will be performed by existing managers is to assume that existing court administrators and supervisors are now underutilized. No data have been introduced to support this position. If we assume that one $30,000 administrator/supervisor will be required for every ten audio system operators, the annual cost per operator will be $3,510 ($30,000 + 17% benefits ÷ 10). The above changes in audio system personnel costs would result in more conservative and reasonable cost estimates.

3.3.3 . Reasonableness

We have suggested that the FJC personnel cost estimates were neither supported by sufficient relevant data nor conservative. Although applying a reasonableness test to the assumptions may seem superfluous at this point, some additional discussion is warranted. In suggesting that official live reporters can be replaced by quasi-reporter/quasi-clerks spending a portion of their time on reporter duties and a portion on clerk duties, the FJC seems to be unreasonably optimistic. The FJC has not presented any experiential data from other court systems which support such claims. We are not aware of any states that have achieved comparable savings as a result of such a switch to electronic recording. Indeed, the states cited by GAO in their study of federal court reporting did not claim they could reduce reporting man-hours by switching to audio systems. Therefore, a review of all available data suggests that the FJC assumptions are unrealistic and unreasonable.

As indicated in our discussion of conservatism, we also feel it is unreasonable to assume that no training or administrative costs will be incurred in a switch to audio systems.

3.3.4 Summary

While meticulously documented, the FJC assumptions underlying audio system personnel costs are unreasonably optimistic. Rather than assuming a per system cost of $12,735[21] we think a cost of approximately

21. 60.4% of $18,944 annual salary + 11.3% benefits.

$26,350[22] is more appropriate. In summary, it is our opinion that the FJC underestimated audio system personnel costs by more than 50%.

3.4 FJC Assumptions Regarding Office Space and Furnishings

In estimating the cost of office space required for audio system operators, the FJC assumed that:

- Each audio system operator would, on average, be allocated the same office space as a deputy clerk employed in a district court clerk's office (162 sq. feet);
- The average cost of district court office space is $9.47 per square foot; and
- 60.4% of the cost of this office space should be allocated to audio system costs.

Based on these assumptions, the FJC calculated that average office space costs associated with an audio system are approximately $927 per year.[23]

In examining the FJC office space cost assumptions in terms of the sufficiency and relevancy of supporting data, their conservatism, and their ultimate reasonableness, two major issues are raised. First, although audio system operators are to essentially perform as court reporters, the FJC projects that they will be provided approximately one-half as much office space as existing court reporters.[24] Because no data or arguments have been presented suggesting that court reporters now occupy excessive amounts of office space, it would appear that the FJC may have underestimated audio system space requirements.

The second major issue with the FJC cost assumptions relates to the use of the 60.4% allocation factor. This factor was discussed in

22. $18,944 annual salary + 17% benefits + $677 training + $3,510 administration. These personnel costs are applicable to years 1 and 3 when training occurs. During years 2, 4, 5, and 6 personnel costs are estimated to be $25,673 ($26,350 - $677).
23. 162 square feet x $9.47 per sq. ft. x .604 = $927.
24. 162 square feet vs 329 square foot average for existing reporters.

Section 3.3 regarding personnel costs, and the issues are the same for office space. Suffice to say here that a more conservative and reasonable approach would be to allocate all office space required by audio system operators to audio system costs.

In summary, it would appear more reasonable to assume that any new court reporters (operators) will occupy the office space of the old reporters they replace. Therefore, office space costs associated with an audio system should be the same as office space costs associated with a manual or stenographic system. The FJC has estimated these costs to be $2,955 per year. Based on FJC analysis with which we concur, an additional $240 per year for telephone service must be included, making a total estimated office space and furnishings expenditure of $3,195. Because we feel it is reasonable to assume that new reporters will occupy the office space of the old, we find it unnecessary to include any additional costs for furnishings. Therefore, we have excluded from our estimates $1,600 in furnishing costs which were included in the FJC analysis.

3.5 FJC Assumptions Regarding Audio Equipment and Supplies

In estimating costs associated with audio system equipment and supplies, the FJC assumed that:

- Initial equipment purchases would average $10,200 for each audio system,
- The useful life of the equipment is six years,
- Annual maintenance costs will average 12% of initial purchase cost after the first year (the first year maintenance will be covered by warranties), and
- Annual audiotape costs will average $1,050.

Based on available information, these assumptions appear reasonable.

3.6 FJC Assumptions Regarding Equipment Installation Costs

In estimating costs associated with equipment installation and facilities modification, the FJC indicates that test equipment installation costs averaged $1,000 per site. However, the FJC acknowledges that test

installations were merely temporary and estimates that permanent installations will average $3,000 per site. No basis is provided for the $3,000 estimate.

In essence, the FJC concedes that the $1,000 test installation cost is neither sufficient nor relevant for projecting future costs and suggests that $3,000 is conservative and reasonable. We are aware of no good empirical basis from which to judge the reasonableness of the $3,000 estimate. We are aware, however, that the GAO estimated an average facilities modification cost of $4,882 for carpeting alone.[25] In reviewing this estimate we suggested that additional modification, such as lowered ceilings with acoustical tile, would likely be required in some courtrooms.[26] The available literature is replete with references to the fact that poor acoustics can be a major source of problems with audio systems. It should also be noted that the FJC has not addressed the potential for major facilities modification (and corresponding expense) at multiple courtroom locations which determine that centralized recording facilities are desirable. The FJC study, although including large and small court locations, did not address multi-courtroom settings desiring to centralize recording operations.

Given the paucity of relevant data regarding equipment installation and facilities modification costs, it does not appear that the FJC estimate of $3,000 per site is adequate; nor is there available a good basis for another estimate. In light of the GAO estimate of $4,882 per site for carpeting alone and the need for conservatism in estimating costs, we suggest that $5,000 per site be assumed for the purpose of analysis.

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25. Federal Court Reporting System: Outdated and Loosely Supervised, Report to the Congress of the United States by the Comptroller General, (GAO/GGD-82-11), June 8, 1982, pp. 56-58.
26. Resource Planning Corporation, Analysis of the GAO Findings Regarding Electronic Recording in the Federal Courts, prepared for the National Shorthand Reporters Association and the United States Court Reporters Association, May 13, 1983, p. 20.

3.7 FJC Assumptions Regarding Court-Ordered Transcripts

The FJC indicates that federal judges and magistrates occasionally request typed transcripts from the official court reporters. In accordance with statutory provisions these transcripts are now provided by reporters at no charge (other than base salary).[27] Under an audio system, the courts would pay for production of these transcripts. Using 1982 data, the FJC estimates the future annual cost of such transcripts to be $272 per site per year. Given available data, these estimates appear reasonable.

3.8 RPC Cost Analysis

In Section 3.2 of this report we explained that the FJC cost comparison methodology was inappropriate for the decision under consideration. In Sections 3.3-3.7 we discussed the various cost assumptions developed and used by the FJC. We are now prepared to present a comparison of the costs of a live reporter system and the costs of an audio reporting system, using cost assumptions we believe are more realistic and reasonable than the FJC's.

The assumptions we have used in estimating the costs of an audio reporting system for a federal district court include:

- The cost of purchasing necessary equipment will be $10,200 per system (see p. 30)
- The useful life of the equipment will be six years (see p. 30)
- Annual personnel costs will be $26,350 per system for years 1 and 3 and $25,673 for years 2, 4, 5, and 6 (see p. 29)
- The cost of equipment installation and facilities modification will be $5,000 per system (see p. 31)
- Annual cost of office space and furnishings will be $3,195 per system (see p. 30)
- After the first year of operation, annual cost of equipment maintenance will be $1,224 per system (see p. 30)
- Annual cost of recording supplies will be $1,050 per system (see p. 30)

27. A Comparative Evaluation, op. cit., p. 106.

- The appropriate interest factor for net present value analysis is 10%, the approximate rate for short-term government borrowing (see p. 23).

Using the above data in conjunction with the FJC estimates of the annual operating costs of the existing live reporter system Table 1 can be constructed.

It will be noted that by replacing the FJC cost comparison methodology with an appropriate analysis technique which considers the time value of money and by making what we believe to be more reasonable and realistic cost assumptions, the net difference in cost in favor of audio recording is approximately $22,000 over six years. This average savings of approximately $3,700 per year can be contrasted with FJC's reported average annual savings of $21,900.[28] Whereas the FJC calculates that annual audio recording costs will be less than half the costs of live reporters, our calculations suggest that audio costs will be 88% of live reporter costs.

It must be emphasized that both the RPC costs and FJC costs are estimates. We have stated our underlying assumptions and explained why we believe they are more appropriate than those provided by the FJC. However, our cost estimates may include an element of error. Table 2 indicates the effect on alternative court reporting costs if our estimates are in error, assuming a 6-year useful life for equipment and, therefore, the same discount factor as in Table 1. In examining Table 2, note that live reporter system costs do not change. It is assumed that little error exists in these costs inasmuch as they are based on the FJC's review of actual cost records.

Table 2 indicates that if RPC cost estimates are 15% too low, there will be virtually no savings from a switch to electronic recording systems. If RPC's cost estimates are 15% too high, average annual savings from electronic recording can be predicted to be approximately $7,500.

28. Ibid., p. 64.

TABLE 1:
COMPARISON OF THE NET PRESENT VALUE OF LIVE REPORTING
AND AUDIO REPORTING
(Average per system costs)

Type of Cash Expensiture	Amount	Timing of Expenditure	Discount Factor*	Net Present Value: Audio Recording System	Net Present Value: Live Reporter System
Personnel (salaries & fringe benefits)					
- live reporters	$37,535	Years 1-6	4.35526	$163,475	
- audio recording					
year 1	26,350	Year 1	1.0		26,350
year 2	25,673	Year 2	.82645		21,217
year 3	26,350	Year 3	.75131		19,797
year 4	25,673	Year 4	.68301		17,535
year 5	25,673	Year 5	.62092		15,941
year 6	25,673	Year 6	.56447		14,492
Facilities and furnishings					
- office space	2,955	Years 1-6	4.35526	12,870	12,870
- telephone					
- live reporters	24	Years 1-6	4.35526	105	
- audio recording	240	Years 1-6	4.35526		1,045
Audio equipment and supplies					
- equipment	10,200	Immediate	1.0	0	10,200
- tapes	1,050	Years 1-6	4.35526	0	4,573
- maintenance					
year 1	0				
year 2	1,224	Year 2	.82645	0	1,012
year 3	1,224	Year 3	.75131	0	920
year 4	1,224	Year 4	.68301	0	836
year 5	1,224	Year 5	.62092	0	760
year 6	1,224	Year 6	.56447	0	691
Installation and facilities modifications	5,000	Immediate	1.0	0	5,000
Court-ordered transcripts	272	Years 1-6	4.35526	0	1,185
TOTAL 6-year NET PRESENT VALUES				$176,450	$154,424

*See the appendix to this report for explanation of the discount factor.

TABLE 2:

SENSITIVITY OF COST ANALYSIS TO ERRORS IN ESTIMATES

Six-Year Net Present Value (thousands)

	Costs if RPC estimates are too high by:			RPC Estimated Costs	Costs if RPC estimates are too low by:		
	15%	10%	5%		5%	10%	15%
Audio Recording System Costs	131.2	139.0	146.7	154.4	162.1	169.8	177.6
Live Reporter System Costs	176.5	176.5	176.5	176.5	176.5	176.5	176.5
Difference	45.3	37.5	30.3	22.1	14.4	6.7	1.1
Average Annual Savings From Audio Recording	7.5	6.3	5.1	3.7	2.4	1.1	.2

Irrespective of whether the FJC or RPC cost assumptions are viewed as more realistic, this analysis should clearly demonstrate the sensitivity of cost projections to changes in assumptions. Because a number of the FJC cost assumptions are not supported by substantial relevant data, are overly optimistic in claiming cost savings, and are not reasonable in light of all available information, we believe that the FJC cost analysis is substantially in error.

3.9 Benefits Associated with Costs

In Section 3.2 we defined eight steps required for a proper capital spending analysis. The eighth step was "assess the costs of the two alternatives in terms of the benefits to be derived from each." This is the one remaining step to be considered in our review of the FJC cost analysis. Whether an audio system saves an estimated $3,700 or $21,900 is meaningful only when its operational impacts are considered. The benefits of the existing stenographic system are known. The benefits of a switch to audio systems are not as clear. The FJC does not specifically address this issue. The FJC report states that audio systems will apparently provide the basis for accurate, timely transcript at reduced cost. In other words, the audio systems may perform acceptably, and cost savings will make them preferable. Based on our evaluation, it is impossible to conclude that the nonmonetary benefits of timeliness and accuracy will accrue with an audio recording system and the costs of the opposing systems are approximately equal.

