A Comparative Evaluation of Stenographic and Audiotape Methods for United States District Court Reporting

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A COMPARATIVE EVALUATION OF STENOGRAPHIC AND AUDIOTAPE METHODS FOR UNITED STATES DISTRICT COURT REPORTING

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Federal Judicial Center
July 1983

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

FJC-R-83-3

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EXECUTIVE SUMMARY

This report presents the results of research undertaken for the Judicial Conference of the United States, in response to the mandate of section 401 of the Federal Courts Improvement Act of 1982 (96 Stat. 25, 56-57). Section 401 was enacted in part because of controversy over General Accounting Office assertions that electronic sound recording methods should replace stenographic methods for court reporting in United States district courts.

Background

Section 401(b) of the act directs the Conference to "experiment with the different methods of recording court proceedings" (96 Stat. 57). The purpose of the experiment was to provide the Judicial Conference with information to use in determining whether to promulgate regulations that would give effect to a prospective amendment to 28 U.S.C. § 753(b); 28 U.S.C. § 753(b) currently provides that court reporting in federal district courts may only be by "shorthand or mechanical means." The prospective amendment to 28 U.S.C. § 753(b), at 96 Stat. 56-57, would give "electronic sound recording or any other method" equal status with "shorthand [or] mechanical means" as a method of taking the record, "subject to regulations promulgated by the Judicial Conference and subject to the discretion and approval of the judge." Under section 401(b), the regulations, and thus the amendment to 28 U.S.C. § 753(b), may not take effect until October 1, 1983. The act in no way mandates that the Conference promulgate regulations; even if regulations are promulgated, use of electronic sound recording is at the discretion of the judge.

Project Design

The Federal Judicial Center, with the assistance of the Administrative Office of the United States Courts, evaluated the operation of audio recording systems in twelve district courtrooms located in

ten circuits. During the test, the stenographic reporters, as the official court reporters, took the official record and prepared transcript pursuant to statute and Judicial Conference policies; this allowed a side-by-side test of the two systems. Four-track cassette tape recorders were installed in eleven project courtrooms; an eight-track reel-to-reel recorder was installed in one courtroom. Personnel employed in the office of the clerk of court were assigned to operate the recorders, prepare logs of the proceedings, and ship the audio recordings and other materials to designated transcription companies whenever a transcript was ordered from the official court reporter.

The criteria by which the performance of the audio recording systems were evaluated follow from the legislative history of the statutory mandate: transcript accuracy, timeliness of transcript delivery, the systems' cost to the government, and the ease with which the systems were used to record proceedings in and out of the courtroom.

Transcript Accuracy

Transcript accuracy was evaluated using a stratified sample of 2,483 pages of audio-based transcript (and the matching pages from the official transcripts) drawn from a population of 17,815 transcript pages from eighty-two civil