APPENDIX

CORRESPONDENCE RELATING TO REQUESTS FOR ADDITIONAL STUDY DATA

1225 19th Street, N.W., Suite 650
Washington, D.C. 20036
(202) 797-1111

RESOURCE PLANNING CORPORATION

July 18, 1983

Jill Berman Wilson
Director of Research and Technology
National Shorthand Reporters Association
118 Park Street, S.E.
Vienna, VA 22180

Dear Jill,

We have completed a preliminary review of the Federal Judicial Center (FJC) report on the district court electronic recording test.* We have determined that additional information and materials from the FJC would be most helpful in our conduct of a thorough review of the study. Specifically, we would like the FJC to provide:

1. A detailed statement regarding how each of the twelve test sites were selected. For example, we would be interested in knowing which specific sites volunteered (i.e., either by name or by FJC letter A through M) and which were selected by the FJC, as well as the specific criteria used by the FJC in choosing sites. Documentation of the selection process, in the form of any correspondence between test sites and the FJC, would be helpful.

2. A detailed statement regarding transcript production during the test period. We would specifically be interested in:

   - the total number of steno transcript and tape transcript pages produced for each site, categorized by type of transcript production required (i.e., ordinary, expedited, daily, hourly)

   - specific identification (and quantification) of any steno-transcript pages for which no corresponding tape transcript pages were prepared (i.e., indication of any transcripts of proceedings produced via the steo process but not via the tape process)

   - for each transcript produced via the steno process but not the tape process, a statement of explanation

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* J. Michael Greenwood, Julie Horney, M.-Daniel Jacoubovitch, Frances D. Lowenstein, and Russell R. Wheeler, A Comparative Evaluation of Stenographic and Audiotape Methods for United States District Court Reporting, Federal Judicial Center, July 1983.

RPC

- a statement regarding how the 17,815 pages of transcript which form the universe of the accuracy sample relates to total transcript production during the test period.

3. Further analysis of transcript accuracy data, including a breakdown of errors both total and functionally relevant by site and type of transcript production required. We would also be interested in how many "functionally relevant errors" would have been identified if an error had been counted each time any panel member indicated it would "likely make a difference." In other words, how many relevant errors were reclassified based on panel discussions?

4. A list of the names and addresses of all transcript services that were approached (or sent a questionnaire) regarding possible participation in the study. We would specifically like to have copies of all questionnaires received from these services and copies of correspondence between the services and the FJC.

5. A detailed statement as to why two transcription firms withdrew from the study, including copies of correspondence between the firms and the FJC regarding the study.

6. Copies of correspondence between the FJC and equipment suppliers and local service/installation vendors.

7. A detailed statement (and copies of relevant correspondence) as to why Baird initially planned to install equipment at three sites, yet ultimately installed equipment in one.

8. A detailed statement explaining any statistical tests performed on study data.

9. Copies of all reports or other correspondence received by the FJC from site monitors.

10. A statement as to whether the tape equipment failures listed on page 114 of the report constituted the only such equipment failures identified during the study. For each failure which occurred during the test we would be interested in knowing the cause of the problem, its duration, and how it was remedied.

11. Copies of any questionnaires or other correspondence received by the FJC from participating judges or attorneys.

12. A description of training provided to tape operators. We would be particularly interested in whether training was conducted individually or in groups.

13. A further description of equipment costs which details recorder cost, duplicator costs, microphone costs, etc.

We would like all the above information and materials as soon as possible. Pending its receipt, we are proceeding with our analysis of the study. We would be happy to meet with FJC personnel to discuss the request at a mutually convenient time.

I'm sure I'll talk to you in the near future regarding the request to the FJC.

Sincerely,

Richard E. Bell

cc: Murray Zweben, Esq.
Nossaman, Guthner, Knox & Elliott

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July 21, 1983

REFER TO FILE NUMBER

N0122-000

Russell Wheeler, Deputy Director
Continuing Education and
Training Division
The Federal Judicial Center
Dolley Madison House
1520 H Street, NW
Washington, DC 20005

Dear Russ:

As you are aware, I believe, the USCRA/NSRA Task Force has contracted with Resource Planning Corporation, 1225 19th Street, NW, Washington, DC 20036, to conduct a review of the recently released report entitled "A Comparative Evaluation of Stenographic and Audiotape Methods for United States District Court Reporting." We have discussed their work previously and you had indicated that the Federal Judicial Center would be willing to provide background data, transcripts and tapes to facilitate such a review. After discussion with Richard E. Bell, project director at RPC, and the Task Force, we would like to request the following information:

1. A detailed statement regarding how each of the twelve test sites were selected. For example, we would be interested in knowing which specific sites volunteered (i.e., either by name or by FJC letter A through M) and which were selected by the FJC, as well as the specific criteria used by the FJC in choosing sites. Documentation of the selection process, in the form of any correspondence between test sites and the FJC, would be helpful.

2. A detailed statement regarding transcript production during the test period. We would specifically be interested in:

- the total number of steno transcript and tape transcript pages produced for each site, categorized by type of transcript production required (i.e., ordinary, expedited, daily, hourly)

- specific identification (and quantification) of any stenotranscript pages for which no corresponding tape transcript pages were prepared (i.e., indication of any transcripts of proceedings produced via the steno process but not via the tape process)

- for each transcript produced via the steno process but not the tape process, a statement of explanation

- a statement regarding how the 17,815 pages of transcript which form the universe of the accuracy sample relates to total transcript production during the test period.

3. Further analysis of transcript accuracy data, including a breakdown of errors both total and functionally relevant by site and type of transcript production required. We would also be interested in how many "functionally relevant errors" would have been identified if an error had been counted each time <u>any</u> panel member indicated it would "likely make a difference." In other words, how many relevent errors were reclassified based on panel discussions?

4. A list of the names and addresses of all transcript services that were approached (or sent a questionaire) regarding possible participation in the study. We would specifically like to have copies of all questionaires received from these services and copies of correspondence between the services and the FJC.

5. A detailed statement as to why two transcription firms withdrew from the study, including copies of correspondence between the firms and the FJC regarding the study.

6. Copies of correspondence between the JFC and equipment suppliers and local service/installation venders.

7. A detailed statement (and copies of relevant correspondence) as to why Baird initially planned to install equipment at three sites, yet ultimately installed equipment in one.

8. A detailed statement explaining any statistical tests performed on study data.

9. Copies of all reports or other correspondence received by the FJC from site monitors.

10. A statement as to whether the tape equipment failures listed on page 114 of the report constituted the only such equipment failures identified during the study. For each failure which occurred during the test we would be interested in knowing the cause of the problem, its duration, and how it was remedied.

11. Copies of any questionaires or other correspondence received by the FJC from participating judges or attorneys.

12. A description of training provided to tape operators. We would be particularly interested in whether training was conducted individually or in groups.

13. A further description of equipment costs which details recorder cost, duplicator costs, microphone costs, etc.

14. All the material (2483 paired transcript pages) the evaluators looked at with proofreader markings and corresponding tapes, logs and evaluation scoresheets.

15. Information as to why no transcripts were received from one of the project courts.

I believe the most efficient way to proceed, if this is acceptable to you, would be to work out the transfer of material directly with Mr. Bell at RPC. He can be reached at 797-1111. Of course, I would be happy to assist in this transfer if I can be helpful. I would appreciate knowing the timeframe for providing each of the data elements listed above, recognizing that some may be provided immediately while others may take some preparation or duplication time.

We have not detailed the specific transcripts and tapes that we would like to have, beyond those utilized in the FJC's accuracy evaluation. It is likely that we will be requesting additional transcripts and tapes at some time in the near future. As soon as we have identified which transcripts and tapes we would like, I will let you know.

Again, thank you for your cooperation and assistance. Please let me know if I can be of any assistance in the transfer of materials.

Sincerely,

Murray Zweben
of NOSSAMAN, GUTHNER, KNOX
& ELLIOTT

MZ:mrm

cc: Richard E. Bell
Resource Planning Corporation
Charles G. Hagee, NSRA
William A. McNutt, Chairman,
USCRA/NSRA Joint Task Force

THE FEDERAL JUDICIAL CENTER
DOLLEY MADISON HOUSE
1520 H STREET, N.W.
WASHINGTON, D. C. 20005

July 28, 1983

Writer's Direct Dial Number:
633-6216

Murray Zweben, Esq.,
Nossaman, Guthner, Knox & Elliott
Sixth Floor
1140 19th Street
Washington, D.C. 20038

Dear Murray:

I have your letter of July 21, and write to advise you (and, by a copy of this letter, Richard Bell of RPC) that we are proceeding with the preparation of some of the key data requested in that letter, even to the point of hiring temporary help to assist us in the preparation of these extensive files. We have also retained a local firm that will produce -- at not inconsiderable cost to the Center -- duplicates of all the tapes from which the population of transcript pages were drawn. Since the sample was drawn by page, not by transcript, these are the "corresponding tapes" referred to in your letter.

We shall be bound to require formal assurances that none of these tapes will be duplicated, that they will be used only and strictly for research purposes in conducting a review of the Center's report, and that they will be returned to the Center at a time we shall specify when transmitting them to Mr. Bell. As an attorney, you can readily appreciate the very serious problems that would occur from misuse of these audio recordings of district court proceedings, some of which involved highly sensitive testimony and issues.

We are evaluating each of the items requested in your July 21 letter, and I hope to be in touch with you shortly with a more specific response. As I know you appreciate, the totality of items you request goes beyond those listed in your February 15 letter. As you suggested, we shall also work with Mr. Bell, and I shall naturally keep you informed. I am mindful of your offer of assistance, and I appreciate it very much.

Cordially,

Russell Wheeler

cc: Mr. Bell
Mr. Hagee
Mr. McNutt

THE FEDERAL JUDICIAL CENTER
DOLLEY MADISON HOUSE
1520 H STREET, N.W.
WASHINGTON, D. C. 20005

Writer's Direct Dial Number:
633-6216

August 12, 1983

Murray Zweben, Esq.,
Nossaman, Guthner, Knox & Elliott
Sixth Floor
1140 19th Street, N.W.
Washington, D.C. 20036

Dear Murray:

This is the response to your letter of July 21 that I promised in mine of the 28th. You requested, on behalf of the Task Force for analysis by Resource Planning Corporation, various items of data and correspondence from the Center's court reporting experiment, and additional data analysis beyond that provided in the report.

I indicated that we had begun the steps necessary to provide the audiotapes from which were produced the population of transcript pages from which the sample was drawn, as well other key data. During the week of August 29, we shall begin to provide to Mr. Bell:

1. Over 800 audiotape cassettes and 15 audiotape reels. (As I indicated in my letter, we regard it as essential that, at the time of the transmission, an official of the Task Force sign an agreement, which we shall prepare, certifying that these tapes will not be duplicated, that they will be used only for purposes of analyzing the Center's report on the court reporting project, and that they will be returned to the Center at a specified time.)

2. Photocopies of the audio operators' log notes.

3. Photocopies of

(a) the audio transcript pages in the sample, in the various forms as they proceeded through the analysis, and the matched steno-based pages; (we will explain the details of these rather extensive files at the time of the transmission).

(b) the summary sheets showing the results of the expert panels' evaluations of the functional relevance of the discrepancies identified by proofreaders.

(c) the tally sheets used in the overall accuracy analysis.

4. In regard to your letter's item 8, the statistical test used on project data as reported at pages 43, 47, and 49 of the typeset edition is the standard test for the significance of a deviation of a proportion from an expected proportion. The formula is:

$$z = \frac{N\ (p-P)}{\sqrt{NP\ (1-P)}}$$

where: N is the sample size (i.e., the number of discrepancies)

p is the proportion of audio-correct renditions, and

P is the expected proportion of .5 (indicating that the proportion of audio-trancript errors is expected, by the null hypothesis, to be equal to the proportion of steno-transcript errors).

In this test, z is a critical ratio, i.e., a measure of the distance between the proportion of times that the audio-based transcript was observed to be correct and the proportion of times the audio-based transcript would be expected to be correct if there were no non-random differences between the correctness of the respective transcripts.

We realize that the information described above is not all the information requested in your letter. We firmly believe, however, after extended discussion within the Center, that the Center's report fully and adequately explains the analysis that was undertaken and that the information described above represents the information within our control and requested in the letter that will allow a full analysis of the Center's report.

As you know, the Center is bearing the costs of making this material available to the Task Force, including the retention of temporary assistance to expedite its preparation. We do not believe that it is reasonable to expect the government to bear the cost of any further material that may be provided, nor that the Center's staff should be expected to be on repeated call for further requests for information that may arise. Specifically, should the Task Force wish copies of entire transcripts, as you indicate they might in your letter, I would appreciate receiving a complete list; furthermore, we shall expect to recover the cost of the reproduction for the Treasury.

I enjoyed speaking with you today. As I said, I plan to be out of the city for the next several weeks, but I shall be in touch with my office.

Cordially,

Russell Wheeler

cc: Mr. Bell
Mr. Hagee
Mr. McNutt

RESOURCE PLANNING CORPORATION

1225 19th Street, N.W., Suite 650
Washington, D.C. 20036
(202) 797-1111

August 16, 1983

Murray Zweben, Esq.
Nossaman, Guthner, Knox & Elliott
Sixth Floor
1140 19th Street, N.W.
Washington, D.C. 20036-6699

Dear Murray:

I have just received the August 12th response of Mr. Wheeler to your July 21st request for FJC study data. I think an immediate clarification is necessary regarding the willingness of the FJC to provide materials essential to an evaluation of the FJC test of electronic recording in the federal district courts.

The validity of the FJC study conclusions are substantially a function of the validity of the test methodology and analytic procedures. In order to adequately evaluate the test methodology, procedures, and resulting conclusions, the basic underlying data requested in your July 21st letter should be examined. Perhaps I have misunderstood the FJC letter, however it appears that the FJC intends to provide only two (and portions of a third) of the fifteen items requested. Specifically, it appears that the FJC does not intend to provide these items (item numbers correspond to numbers contained in your July 21st request letter):

1. A detailed statement regarding how each of the twelve test sites were selected. For example, we would be interested in knowing which specific sites volunteered (i.e., either by name or by FJC letter A through M) and which were selected by the FJC, as well as the specific criteria used by the FJC in choosing sites. Documentation of the selection process, in the form of any correspondence between test sites and the FJC, would be helpful.

2. A detailed statement regarding transcript production during the test period. We would specifically be interested in:

   - the total number of steno transcript and tape transcript pages produced for each site, categorized by type of transcript production required (i.e., ordinary, expedited, daily, hourly)

   - specific identification (and quantification) of any steno transcript pages for which no corresponding tape transcript

RPC

pages were prepared (i.e., indication of any transcripts of proceedings produced via the steno process but not via the tape process)

   - for each transcript produced via the steno process but not the tape process, a statement of explanation

   - a statement regarding how the 17,815 pages of transcript which form the universe of the accuracy sample relates to total transcript production during the test period.

3. Further analysis of transcript accuracy data, including a breakdown of errors both total and functionally relevant by site and type of transcript production required. We would also be interested in how many "functionally relevant errors" would have been identified if an error had been counted each time any panel member indicated it would "likely make a difference." In other words, how many relevant errors were reclassified based on panel discussions? [This item may be obtainable from the materials the FJC has said it will provide].

4. A list of the names and addresses of all transcript services that were approached (or sent a questionnaire) regarding possible participation in the study. We would specifically like to have copies of all questionnaires received from these services and copies of correspondence between the services and FJC.

5. A detailed statement as to why two transcription firms withdrew from the study, including copies of correspondence between the firms and the FJC regarding the study.

6. Copies of correspondence between the FJC and equipment suppliers and local service/installation venders.

7. A detailed statement (and copies of relevant correspondence) as to why Baird initially planned to install equipment at three sites, yet ultimately installed equipment in one.

9. Copies of all reports or other correspondence received by the FJC from site monitors.

10. A statement as to whether the tape equipment failures listed on page 114 of the report constituted the only such equipment failures identified during the study. For each failure which occurred during the test we would be interested in knowing the cause of the problem, its duration, and how it was remedied.

11. Copies of any questionnaires or other correspondence received by the FJC from participating judges or attorneys.

12. A description of training provided to tape operators. We would be particularly interested in whether training was conducted individually or in groups.

13. A further description of equipment costs which details recorder cost, duplicator costs, microphone costs, etc.

15. Information as to why no transcripts were received from one of the project courts.

As I am sure Mr. Wheeler understands, to conduct an adequate scientific review of a study based on empirical data it is necessary to examine the empirical characteristics of the sample and the source data. Since the data requested in the above mentioned items form the foundation for all conclusions reached in the study, it is imperative that these data be made available. Without the opportunity to inspect the underlying data, a prudent reviewer has a responsibility to point out potential or likely methodological flaws as opposed to confirming or disconfirming the scientific rigor of the study.

All of these items should be routinely available from test working papers as a result of conventional research procedures. Aside from copying, significant additional workload should not be required to prepare or compile the data requested. Presumably NSRA is willing to reimburse the FJC for copying expenses.

Without the above items we will have to assess the FJC study methodology and procedures based solely on their published report. I would think that the FJC would want the opportunity to provide additional information relevant to the items at issue. In either case, I would appreciate prompt clarification regarding the willingness of the FJC to provide the data so that we may plan the review process.

Sincerely,

Richard E. Bell

RESOURCE PLANNING CORPORATION

1225 19th Street, N.W., Suite 650
Washington, D.C. 20036
(202) 797-1111

September 2, 1983

Mr. Russell Wheeler
The Federal Judicial Center
Dolley Madison House
1520 H Street, N.W.
Washington, DC 20005

Dear Mr. Wheeler:

We have recently received the test materials provided by your office. As you know, these items comprise only a small portion of the data and materials we have requested in order to conduct our examination of the test findings.

Inasmuch as the Federal Judicial Center has expressed reluctance in providing additional study documentation, perhaps we could meet and discuss those materials requested but not provided. A meeting to discuss such issues as test court selection and transcript sampling would undoubtedly be helpful in clarifying the FJC study methodology and procedures. Such clarification would assist us in performing an objective study evaluation, and should impose little burden on the FJC.

I look forward to hearing from you in the near future in order to arrange such a meeting.

Sincerely,

Richard E. Bell

cc: Murray Zweben, Esq.
Jill Berman Wilson

RPC

THE FEDERAL JUDICIAL CENTER
DOLLEY MADISON HOUSE
1520 H STREET, N.W.
WASHINGTON, D.C. 20005

Writer's Direct Dial Number:
633-6216

September 8, 1983

Mr. Richard E. Bell
Resource Planning Corporation
1225 19th Street, N.W.
Suite 650
Washington, D.C. 20036

Dear Rick:

I write to confirm our telephone discussion today. Gordon Bermant and I will be pleased to meet with you and Tom Florence at 10 a.m., Wednesday, September 14, in Gordon's office to discuss certain items that you have requested in connection with your review of the Center's test of audio recording.

As you know, I have yet to respond to Murray Zweben's letter of August 16, covering yours of the same date, reasserting a need for various items of information. I hope it will be possible, as you suggest, to resolve some of your queries at our discussion next Wednesday. As I indicated by phone, though, it will not be possible or even desirable to cover each item that you list in your August 16 letter. For the sake of avoiding any unnecessary confusion and to ensure a profitable meeting, I think it will be best if I prepare an agenda of topics for discussion, and, as I indicated, that we tape record the discussion for the record.

We look forward to seeing you next Wednesday.

Cordially,

Russell Wheeler
Deputy Director
Continuing Education
and Training

cc: Mr. Bermant

SURVEY OF U.S. MAGISTRATES

A Research Note
by
Jill Berman Wilson
Director of Research and Technology
National Shorthand Reporters Association

As part of the activities of the United States Court Reporters Association and National Shorthand Reporters Association Task Force on Testing Guidelines for Alternative Court Reporting Systems (hereinafter referred to as the "Task Force"), a survey of fulltime United States magistrates was conducted to determine their level of satisfaction with the tape recording and live reporting services used to preserve the record of proceedings heard by the magistrates. This report documents the findings of this survey.

BACKGROUND: Each district within the federal court system has one or more magistrates. In most jurisdictions, there is at least one fulltime magistrate and there may be as many as six fulltime magistrates with additional parttime magistrates depending upon the workload. For the most part, magistrates are charged with presiding at a number of types of proceedings, including preliminary hearings, motions, bail and bond hearings, civil and criminal trials for minor cases, and sentencing proceedings.

Until 1968, these judicial officers were called United States Commissioners. The Magistrates Act of 1968 (P.L. 90-578) created the position of United States magistrate and expanded their jurisdiction. The section of that Act dealing with minor offenses allowed for preservation of the record by a court reporter or by a suitable sound recording device. Shortly after the Act was adopted, the Administrative Office of the U.S. Courts provided tape recording devices to all magistrates and strongly encouraged their use. The Magistrates Reform Act of 1979 made no provision for the use of court reporters by magistrates. However, as a matter of general policy, attorneys or litigants could request the use of a court reporter. When one was used, in general contract reporters were brought in. Presently, however, under newly adopted management plans in most districts, district court reporters are required to report in magistrates' proceedings when they are not committed to reporting in their regular assignment. This produces constraints on the availability of court reporters for magistrates' proceedings and their ability to devote themselves to transcripts ordered from these proceedings.

The Judicial Conference of the United States is in the process of evaluating the application of tape recording systems for possible use in federal district courts for all types of cases heard. As a part of this evaluation, the Task Force felt that those within the federal system who are most familiar with the strengths and weaknesses of both tape recording and court

reportering as a means for preserving the record should have the opportunity to offer their insights in this area. It should be remembered that, in general, the level of complexity of cases heard by judges in the federal system is higher than those heard by magistrates and that the number of participants in a judge's trial is likely to be greater than in a magistrate's hearing.

METHODOLOGY: In response to the desire to tap the insights of these magistrates, a survey instrument was designed, composed of 8 questions (5 one-part questions, 2 two-part questions and one five-part question). A copy of the survey instrument is included as an attachment to this report.

On April 26, 1983, letters were sent to each of 235 fulltime U.S. Magistrates requesting their cooperation with the survey. On May 1, 1983, the survey document was sent along with a cover letter and a prepaid, self-addressed return mail envelope. Response was requested by May 31, 1983. As of June 6, 1983, 136 responses had been received, resulting in a 57.6% response rate. This response rate was deemed ample for analysis and drawing conclusions. The results which follows are based upon those 136 responses.

RESULTS: Question 1 of the survey inquired as to how often the magistrate uses a shorthand reporter to maintain the record in proceedings over which he or she presides. Question 2 (part A) querried how often a tape recorder is used in lieu of a live court reporter. The results of these questions are detailed in Chart I.

Chart I

Frequency Rate	Court Reporter Used?	Tape Recorder Used?
Never	3%	1%
Occasionally	65%	13%
Frequently	24%	39%
Always or almost always	8%	47%

It is clear from these figures that a tape recorder is used far more frequently as the sole means for preserving the record of magistrates' proceedings. However, the figures also indicate that there is sufficient use of a court reporter to offer a knowledgeable basis for comparison; only 3% indicate that they never use a court reporter and only 1% indicate that they never use a tape recorder. Therefore, the Task Force's hypothesis that

the magistrates are a primary source for enlightened evaluation of these two methods of record preservation is substantiated.

Part B of question 2 inquired as to the types of proceedings where a tape recorder is used. Four possible answers were offered and respondents were permitted to respond more than once : Arraignments and Pleas, Suppression Hearings, Other Hearings, and Other Proceedings (specify). 117 respondents indicated that they use a tape recorder for arraignments and pleas, 38 indicated they use it for suppression hearings, and 91 indicated other hearings. On the portion that requested specification, the following types of proceedings were identified:

Chart II

Type of Proceedings	Number responding
Motions	23
Bail/bond hearings	20
Preliminary hearings	19
Trials	17
Matters involving petty offenses	14
Pretrial conference	11
Discovery motions	9
All civil cases	4
Sentencing	4
Appointment of counsel	1
Grand Jury proceedings	1
All criminal cases	1

It is clear from this range of types of proceedings that the magistrates have not only the depth of experience to offer knowledgeable information about tape recording, but the breadth of experience as well.

The next set of questions dealt with the perception of the relative abilities of tape recorders and court reporters in terms of in-court performance, accuracy of transcripts, and timeliness of transcript production. In each instance, the majority of magistrates felt that the court reporter was superior in performance. The following charts indicate their responses:

Chart III

Area of performance	% favoring court reporter	% favoring tape recorder	% indicating no difference
In-court performance	70%	12%	18%
Accuracy of transcripts	67%	12%	20%
Timeliness of transcripts	57%	20%	23%

Based on these responses, the court reporter's superiority is most clearly demonstrated in the area of in-court performance, where seven of every ten magistrates felt that their ability to perform in the courtroom was significantly better than a tape recorder. Even in the area of timeliness for the production of transcript, a majority of the magistrates felt that there was enough difference in the court reporter's ability to produce transcripts on a timely basis to indicate their superiority over the alternate system. Part of the reason that reporters were rated less well on the issue of timeliness than in other areas of performance may be that most court reporters working in a magistrate's court are doing so on "borrowed" time. That is, they are doing so when the judge to whom they are regularly assigned is on leave or not conducting court that day. The transcripts resulting from their work in magistrate's proceedings must, of necessity, take second priority to the transcripts requested from their regular assignments.

The next set of questions dealt with the magistrates' feelings about the replacement of reporters by tape recorders and vice versa as well as a question on how well tape recorders, as the sole means of preserving the record in their court, would meet their needs. When asked whether they would favor tape recorders replacing reporters for all magistrates' proceedings, 84% said they would not favor a move to the exclusive use of tape recorders. However, when asked whether they would favor the exclusive use of reporters, in lieu of tape recorders, 34% -- more than a third of the respondents -- stated that they would favor the exclusive use of court reporters for their proceedings.

The last question in this group was "If you were required to use a tape recorder, in lieu of a shorthand reporter, for all types of proceedings, would it adequately serve your needs"? 58 percent of the respondents indicated that the exclusive use of a tape recorder for all proceedings would not adequately serve their needs.

The final question in the survey concerned the relative importance of various aspects of preserving the record of a court proceeding and subsequent production of transcripts. The respondents were asked to rate the relative importance of each aspect on a scale of 1 (very important) to 5 (not important). The results of that question, calculated as a percentage of those

responding to each item of the question, are as follows:

Chart IV

	(Very important) 1	2	3	4	(Not important) 5
Accuracy of transcript	96%	2%	.8%	0	.8%
Cost of transcript production	25%	27%	33%	5%	10%
Efficiency of transcript production	56%	28%	13%	.8%	2%
In-court performance	62%	23%	11%	2%	2%
Protection of litigants' rights	64%	17%	8%	4%	4%

Using the same range, the mean and median scores for each aspect were calculated and are as follows:

Chart V

Aspect	Mean Rating	Median Rating
Accuracy of transcript	1.07	1
Cost of transcript production	2.49	2
Efficiency of transcript production	1.65	1
In-court performance of reporting system	1.60	1
Protection of litigants' rights	1.55	1

Using the mean score for evaluation, it is clear that the magistrates regard the accuracy of the transcript as the single most important aspect of a court reporter's job. Following close behind that, with no significant difference among the three, are protection of the rights of the litigant, the in-court performance of the reporter, and the efficiency of the production of transcript. Trailing far behind in relative importance is the cost of preserving the record and producing a transcript.

CONCLUSIONS: From the results received, one must conclude that magistrates, based on their experience with both tape recorders and court reporters, are the most qualified judicial officers within the federal court system to comment on the relative performance of both systems. It is also clear that they deem

accuracy of the record as the most important factor and the cost of preserving that record as the least important.

Based on the responses on questions of in-court performance and accuracy and timeliness of transcripts produced (Chart III), it is obvious that the reporter is the favored method of preserving the record and producing transcripts. Relatively, the reporters received the highest level of support in the category of in-court performance, followed by accuracy of transcript and timeliness of transcript production. However, in each instance, the reporters received a majority endorsement from the magistrates responding.

Perhaps most telling among the responses was that on the question of a tape recorder's ability to meet adequately the needs of the magistrate. That aspect of adequacy is key -- the question did not query which system would best meet their needs, but rather, was a tape recorder adequate to the task. Only 42% of the respondents felt that the tape recorder was minimally adequate to meet their needs in terms of record preservation and transcript production. Therefore, it is safe to assume that if tape recorders were used in all magistrate's proceedings that more than half would not have their basic needs met.

COMMENTS: Although the survey form itself did not ask for comments from the respondents, a number did include comments. These unsolicited comments offer several interesting notes.

Survey #28: "Shorthand reporters are necessary in trials, civil and criminal, with a tape recorder as backup".

Survey #47: "I strongly support the use of court reporters in any proceedings where evidence or testimony is presented. I find tape recorders to be very unreliable. I might just as well not make any record at all as to rely on a tape recorder".

Survey #55: "The tape recorder produces a verbatim record; however, accuracy is lost in transcribing same to writing". "A tape recorded record can be produced more timely if the parties want a duplicate cassette, but not if they was a written transcript".

Survey #58: "I think replacing court reporters with tape recorders would be a judicial disaster, irrespective of the technical sophistication of the tape recorder".

Survey #65: "I very much favor the use of in-court reporters. I have great skepticism about the use of tape recorders, which I am obliged to use frequently. If they produce audible speech, they are very hard for a typist to make transcripts from because many words are inaudible and the typist, in multiparty hearings, doesn't know who is talking or cross-talking".

Survey #90: "Court reporters are far from perfect and I have noticed in recent years a disturbing decline in the general level of competency of reporters. It is only the current technical deficiencies of recording equipment that gives the average court reporter an edge, in my opinion".

Survey #103: "A court reporter is not required for preliminary criminal matters, but one is preferred for any evidentiary hearing or trial".

Survey #110: "In my capacity as United States magistrate, I seldom, if ever, use a court reporter; and we rely on our tape recording system. I believe that our tape recording system is adequate; but based upon my past experience as a trial attorney, I believe a court reporter is superior to a tape recording system. We use a court reporter in every case to be tried before a jury and, perhaps, in connection with other protracted or complicated proceedings. In my term as United State magistrate for the past ten years, I have had one jury trial in which a court reporter was utilized and otherwise, a court reporter was hardly ever used. On a rare occasion, a defendant in a felony case may request a court reporter for an arraignment; and when this occurs, a court reporter is utilized".

Survey #113: "On all felony matters (first appearances, pleas, arraignments, etc.), my secretary keeps shorthand notes to back up the tape recorder".

Magistrates' Survey Report
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page 8

Survey #118: "It is my understanding that there is presently available 'state of the art' recording equipment which is extremely accurate in recording audible voices in courtroom proceedings. This magistrate uses Lanier/Edisette recording equipment, when a court reporter is not present, which has been in use for over eight years. This equipment leaves much to be desired in terms of fidelity and accuracy and may answers are based on my experience with this equipment".

It seems that magistrates deem tape recording adequate for some of the proceedings over which they preside, and for good reason. When there is relatively little chance of a transcript being needed, which is true for many magistrate proceedings, it may be perfectly adequate to use a tape recorder to preserve the record. However, it is equally clear that the magistrates responding to this survey do not find the audio recording systems in use adequate for all proceedings, particularly when a written transcript will be needed.

Mr. KASTENMEIER. Thank you, Mr. Keane.

Let me ask you first, what does one of these CATs cost? I take it it's the reporter who buys the equipment.

Mr. KEANE. In the Federal system the reporter buys it, yes, sir.

Mr. KASTENMEIER. What does it commonly cost a reporter to buy one of these?

Mr. KEANE. There is a range of costs, depending upon the type of system you buy. A microcomputer system is as low as $7,000, up into the $60,000-plus range currently. Dick, you have one——

Mr. KASTENMEIER. Seven to sixty thousand; is that correct?

Mr. DAGDIGIAN. Mr. Chairman, the low figure is perhaps for someone who is very creative with a computer and can get into developing some of his own software. But from what is available on the market today, I think perhaps more realistically we're looking at a starting point of around $20,000—that's hardware and software. If you get into a multiple-user system, one that can accommodate a number of reporters with greater capacity, we are probably in the $45,000 to $55,000 range. Those are general figures, but I think it's in that range.

Mr. KASTENMEIER. That is a substantial investment.

Mr. Dagdigian, how many reporters are there presently in the Federal judicial system?

Mr. DAGDIGIAN. My information at the moment is 551.

Mr. KASTENMEIER. I was asking the first two witnesses how many still used handwritten notes——

Mr. DAGDIGIAN. Yes. I think there is a small number. I believe it is 10 or less in the Federal system.

Mr. KASTENMEIER. Actually, in the congressional reporting system, we still have people using handwritten stenographic notes, totally handwritten, using no stenotyping or other process.

Mr. DAGDIGIAN. Yes, I understand.

Mr. KASTENMEIER. One thing I am surprised at, Mr. Dagdigian, I must say, is that of the 10 or 11, how many of the other 540 are equipped with a CAT?

Mr. DAGDIGIAN. Our current information is that about one-third of the Federal reporting complement is using computer transcribing equipment.

Mr. KASTENMEIER. I guess what surprises me is your statement on page 7. Why would your association of reporters recommend to the administrative office that it adopt a policy of hiring only reporters who are on CAT, or willing to go on it, presumably throwing all the rest of the reporters to the wolves, particularly when the cost is so great. I can understand Mr. Keane's organization taking that position, but why would you?

Mr. DAGDIGIAN. No, sir. I hope there is not a misconception of what we are saying. We are talking about people coming on board from this point forward. We don't mean to impose something on those people who are in place and working. We encourage them, as I have been in the system for going on 18 years and made the decision in the last 2 years that that was the direction for the future. I committed myself to going that route.

What we are saying is that the court, in hiring new reporters from this point forward, should look first or should take on people and encourage people that are interested in working in the Federal court system to be working on a computer transcription system or to be capable of going on it.

Mr. KASTENMEIER. Well, this is certainly not to be critical of CAT utility, but it seems that you're taking a harsher position than any of the court organizations with respect to the employment of new court reporters who otherwise are competent; you're saying they cannot be hired unless they have access to what may be minimally, in your view, a $20,000 device. That seems to be rather restrictive in terms of labor practices, I might say, for an association presuming to represent such a group.

Mr. DAGDIGIAN. Well, I might add, sir, that certainly in my district I work side by side with many of my colleagues who are functioning in perhaps the more conventional method of dictating their work or using notereaders. I don't mean to discredit their abilities. They are doing a very capable job and they are meeting their delivery requirements. It is our feeling and intent to encourage the new people that are entering the field and entering service in the Federal courts to look in that direction, because we feel the long-term future is that way. It is an encouragement.

But by the same token, taking an individual situation in a given geographic area, where there is a qualified, capable reporter available and the district court is looking for such a reporter, we do not mean nor intend to apply a CAT policy as a hard and fast thing. I think it is a variable factor—be on CAT or be willing to go on it at such time as is feasible.

Mr. KASTENMEIER. I gather that district judges, by and large, seem to be perfectly happy with stenotype reporting in the traditional sense. The experiment or the alternative permitted under the Dole amendment, however, would you not agree, has been interpreted as not replacing any current reporters. The policy, as I

understand it, is that they may be replaced through attrition but may not be replaced by audio recording.

You are not saying that district judges are not going to fire anybody, at least that is not the policy; is that not correct? They are not going to fire any reporters and replace them with electronic devices, the taping devices, but they may replace them as the reporters who use stenotypes, retire or otherwise. Is that not their policy?

Mr. DAGDIGIAN. The term "attrition" has been used, and I think that has been the general position, yes.

Mr. KASTENMEIER. I believe you support H.R. 4450. It is a very simple bill, introduced by Mr. Rodino and Mr. Fish. Can you give us a report of what is happening over in the Senate? I am told there isn't a companion bill over there, is that right?

Mr. DAGDIGIAN. I am not aware of any activity personally.

Mr. KASTENMEIER. The CAT seems to be, as far as I can gather—and I am not very knowledgeable of this, I confess—an additional factor that has been added; that is to say, I take it that Dole and others were not really making a judgment about computer-assisted transcription or the quickness of those transcripts being available to the courts. They were looking at the question in a narrower sense, of the accuracy and cost, I guess, although you have challenged that.

I guess my question is, how does computer-assisted transcription fit in with what originally was deemed to be the focus of the Senate amendment?

Maybe I haven't phrased the question very well.

Mr. DAGDIGIAN. I'm not——

Mr. KEANE. I might be able to respond.

Mr. KASTENMEIER. Senator Dole and others, when they addressed this, did not really take into consideration computer-assisted transcription. They were looking at audiotaping versus traditional stenotype reporting and saying that the former shall be permitted as an alternative, and there was an ongoing experiment at the time, I guess, or one that was authorized. Is that not what——

Mr. KEANE. Yes. The sequence is a little different, though. Actually, Senator Dole's committee was looking at a GAO study of the court reporting system which was conducted prior to his hearing. It suggested in the long term that tape recording might be an acceptable alternative, but the study was also on the then management and utilization of the court reporting personnel in the Federal court system and some of the abuses that the GAO felt existed at the time.

Mr. KASTENMEIER. Is that study somewhat dated now that the element of computer-assisted transcription is more prominent in the configuration? Do you think we need a new study of this?

Mr. DAGDIGIAN. I think the focus of the study was a different one, sir. I believe a lot has happened in the management of court reporters in the Federal system as a result of the GAO study and Senator Dole's hearings. But the focus was really a different one.

Mr. KEANE. If I might add to that response, Mr. Chairman, Senator Dole's committee was looking at alternative forms of court reporting. The Center's study compares alternative forms of court reporting but limits it to stenographic and to audiotape. A variant of one alternative is this newly developing CAT technology, which, in

the timeframe of the study and the hearings, was less than 10 percent in the Federal system. It is now over 30 percent. So times have changed and issues have changed with them, particularly the cost-price issues, very significantly. We think the data gathered could be reanalyzed from that point of view and could be very helpful, particularly if we added to that some cost data on the transcription side versus the recording side.

Mr. KASTENMEIER. I have no doubt you are correct in that, at least I have that sense.

I would like to yield to the gentleman from Illinois, Mr. Hyde.

Mr. HYDE. Let me understand. The non-CAT system, the taping system, the audio system, involves the tape or the record somehow getting transposed into copy, and that is done by the typist listening to the tape and typing it manually right off of the tape; is that correct?

Mr. KEANE. That is correct.

Mr. HYDE. And you are saying that automatically taking the tape from the CAT and running it through a computer or word processing and producing a copy is faster, cheaper, more accurate, et cetera?

Mr. KEANE. Well, each issue has to be addressed differently. The accuracy is still on the input side, that is, what the audiotape "hears" and what the stenographer hears.

Mr. HYDE. So CAT could be inaccurate if the reporter didn't get the word, whereas the machine will have the word——

Mr. KEANE. Well, the machine may or may not have the word. The scores are very close in terms of both being more than 98 percent accurate. That's a pretty high level of accuracy. It is on the transcription side where you gain some significant benefits. One of those is that you can improve the 8 to 10 pages an hour for the stenographer, where the audiotape transcriber is listening in real time and typing perhaps 8 to 10 pages—we have no data to really know how long it takes them to type off of a tape.

My experience with typing off of tapes, in planning some large audio transcription projects, is that we doubled the time estimates because of the difficulty of understanding people. So you have accuracy here, transcription here, and then all of that affects cost in terms of turnaround time, and then the ability of the printers and other peripheral devices to be printing these things out at tremendous rates of speed while the court reporter is busy reviewing and editing.

Mr. HYDE. Do you get multiple copies from CAT? How do you do that? Do you get one copy and then you have to make additional copies, or can you get——

Mr. KEANE. There are several ways you could do that. You could run serial copies multiple ways. You could use what they call laser printers, which you can print hundreds of copies of pages per minute. A whole variety of technologies has opened up.

Let me mention to you that the CAT electronic media that is produced is very, very significant and isn't being considered here. I have a data base that I have used over the years of the White House Watergate transcripts. I can create computer-assisted indexes to all of the significant words in there. I have a search that I run that tries to get the words "FBI" or "Bureau" within 10 words

of the word "damn". Let me tell you, that reveals some very interesting conversations, but it also gets to the heart of the thousands of pages of transcript. This is a tremendous increase in my productivity as a trial lawyer, so that you have a third stream of benefit that goes beyond going from key or audiotape to paper. You have the computer media which opens up tremendous tools for productivity and increased performance time.

The acid test we use is the ability to respond to a witness in the middle of cross-examination, who changes his testimony. You need 3 or 4 seconds response time to go in and find out what that person said and how to contradict him if you're the trial laywer. The computer technology, of getting things in there quickly, is a tremendous benefit. Audiotape would add a labor step for more effort in that process.

Mr. HYDE. Is it your complaint that CAT has not been given enough opportunity to be tested by the court administrators and, therefore, is not given the consideration it deserves?

Mr. KEANE. In the picture, the windowframe of the study, they had 10 percent of the court reporters but not 10 percent of the pages were CAT-produced. They did not analyze the CAT cost because they did not analyze any transcription cost. It is our simple contention that they didn't address it——

Mr. HYDE. Your contention is the transcription costs will make the difference?

Mr. KEANE. I think it will have a material impact. I believe that it might, but I would rather look at some hard numbers to draw that conclusion.

Mr. HYDE. We don't have those, nor have we had the time to acquire them; is that it?

Mr. KEANE. I think that is a correct statement, sir.

Mr. HYDE. Mr. Dagdigian, where do you live?

Mr. DAGDIGIAN. I live in Congressman Annunzio's district, on the northwest side of the city.

Mr. HYDE. I had hoped you were my constituent. My enthusiasm has diminished for your cause now. [Laughter.]

I'm only kidding. Thank you, Mr. Chairman.

Mr. KASTENMEIER. Let me ask you, Mr. Dagdigian, just one further question—and this doesn't relate to the merits of this but just to my understanding.

We are talking about stenotype reporters in a traditional sense. In the traditional use, you are absolutely dependent on reporters, in terms of not only stenotyping but for the transcription and the printed transcripts. However, in the world of computer-assisted transcription, theoretically, as it is improved, through traditional stenotyping you could take down the notes and thereafter the courts could say "we don't need you for the transcriptions; we will take this and go to a computer and get the printouts and so forth" and they would separate you from that additional role of preparing ultimately the transcripts, which is also a source of income and an important role for reporters.

Isn't there some fear of that?

Mr. DAGDIGIAN. I think there is some concern. It is something that the court reporting field has looked at. Traditionally, it has always been the function of the court reporter to prepare the transcript and to receive income for producing it. By the same token, in doing so, he or she has assumed the expenses of doing so and providing the necessary tools and equipment.

Mr. HYDE. Mr. Chairman, excuse me, but you must certify that the transcript is an accurate transcript from your notes or your tapes, in other words.

Mr. DAGDIGIAN. Exactly.

Mr. HYDE. So if there is a disconnection, a bifurcation; you would not be able to certify.

Mr. DAGDIGIAN. You are detaching the reporter, who was there and reported, from totally reviewing that transcript. The traditional method in utilizing computer-aided transcription still is for the court reporter to make a final review, whether it is on the screen or in hard copy, to review and make any corrections and then to certify to the record.

Mr. KASTENMEIER. I am not suggesting that that is likely to happen, but in analyzing the new technology, it does in a way depersonalize it, at least in terms of the actual stenotyped information that goes down and the reduction of that information back into a transcription. I just raise the question theoretically. I don't see anything rising or challenging that immediately, but technology does some strange things sometimes. That is partly why we are here.

In any event, I do want to thank you both for enlightening the committee on the subject. Obviously, this is a matter which will command our attention, although we would be interested in what the Senate is doing about it, if anything, in terms of any possibilities of legislative activity on this question.

I should perhaps, very briefly, call upon the preceding two witnesses, Dr. Bermant and Dr. Wheeler, to come back to the witness table to comment on Mr. Keane's specific three items—if you wish to. If you have no comment, fine.

In any event, we thank you both for your testimony.

Mr. DAGDIGIAN. Thank you.

Mr. KASTENMEIER. Dr. Bermant, there were three points that I think Mr. Keane made, criticisms of the Federal Judicial Center report—the shortcomings, I think he called them.

Do you wish to respond to those, hopefully briefly?

Mr. BERMANT. Only to say, sir, that there is fundamentally nothing new there. This is virtually, without exception, material that was raised in the September report and was, we believe, responded to thoroughly in our response. There were perhaps a couple of wrinkles that might be worth responding to.

On the question of training, Mr. Keane asserts, on the basis of his experience, that it is going to be more expensive than it appears to us to be. Dr. Wheeler has recently collected some figures that shows that, indeed, it is less expensive than we estimated it to be.

Would you care to comment on that?

Mr. WHEELER. In the memorandum that was attached to our statement, Mr. Chairman, we estimated $1,000 for training over 3 years, $333 a year. The one experience we have had so far came in at less than $1000—about $800 per installation. We conceded that

it wasn't mentioned in the report, but we thought it was trivial and I think our experience to date suggests it probably is trivial.

Mr. BERMANT. The point on hidden costs of implementation, there was the major assertion, which was made in the original Coopers & Lybrand report, and here repeated by Mr. Keane, that our figure of 60.4 percent utilization of the audio operator for audio work, the remaining proportion to be used in the clerk's office is, in his view, a dangerous underestimate of the amount of time it will take the audio operator to perform audio-operating duties. Again, as we re-analyzed on the basis of the Coopers & Lybrand statement, we came to the opinion that we had probably overestimated the amount of time that it will take.

Now, there will, of course, be variability. The circumstance that Mr. Keane points to, when all five judges in a five-judge courthouse are busy, and all taking trials, those things will surely happen from time to time and it will cause dislocations in the clerk's office from time to time.

One needs only to reflect, however, that official court reporters catch cold just like everyone else. There are always dislocations in any existing system, and there will be dislocations in this one from time to time. That is not, however, a systemic problem with the implementation of this technology, the way it has been organized. There will be difficulties, surely. There are difficulties now, and there will continue to be difficulties. No system is perfect. But it is certainly an overemphasis to imagine that somehow there is built into the implementation of this system something deep and perverse that will cause a problem. It is just not there.

Mr. KASTENMEIER. May I ask you, in conclusion, since you said at the outset you had your study, the GAO study, and then your own evaluation, the Federal Judicial Center's evaluation, all of which were limited, of course, to accuracy and cost and other factors and did not necessarily reach computer-assisted transcription as the focus of the Center's study.

Do you think it would be useful or not useful to have another study, broadening it somewhat to include the emphasis given by the last two witnesses, on trying to place in perspective computer-assisted transcription, particularly since a primary witness suggested that really no new hiring should take place of reporters without computer-assisted transcription availability?

Mr. BERMANT. It is my view, Mr. Chairman, to the extent that the benefits proclaimed for CAT are real, they will be so patent that the evidence in support of them will emerge naturally over the course of the next several years. These are expensive machines. The reporters who have moved to them have deep and serious investments in them. There is no question about it, there's a lot of money at stake here in the investment in CAT. It is a serious question, no question about that.

The rates of page production per hour are not really what is at stake. I mean, you reach a point of diminishing utility. The machine prints them faster than they can be utilized, except under extreme demands of hourly or daily copy, perhaps. There will be evidence forthcoming in the nature of things. We needn't stop the clock. We needn't do anything specifically to halt the progress of anything that is going on in order to study, because those data will

be forthcoming naturally under the course of the current permissive legislation. We will inevitably, as a result of simply keeping our eyes open, be able to track the effects of increased utilization of CAT. There is nothing in the current legislation that should chill the implementation of CAT if its benefits are as great as its proponents claim. I am agnostic on that point completely.

Mr. KASTENMEIER. Well, Dr. Bermant, I appreciate your comments on that point. I do think we might want to pursue that.

Mr. BERMANT. Surely.

Mr. KASTENMEIER. To what extent that may be true or to what extent we might gain something from a specially focused study or a broadened study is something we will have to decide. In any event, I do want to thank you and Dr. Wheeler for your appearance here today.

That concludes this morning's hearings on this question, and the committee stands adjourned.

[Whereupon, at 12:07 p.m., the subcommittee was adjourned.]

APPENDIXES

APPENDIX 1

TEXT OF BILL

98TH CONGRESS
1ST SESSION

H. R. 4450

To delay the effective date of section 401(b) of the Federal Courts Improvement Act of 1982.

IN THE HOUSE OF REPRESENTATIVES

NOVEMBER 17, 1983

Mr. RODINO (for himself and Mr. FISH) introduced the following bill; which was referred to the Committee on the Judiciary

A BILL

To delay the effective date of section 401(b) of the Federal Courts Improvement Act of 1982.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 401(b) of the Federal Courts Improvement Act of 1982 is amended by striking out "one year after the effective date of this Act", and inserting in lieu thereof "January 1, 1986."

APPENDIX 2

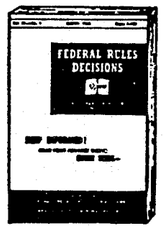
FURTHER MATERIAL SUBMITTED BY THE WITNESSES

A. BY GORDON BERMANT AND RUSSELL WHEELER

MANAGEMENT OF FEDERAL COURT REPORTERS

By

Honorable Daniel H. Huyett, 3rd



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99 Federal Rules Decisions

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MANAGEMENT OF FEDERAL COURT REPORTERS *

by

DANIEL H. HUYETT, 3RD **

It is indeed a pleasure and a privilege to speak to the Conference of Metropolitan District Chief Judges. Nothing is more enjoyable or worthwhile than a meeting of federal judges. I shall discuss court reporter problems generally and in particular the management of court reporters.

District Chief Judges have been involved with a wide variety of court reporter problems over the years—speaking to Chief Judges about court reporters is carrying coals to Newcastle. This is an area, however, which in the last year or two has undergone considerable change; the changes will continue, and court reporter problems will be with us for a long time. This is an important subject; it is timely and a worthy agenda item for this Conference.

I have been rather deeply involved in court reporter problems during the past three or four years. I am the liaison judge to the court reporters of our court, and a member of the Subcommittee on Supporting Personnel of the Judicial Conference Committee on Court Administration, which is concerned with court reporter matters. As a member of the Subcommittee I attended a fascinating meeting at Cape Cod in June of 1981 when the Subcommittee met with representatives of the General Accounting Office to discuss in detail the notable 1981 General Accounting Office Report on federal court reporters. Recently I was a member of the Advisory Committee which assisted the Administrative Office in the preparation of the Court Reporter Manual, approved by the Judicial Conference in March of this year. My courtroom in Philadelphia is the situs in the Third Circuit for the electronic recording experiment which The Federal Judicial Center is now conducting.

As many of you know, in recent years, particularly in 1982, few problems generated more emotional discussion or occupied more of the time of the Judicial Conference than court reporter problems.

Certain rather serious abuses have existed in the recent past that have been largely, but certainly not completely, eliminated. We can all agree that the efficient production of an accurate record for appeal and for the use of the trial court and the parties is essential. Personnel within a court should be effectively utilized. Good management of court reporters

* Remarks delivered at Conference of Metropolitan District Chief Judges, Carmel, California, April 7, 1983.

** United States District Judge of the Eastern District of Pennsylvania.

will save money—for example, less use of contract reporters—and we cannot overlook the need to serve the public by making certain that court reporters charge only a fair price and render good service. With proper management of court reporters, counsel will no longer be at the mercy of the court reporters in obtaining timely transcripts.

Court reporters are handsomely compensated. They receive all the usual fringe benefits of federal employees, including the annual cost-of-living pay increase. Presently the starting salary is $31,326 and there are two step increases: one to $32,902 and the other to $34,458. One step increase is for possessing the Certificate of Merit and the other is for achieving ten years of satisfactory federal service. Additional income is available from producing transcript for sale to parties, as well as other free-lance work. A court reporter in a busy court who is willing to work very hard can earn anywhere from $60,000 to $80,000 per year. Some reporters earn as much as $100,000 or even $150,000 annually.

Traditionally, federal court reporters functioned virtually without supervision. A reporter was assigned to a particular judge and was considered part of the judge's personal staff. It was the responsibility of the judge to supervise his court reporter, but few judges were familiar with the requirements of the Court Reporter Act or with the numerous regulations and directives of the Judicial Conference and the Administrative Office that were scattered all over the place. Also, court reporters operated in a dual capacity and had an inherent conflict of interest. They performed official work whenever their presence was required in the courtroom to make the official record and for this they received an annual salary, but at the same time they were permitted to charge for official transcripts and also to take on private deposition work. They were assured of their official salaries and thus there was an incentive to do private work.

The General Accounting Office, following a rather comprehensive study in 1981, found that federal court reporters were the largest group of federal employees operating virtually without supervision. The 1981 General Accounting Office Report on federal court reporters, as all of you know so well, was a stinging condemnation of the federal court reporter system.

The General Accounting Office concluded that the federal judiciary was not adequately managing federal court reporters; that the federal court reporting system was inefficient, costly, inequitable, and perhaps in the final analysis, unmanageable. The provisions of the Court Reporter Act and Judicial Conference policies and guidelines were not followed. As a result, court reporters were managing themselves for their own best interests and to the detriment of the litigants, the courts, and the public.

Specifically, the General Accounting Office found that court reporters devised many ways to overcharge litigants for transcripts, including the violation of Judicial Conference imposed maximum transcript rates and format requirements; that court reporters were engaged in activities which conflicted with federal employment, including operating private businesses out of federal courthouses and profiting by using substitutes to

do their official work; that court reporters were poorly utilized resulting in transcript backlogs, inequities in compensation, and contracting for reporting services when official reporters were available.

The General Accounting Office reviewed the work of auditors of the Administrative Office and found that in 69 percent of the district courts there was transcript overcharging. In the seven district courts studied by the General Accounting Office, there were no procedures to supervise reporters or to monitor their transcript fee charges. It was found in the case of one official court reporter that he had not personally recorded any court proceedings for at least five years. He managed a private court reporting firm and used his employees to record the proceedings for which he was responsible.

The General Accounting Office found workload imbalance and that some reporters had very light workloads while others were overburdened and thus had incurred sizeable transcript backlogs. It was found that contract reporters were utilized in some courts, even though official reporters were available.

The most dramatic recommendation of the General Accounting Office was the proposal that electronic recording systems be used as the primary court reporting method. The General Accounting Office contended that by using electronic recording of proceedings there would be a savings of approximately 10 million dollars per year. The claim was that audiotape recording would eliminate many problems resulting from two inherent weaknesses in the stenographic method: (1) the necessity for translating a court reporter's notes into an understandable form, and (2) the inability to verify transcript accuracy. There were suggestions in the report as to precisely how an electronic recording system could be implemented.

Rather swift action followed the 1981 General Accounting Office Report.

Congress enacted the Federal Courts Improvement Act of 1982; most of its provisions took effect October 1, 1982. That Act provided, among a great many other things, that during the one year period after the date of enactment (April 2, 1983), the Judicial Conference should experiment with different methods of recording court proceedings. The Act provided that electronic sound recording was a method that could be used to record proceedings, subject to regulations promulgated by the Judicial Conference and subject to the discretion and approval of the judge. The regulations that the Act authorizes the Conference to promulgate cannot take effect before one year after the effective date of the Act, and so October 1, 1983 is the earliest date that electronic recording may be utilized to produce an official court record.

As a consequence, The Federal Judicial Center has been engaged in an experiment involving electronic recording equipment. To carry out the experiment there are 12 test cites in all, at least one in all but two circuits, and a dual system of preparing the record and producing transcripts has been in effect starting last fall and continuing in most cases through March or April of this year. The Federal Judicial Center project

is under the very capable direction of J. Michael Greenwood and Gordon Bermant, assisted by a group of very competent people, particularly Julie Horney, M. Daniel Jacoubovitch, Frances D. Lowenstein, and Russell Wheeler. Early in July of this year The Federal Judicial Center will issue its report, which ultimately will be presented to the Judicial Conference for consideration and action.

In my view, The Federal Judicial Center report will be a highly significant and most valuable document. The project of the Center has been one of unprecedented proportions and involves the expenditure of a considerable sum of money as well as hundreds of hours of the time of a talented group of people at the Center. The report will be a unique contribution in an area which unfortunately has not received careful attention over the years.

In response to the General Accounting Office Report, the Judicial Conference in March, 1982, adopted a series of proposals which mandated Court Reporter Management Plans in each district court. All of you are familiar with these requirements, but let me run through them rather quickly.

The Judicial Conference provided the following:

1. Each circuit council was asked to require the district courts to develop a Court Reporter Management Plan that would provide for the day to day management and supervision of an efficient court reporting service within the court.

2. Each Plan must provide for the supervision of court reporters in their relations with litigants as specified in the Court Reporter Act, including fees, charges for transcripts, adherence to transcript format prescriptions and delivery schedules.

3. The Plan must provide that supervision shall be exercised by the clerk of the court, district court executive, judge, or other person designated by the court. It is my view that this requirement was a compromise since many believed that the court reporter supervisor should be an *outside* supervisor, *i.e.* the clerk or the district court executive and not a reporter or a committee of reporters or even a judge.

4. That reporting tasks be apportioned equitably at the same site.

5. That through scheduling, the use of contractual services be minimized.

6. Each Court Reporter Management Plan must be approved by the Judicial Council of the Circuit.

7. Production of daily and hourly transcripts should not be subsidized by the court. If extra court reporters were required to produce expedited transcripts, their fees should be paid out of the earnings derived from the higher transcript rates established by the Judicial Conference. Other court reporters may assist with the production of expedited transcripts only if they were available.

One of the most important requirements of the Judicial Conference was that each reporter must certify on each invoice that the fee charged and

the page format used conforms to the regulations of the Judicial Conference.

There were penalties for late delivery of transcripts.

The Judicial Conference made it clear that a reporter was not employed by a particular judge or part of the personal staff of an individual judge, but that a court reporter is employed by the court *en banc* and that the court *en banc* controls the assignments of the court reporter.

Court reporters were permitted thirty days sick leave per year.

I refer you to the handout that you have which contains about a dozen examples of format violations of Judicial Conference requirements.

In 1946 the Judicial Conference determined that a page of transcript shall consist of 25 lines written on paper 8½ by 11 inches in size prepared for binding on the left side, with a 1¾ margin on the left and ⅝ inch margin on the right side. Also, typing shall be 10 letters to the inch. May I also tell you that the recent action of the Judicial Conference in March of 1983 in approving the Court Reporter Manual also approved detailed page format criteria set forth in the manual and developed by a panel of judges, court reporters, and others assembled by The Federal Judicial Center last year to prepare guidelines for use in the test of electronic sound recording that I mentioned earlier. These detailed criteria are the law pertaining to format requirements for official transcripts, and of course supplement the 1946 action of the Judicial Conference.

Very few judges over the years were familiar with the 1946 Judicial Conference format requirements, and a judge could look at an official transcript and not realize that the court reporter had failed to comply with format requirements. This is the hidden problem. In other words, because a reporter receives a set fee per page of transcript, if a reporter fails to comply with page format requirements, the reporter is engaged in a very subtle form of overcharging that may never be detected without proper supervision. If, for example, the reporter on a page of transcript fails to have 25 lines per page, but has only 22, 23 or 24 lines, obviously the reporter is overcharging. If the left margin is not 1¾ inches but is 2½ or 3½ inches, and if the right margin is not ⅝ of an inch but is greater, again the reporter is overcharging. If the reporter uses a larger size type so that there are not 10 letters to the inch, the reporter is overcharging.

Early in 1982 I spent an afternoon in our clerk's office and examined transcripts produced in recent years by the official court reporters of our court, and I examined the transcripts of 17 out of the 19 full-time official court reporters on the payroll at that time. I found to my amazement that 7 of the 17 reporters were not in compliance with the page format requirements of the Judicial Conference. Among the areas of lack of compliance with format requirements among the 7 reporters were the following items:

1. A left margin greater than 1¾ inches and in the case of one reporter, consistently apparently over the years, a left margin of 3 inches.

2. Fewer than 25 lines per page; two of the reporters had as few as 22, although not on a consistent basis; others counted a page number or a heading, *e.g.* "Smith-Cross," as a line.

3. Excessive indentation of questions and answers.

4. Excessive indentation of quoted testimony.

I found that in the case of those reporters who used notereaders ofttimes a reporter charged for a full page, but because of the manner in which the notereader read the court reporter's notes, there may be as few as 3 or 4 lines on a page, or perhaps 7 or 8 lines on a page, and for this the reporter charged for a full page.

Thus, failure to follow official transcript format requirements of the Judicial Conference, as I said a moment ago, results in a subtle form of overcharging. Considering the violations that I observed in our court alone, I would estimate that the overcharging ranged from 25 to 60 percent.

Obviously, proper supervision of court reporters, plus a certification on the invoice of each court reporter that the fee charged and the page format used conform to the requirements of the Judicial Conference, will assist in solving the overcharging that some reporters have done over the years.

I do not wish to suggest of course that all reporters have overcharged over the years. The typical federal court reporter has been hard working, conscientious and honest. But there have been those who have not performed their work in that manner.

Also among the handouts that you have are an official Court Reporter Management Plan prepared by the Administrative Office; a model Court Reporter Management Plan which I have prepared; and a variety of plans from various district courts throughout the country.

The model plan of the Administrative Office is essentially a checklist and should be very helpful in the preparation of a plan. The model plan which I have prepared may be a good starting point as a form of plan and can be supplemented appropriately.

The Judicial Conference requires a court reporter supervisor for each district court, and throughout the country there are various types of court reporter supervisors. In the Northern District of Alabama the court reporter supervisor is a committee of 3 reporters. In the District of New Jersey, for example, the court reporter supervisor is the clerk plus a court reporter committee consisting of two judges, the clerk, and a court reporter. In our district, the Eastern District of Pennsylvania, the court reporter supervisor is the clerk who is given full authority to manage the court reporters, and the clerk works with a liaison judge. In the Middle District of Pennsylvania, in Delaware, and in the Western District of Pennsylvania the court reporter supervisor is the chief court reporter.

My message today, and I simply cannot emphasize this too strongly, is that in considering the role of the court reporter supervisor we are concerned with effective management concepts. Responsibility and authority should be conferred upon a single competent person. It is difficult as we all know to manage effectively with a committee. A committee is appropriate to formulate policy, but a committee is an incompetent vehicle to manage. The court reporter supervisor should be the clerk or a district executive. The court reporter supervisor should be an outside person and should not be a court reporter.

Clerks are highly trained, competent and professional administrators. It must be realized, and this is vital, that supervision of court reporters is a complex administrative task. This is particularly true because of the recently imposed detailed requirements of the Judicial Conference. The court reporters, by the nature of the system, have their self-interests—they have an inherent conflict of interest as I stated earlier, and they are motivated primarily by a desire to maximize their profits. To have a court reporter supervise other court reporters is simply poor management. A court reporter is a skilled professional in a highly specialized field, but obviously is not necessarily a trained and competent administrator.

Judges should judge—there are certain tasks that only a judge can do, and a judge should limit himself or herself to judge tasks. Judges should not perform administrative work that can be done by others, and in this case by the clerk who is a professional administrator.

I would like to discuss briefly some details of Court Reporter Management Plans.

Wherever possible, court reporters should be placed in a pool and should not be assigned exclusively to a particular judge. The pool system is the most effective method to be certain that there is an equitable distribution of the workload of the court reporters.

Court reporters should work regular hours and should be required to be in the courthouse for the same number of hours as an employee of the clerk's office. Court reporters of course should work 5 days per week. If a court reporter puts in a regular work week of approximately 40 hours and is not permitted to do private work during that period, then the court reporter should be granted some type of vacation time to compensate for the regular work week. In the Southern District of Texas, which was a pioneer in developing Court Reporter Management Plans, even before the General Accounting Report, there is an informal procedure to grant the court reporter leave in lieu of formal vacation time. The matter of leave or whatever the terminology may be is under study by the Administrative Office and ultimately will be addressed by the Judicial Conference.

In order to assure an equitable distribution of the workload of the court reporters it is necessary that there be careful record keeping and supervision of the court reporter. This is an administrative task.

The use of contract court reporters should be minimized; this will save money; this is done by competent scheduling and supervision by the court reporter supervisor.

Incompetent reporters should be weeded out; this is accomplished by proper supervision of the reporters and in this manner the incompetent reporters become known. Under the old system where a reporter was

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assigned exclusively to a particular judge it was difficult to identify and ferret out the incompetent reporter.

It is essential, and I cannot stress this too highly, when a new reporter is employed that only highly competent persons who fully meet all of the Judicial Conference requirements are employed. Reporters who use computer-aided transcription (CAT) should be preferred as well as reporters who use notereaders. Reporters who type from their own notes should never be employed, and the lowest category of those who should be considered is the reporter who dictates from his or her own notes for typing by another.

All this leads us to the development of productivity standards. A recent study discloses that to produce 1,000 pages of transcript the following labor of a reporter is required:

1. 125 hours if the reporter types from his or her own notes.
2. 59 hours if the reporter dictates for typing by another.
3. 66 hours if the reporter uses CAT.
4. 34 hours if the reporter uses highly skilled notereaders.

The most recent studies disclose that CAT costs are declining and that CAT at the present time may be more productive than even skillful use of notereaders. At least 20 percent of the federal reporters are now using CAT, and the number may be higher. Fewer and fewer reporters dictate for typing by another and virtually none of the reporters types from his or her own notes.

The development of productivity standards is a complex administrative task and can be done only by a professional, *i.e.* the clerk.

Outside private work of course should be subordinate at all times to the official work of the court reporter.

As I said earlier, the Judicial Conference at its March, 1983 meeting approved the Court Reporter Manual. The Manual satisfies the need to have in one place authoritative information to guide judges, court reporter supervisors, attorneys, and others concerning provisions of the Court Reporter Act, Judicial Conference policies, and the numerous directives and regulations of the Administrative Office. The Manual will be in your hands shortly, and I am certain will be exceedingly helpful to judges as well as to others.

The flurry of activity concerning court reporter matters in recent years—particularly the General Accounting Office Report and Judicial Conference action—has caused considerable improvement in the system since the court reporters are worried about electronic recording, and of course they want to do the best possible job to preserve their jobs. This is understandable, and there is no doubt in my mind that the system is working vastly more effectively now than it had been as recently as a year ago.

Audiotape recording is looming on the horizon. The Judicial Conference will address the use of electronic recording at its September, 1983 meeting. I believe it will be a long time before the live court reporter

disappears from the courtroom, if that ever takes place. Should the Judicial Conference authorize the regulations that will give effect to last year's statutory amendment, electronic recording still will be optional with each judge, and a judge can use it as little or as much as he or she may desire and can supplement electronic recording with a live court reporter. In other words, I perceive a rather flexible procedure for making a record in the future, and all this should save considerable money to the taxpayers, as well as result in a more accurate verbatim record.

If the Judicial Conference sanctions the use of electronic recording in the making of an official transcript, as I believe it will, those courts which adopt electronic recording in whole or in part will be faced with more complex court reporting management arrangements because some one person will spend a considerable amount of time handling the ordering and timely delivery of transcripts, billing, assuring compliance with Judicial Conference requirements and many other details required with the advent of electronic recording. Obviously the clerk is the logical person to assume these complicated tasks.

The 1981 General Accounting Office Report, notwithstanding all the emotions generated at the time, was essentially correct and has had a salutary effect. And the March, 1982 Judicial Conference action requiring Court Reporter Management Plans was a large step in the direction of improving the system. There is now in process a good faith conscientious effort to correct the abuses and deficiencies of the past, and the key to it all in my opinion is effective, competent, outside supervision of court reporters.

The federal court reporter system is in a state of change and improvement; many benefits will flow from the events of the past year or two which have focused attention on the need for more effective management and control of court reporters.

APPENDIX 3

ADDITIONAL CORRESPONDENCE

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[illegible], CALIFORNIA

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Congress of the United States
House of Representatives
Washington, D.C. 20515

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SUBCOMMITTEE ON MONOPOLIES AND COMMERCIAL LAW
ENERGY AND COMMERCE
SUBCOMMITTEE ON ENERGY CONSERVATION AND POWER
SUBCOMMITTEE ON TELECOMMUNICATIONS, CONSUMER PROTECTION, AND FINANCE

September 20, 1983

Warren E. Burger
Chief Justice of the United States
Supreme Court Building
1 First Street, N.E.
Washington, D.C. 20543

Dear Mr. Chief Justice:

I am writing to you in your capacity as Chairman of the Judicial Conference of the United States.

Last Congress, the Senate amended on the floor S.1700 to permit experimentation with new forms of court reporting in our federal courts. This amendment became law. The purpose was to provide the Judicial Conference and the Congress with information regarding utilization of alternative methods of court reporting. As pointed out on the Senate floor by the author of the amendment, Senator Howell Heflin, when he offered the amend-

> "A one-year test period with a mandatory evaluation by the Judicial Conference will provide Congress with the basis for determining what is the best system for court reporting...Congress should take care in instituting a new mechanism which has not yet been appropriately examined compared to an existing and proven system." (127 Cong. Rec. S14, 702, daily ed. Dec. 8, 1981).

It is my understanding that the Judicial Conference, based on the above mentioned law, may be considering promulgating regulations authorizing the use of sound recording in lieu of shorthand or mechanical reporting of district court proceedings. In my opinion, this may have a devastating effect on our existing and proven systems of court reporting.

We have only recently received (Aug. 1983) the Federal Judicial Center's comparative evaluation of stenographic and audiotape methods for U.S. district court reporting. As I understand the new law, experiments were to include all possible systems of recording court proceedings and producing the transcripts of those proceedings. Computer assisted transcription, which many people consider the state of the art today and possibly the wave of the future, was not even evaluated as part of the Federal Judicial Center's study, nor were any methods of producing transcripts evaluated as to their relative costs or capabilities.

As you are aware, court reporters are very sensitive to alternative methods of court reporting. In the early 70's some people believed that theirs might be a dying profession. This was not the case then nor is it now, but as Senator Heflin pointed out on the floor of the Senate when he offered his amendment, the Congress must "take care in instituting a new mechanism which has not yet been appropriately examined."

I have asked the Chairman of our Courts Subcommittee, Bob Kastenmeier, to schedule a hearing on the Federal Judicial Center's Report and related reports and other information concerning alternative methods of recording court proceedings. In addition I am requesting that the Judicial Conference delay promulgation of any regulations regarding electronic reporting until the Congress has had an opportunity to exercise its proper oversight responsibility and further examine the question.

Sincerely,

Carlos J. Moorhead

Carlos J. Moorhead
Ranking Republican
Subcommittee on Courts,
Civil Liberties and the
Administration of Justice

CJM:tm

cc: Honorable Robert W. Kastenmeier

Supreme Court of the United States
Washington, D. C. 20543

CHAMBERS OF
THE CHIEF JUSTICE

September 22, 1983

Dear Mr. Fish:

Thank you for your September 20, 1983 letter advising members of the Judicial Conference of your continuing interest in working with us to improve court reporting services. We appreciate having had your views available during our discussions of the Court Administration Committee's recommendation that each judge or magistrate be permitted to choose the means for producing a record of proceedings which he or she believes will best serve the court and the litigants.

I assure you that all Conference members share your belief that changes in court reporting procedures and technology should be carefully evaluated before they are authorized. Having carefully evaluated the Federal Judicial Center report, as well as concerns expressed about its validity, the Conference has concluded that the report is comprehensive and complete. It has also concluded that the report justifies the Court Administration Committee's recommendations. The Conference has accordingly approved the following recommendations:

1. Effective January 1, 1984, pursuant to 28 U.S.C. 753(b), individual United States district court judges may direct the use of shorthand, mechanical means, electronic sound recording, or any other suitable method, as the means of producing a verbatim record of proceedings required by law or by rule or order of the court. The judge should consider the nature of the proceedings, the availability of transcription services, and any other factors that may be relevant in determining the method to be used in producing a verbatim record that will best serve the court and the litigants.

2. Electronic sound recording equipment, for purposes of this regulation, shall be multi-channel audio equipment. This regulation shall be augmented by guidelines issued by the Director of the Administrative Office, containing technical standards for equipment and procedures for implementation.

3. In the event the need for shorthand, stenotype, or other reporter services should diminish by reason of the utilization of electronic sound recording equipment, any reduction in personnel shall, where feasible, be accomplished through attrition.

Cognizant of the importance of the functions and personnel effected by those recommendations, the Conference has also authorized a special committee composed of Conference members to monitor the implementation of regulations by the Administrative Office of the United States Court.

Just as we welcomed your views in our deliberations yesterday and today, we would invite you to continue to advise us of your concerns in this and other areas in the future.

Cordially,

Warren E. Burger

Honorable Hamilton Fish, Jr.
United States House of Representatives
Washington, D.C. 20515

DAN GLICKMAN
FOURTH DISTRICT—KANSAS

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CONGRESS OF THE UNITED STATES
HOUSE OF REPRESENTATIVES
WASHINGTON, D.C. 20515

October 7, 1983

Honorable Warren Burger
Chief Justice
United States Supreme Court
One First Street, N. E.
Washington, D. C. 20543

Dear Chief Justice Burger:

During consideration of a technical corrections bill relating to the Federal Courts Improvement Act, those of us on the House Subcommittee on Courts, Civil Liberties and Administration of Justice discussed the implementation of new rules pursuant to 28 USC 753(b) regarding alternative means of producing verbatim records of court proceedings. There was considerable concern expressed about the impact of the new rules.

During the discussion, the point was made that a special committee composed of Judicial Conference members was being set up to oversee the implementation of the rules. While I understand that appointments have recently been made (and I have no quarrel with the qualifications of the individuals who have been designated), I would like to suggest that it might be prudent to expand the Committee which has already been appointed to include some non-conference members. In light of the fact that the rules themselves had been developed by the Conference, oversight including other judges, not involved directly in the development of the rules, could add significantly to the review process and to the confidence of judges who do not serve on the Conference in the open-mindedness of that process.

Particularly in that the Subcommittee will likely be confronted again with questions relative to the implementation of these rules, I would be most interested in hearing from you in this regard.

With best regards,

Dan Glickman

Dan Glickman
MEMBER OF CONGRESS

DG:cnl

cc: Honorable Robert Kastenmeier, Chairman
Subcommittee on Courts, Civil Liberties & Administration of Justice

Supreme Court of the United States
Washington, D. C. 20543

CHAMBERS OF
THE CHIEF JUSTICE

November 15, 1983

Dear Congressman Glickman:

Thank you for your recent letter concerning the Judicial Conference's efforts to implement Congressionally mandated reforms in the provision of court reporting services. I regret having been unable to acknowledge your letter until today. Your suggestion that the special Conference committee, which was recently created, be expanded to include judges other than members of the Conference is a welcome and constructive one.

At this point, however, we are making every effort to act carefully, precisely because we are sensitive to the concerns presented to the Conference in September on behalf of court reporters. Given the nature of the concerns expressed in September, we feel that judges who are actually members of the Conference should shoulder personal responsibility for the seminal decisions being made in these early stages of reform - and report to their Conference colleagues their "hands on" experiences.

The rules you reference will be developed by the special committee, not by the Conference, and thereafter presented to the Conference for approval or revision. I know of no judge who lacks confidence in that process, and I do not believe the "open-mindedness" of the process would be questioned by objective individuals. In time I assure you that judges who are not Conference members will either be appointed to the special committee or constitute the membership of a standing committee to which the function is permanently assigned.

I appreciate your interest and encourage you to advise me of any Conference matter which is of interest to you in the future.

Cordially,

Warren E. Burger

Honorable Dan Glickman
United States House of Representatives
Rayburn House Office Building
Washington, D.C. 20515

cc: Honorable Robert W. Kastenmeier
Chairman, Subcommittee on Courts Civil
Liberties and the Administration of Justice

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October 31, 1983

RECEIVED
NOV 4 1983

Honorable Peter W. Rodino, Jr.
U.S. House of Representatives
Washington, D.C. 20515

RECEIVED
NOV 4 1983
JUDICIARY COMMITTEE

Re: Court Reporters or Tape Recorders in the United States District Courts

Dear Congressman Rodino:

I am writing to urge that you support delay of the introduction of tape recording in the U.S. District Courts in place of Certified Shorthand Reporters. Electronic recording simply will not work and I believe that the Congress should subject the matter to intensive study before any such step is taken.

As you may recall, I spent four years in the Essex County Court and the Superior Court, Law Division; one year in the Superior Court, Appellate Division and nearly eight and a half years on the U.S. District Court bench in New Jersey. I have had considerable experience with both shorthand reporters and tape recording. The latter has only a limited use in the courtroom as a basis for the preparation of transcripts.

When I was a New Jersey trial judge, I handled appeals from the municipal courts. These, for the most part, were on transcripts prepared from tape recordings. The review was supposed to be a trial de novo on the record. Several times the record was so unsatisfactory, that a full trial de novo had to be held. I also, as a federal judge,

reviewed many social security appeals prepared from tape recordings. If sufficient care were taken, these transcripts were, for the most part, satisfactory. However, for reasons which I never understood, there was undue delay in the preparation of these transcripts.

In my experience, tape recording will work only when there are no more than two parties, two attorneys and there is a person whose sole job is to monitor the recording. Tape recording works best when there is an individual who repeats into a microphone all that is said and identifies the speaker, much like a simultaneous translator. But such a system represents no saving at all.

There is no way a tape recording would have worked in some of the major, multi-party criminal and civil cases I have tried. A tape recording cannot identify speakers as does a reporter. It cannot ask for spelling and clarification. It will not take down answers by signal rather than words.

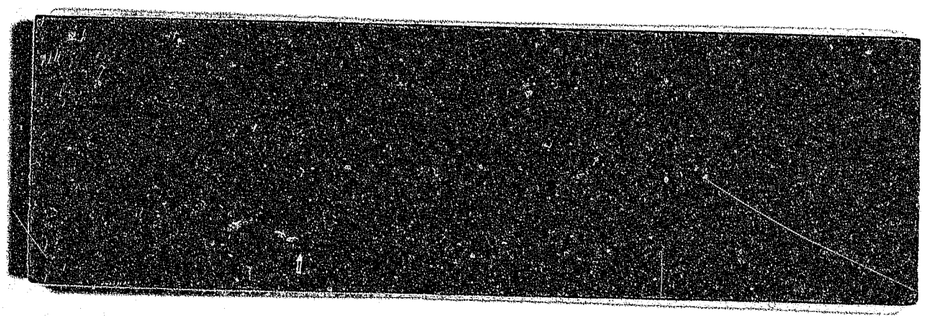
During jury trials sidebar conferences are frequent in most cases. There are two ways to handle them. One is to excuse the jury. To excuse six to sixteen people from the courtroom for a few minutes of argument and ruling is a waste of time. Most judges have a small conference outside the hearing of the jury. In federal court it was my practice to retire to a small room behind the courtroom entirely outside the presence of the jury where the court and counsel could speak in normal tones. Also, I often used this room for delicate questioning of jurors during voir dire. The reporter simply would bring his or her machine into the room and take down what transpired. That could not be done with a tape recorder.

I once tried thirty defendants simultaneously. Each defendant had an attorney and the government had two. A seating chart was prepared so that the jurors, the court, the clerk and the reporter could identify the speaker. A tape recorder could not do that.

I have listened for fifteen years to court administrators who want to eliminate the reporter. They are looking for ways of cutting the court budget. That is a laudable goal, but not at a sacrifice of the ability to decide cases fairly and justly.

I think the Congress ought to learn of the new developments in shorthand reporting and make a judgment whether they will increase

CONTINUED



Honorable Peter W. Rodino, Jr. October 31, 1983
Page 3 of 3 Pages

efficiency and cut costs. There are now electrically-operated stenographic machines. Note reading can be computerized and tailored to each individual reporter. In my opinion, new technology in conjunction with the shorthand reporter eventually will dissolve the problem.

Very truly yours,

H. CURTIS MEANOR

HCM:mls

U.S. DISTRICT COURT,
SOUTHERN DISTRICT OF NEW YORK,
New York, NY, May 18, 1984.

Hon. ROBERT W. KASTENMEIR,
Chairman, Subcommittee on Courts, Civil Liberties and the Administration of Justice, Committee on the Judiciary, Rayburn House Office Building, Washington, DC.

DEAR MR. CHAIRMAN: I understand that your subcommittee is holding hearings relating to the subject of the use of electronic recording in the federal courts.

I am Chairman of the Committee on Court Reporters in our court. As a result of my study of the report issued by the Federal Judicial Center in July 1983, I concluded that the report was deficient in certain respects. On September 19, 1983 I wrote the Judicial Center commenting in detail on these matters, and requesting that a supplement to the report be issued. I am now taking the liberty of sending you a copy of this letter with the suggestion that it be made a part of the record of your subcommittee's proceedings. I should not that the Judicial Center declined to issue the supplement.

Despite what appear to be the favorable findings in the Judicial Center report, the judges of our court are in no way satisfied that electronic recording offers a satisfactory substitute for live court reporters, or that the electronic method would be less expensive, when all of the costs of such a system are realistically assessed. Our court stands ready to participate in any program which would assist in arriving at a fair and realistic assessment of the competing methods of court reporting. We would, of course, be most happy to discuss these matters with your subcommittee or its staff at any time.

Very truly yours,

THOMAS P. GRIESA.

U.S. DISTRICT COURT,
SOUTHERN DISTRICT OF NEW YORK,
New York, NY, September 19, 1983.

Dr. RUSSELL WHEELER,
Deputy Director, Continuing Education and Training,
The Federal Judicial Center, Washington, DC.

DEAR DR. WHEELER: Thank you so much for your letter of September 9. As a result of discussions with my colleagues, I would like to reiterate the views I expressed to you over the telephone. These views are presented entirely with a wish to further the fair and objective consideration of the subject of electronic sound recording in the federal court system.

I repeat my strong recommendation that the Judicial Center should issue a supplement to its July, 1983 report on court reporting, and that this supplement should deal with the question of the cost and mechanics of obtaining transcripts. This is clearly a subject germane to the report, and indeed a most important subject. I submit that it does not belong to a separate category of "implementation" which can be considered as something apart from the matters necessary to present a complete picture in the report.

The report is a most important document. It will undoubtedly be used and referred to over the years by judges, judicial committees, the Congress, and other bodies. Under these circumstances, it seems to me important that the Center take steps to remedy a substantial omission in the coverage of the report.

In its introduction, the report notes the obvious fact that the process of court reporting involves not only the recording of proceeding in court, but also the transcription of what has been recorded. The report emphasizes that the study conducted by the Center dealt "with the full scope of court reporting functions" (p. 4).

The report does, of course, devote considerable attention to the subject of transcription. It describes the selection of certain "transcription companies" to prepare the audio-based transcripts for the study and gives the names and locations of those companies (p. 26; App. E). An important feature of the report is a comparison of transcript quality and timeliness of transcript delivery for the steno-based transcripts versus the audio-based transcripts (Chapters V and VI).

The study goes on to make an analysis of comparative costs relating to the two methods (Ch. VII). However, here the transcription phase of the process is omitted, and the cost comparisons which are given relate solely to the cost of *recording* and attendant items. There is no information or analysis about the comparative costs of transcription under the two methods. There is no comparative analysis of the *total*

cost of the court reporting process (including transcription). Such material is omitted, despite the fact that the introduction to the report states that the study dealt "with the full scope of court reporting functions."

At the opening of Chapter VII of the report, there is the following statement:

"It is important to bear in mind that the costs incurred in the actual transcription of the audiotapes, and the costs incurred by the official court reporters in preparing official transcripts, are not subject to comparison in this study. This is because costs for transcripts are met by the parties (which may in some cases be the government) according to fees prescribed by the Judicial Conference of the United States.[84]" (p. 59)

Footnote 84 states:

"84. The Conference acted pursuant to 28 U.S.C. § 753(f). For a list of the prescribed fees rates, see Administrative Office of the United States, *supra* note 22, at ch. 20, pp. 3–4.

"Observation during the course of the project does not give reason to believe that the costs incurred by the transcription companies, and by the official court reporters, to produce transcripts for this project are atypical of the costs or profits that would normally be incurred to produce transcripts."

In Chapter II there is a similar statement—that the costs analyzed in the report:

". . . do not include costs to the parties who purchase transcripts; those costs are prescribed by the Judicial Conference in terms of chargeable fees, per page, for various types of transcript." (pp. 9–10)

I would like to make two points about the disclaimers quoted above.

First, the question of the cost of transcription is just as important as the question of the cost of recording. The fact that the cost of transcripts is met by litigants surely does not render this issue irrelevant. I cannot see how either the Center, or any reader of the report, can draw a valid conclusion about the relative merits and cost efficiency of steno versus audio reporting without having information and analysis regarding cost of transcription. Thus, I find it difficult to understand how the Center could arrive at its conclusion in the report about "reduced costs" (pp. xiii, 81), and at the same time omit a comparison of transcript costs.

Second, the disclaimers do not present an accurate and complete picture. It is said that the cost of transcripts has not been a subject of the study "because" these costs are met by the parties according to fees set by the Judicial Conference. There are several problems with this statement. In the first place, the statute, even as amended, only refers by its terms to official court reporters in requiring the sale of transcripts at Judicial Conference rates. 28 U.S.C. § 753(f). Transcription companies are not covered by this portion of the statute. Even if we assume that there will be a legal requirement about rates imposed on transcription companies, the real question is whether, and to what extent, transcription services are available throughout the federal system which will in fact provide good quality and timely service at the Judicial Conference rates. I think I am not overstating it to say that there is a strong implication in the report that there is no problem in this regard. Certainly, the reader sees that there is no issue which the Center deems worthy of discussion. However, as your letter points out:

"The Center, in its study of audio recording as a possible court reporting method, did not undertake to document the availability of competent transcription services for federal courts throughout the country."

Thus there are important issues which the reader should be appraised of, but is not.

To return to footnote 84, quoted above, there is the statement:

"Observation during the course of the project does not give reason to believe that the cost incurred by the transcription companies, and by the official court reporters, to produce transcripts for this project are atypical of the costs or profits that would normally be incurred to produce transcripts."

However, the report provides no information about what costs were incurred by the transcription companies or what profits they derived from the work.

This brings me to a list of issues, which I urge should be addressed in a supplement to the report, so that readers of the report will be clearly appraised of the existence of these issues, and of the extent to which the Center does or does not have information. As I have indicated, the report as it stands, including the disclaimers on pages 9 and 59, fails to alert the reader even to the existence of the issues.

1. To what extent are transcription services available which would provide good quality and timely transcript service at Judicial Conference rates? As I understand it, the transcript companies employed in the study charged these rates, although

this is not stated in the report. Has the Center ascertained whether these companies would provide transcripts at Judicial Conference rates on a regular, volume basis? Regarding the question of the general availability of competent transcription companies throughout the country, a comparison of the list of study sites with the transcription companies used in the experiment shows that there was only one city where the study was conducted in which a transcript company was obtained in the same city—San Francisco. Does the Center have any information about the general availability of such services? I would think that, for the sake of fairness and completeness, the Judicial Center would wish to make it clear what information and analysis the Center possesses, or does not possess, on this question.

2. What is the level of skill required of a typist to take a tape from a federal court proceeding and make a transcript of it? Is the level of skill substantially different from what is required of a typist dealing with a stenotype tape? Are there differences in the difficulty of the transcribing depending upon the complexity of the court proceeding? These questions arise because, as an initial proposition, it is of course true that an audio tape is intrinsically different from a stenotype tape. If a substantially higher degree of skill, or a greater amount of manhours, is required to deal with the audio tape versus the stenotype tape, then conversion to the audio method would simply result in a transfer of skilled labor costs from the courtroom activity to the transcription process. This would mean that the saving to the federal government in court reporters' salaries would result in an increased financial burden to litigants in buying transcripts. I hasten to say that I do not in any way know that this result would occur, but the point is that there is no information or analysis in the Center's report which deals with the issue one way or the other.

3. The report discusses extensively the duties of court personnel in an audio system, principally in respect to monitoring in the courtroom. However, in subdivision (2) of the footnote to Appendix Q, there is an indication that in an audio system the court personnel would be responsible for filing tapes, duplicating tapes, and processing transcript orders. Also, at pages 80–81 there is a general admonition that only transcription services of good quality "should be employed." Does the Center have any information or analysis about the appropriate method for employing transcription companies and for dealing with them in the processing of transcription orders? Are the litigants to go out into the marketplace and make whatever arrangements, at whatever prices, they can? Or, is the court (presumably the clerk) to employ the transcription companies and handle the processing of orders? If the latter is the appropriate method, what are the burdens to the court in terms of personnel and space?

Obviously, the specific points I have just made may be incomplete and may not focus on the issues in the best possible way. However, I am confident that the question of the cost and mechanics of obtaining transcripts is a highly relevant and important one, and germane to the subjects which the report has addressed. I respectfully submit that, to ensure that the work of the Center is fair and complete, a supplement to the report should be issued dealing with this question.

Very truly yours,

THOMAS P. GRIESA.

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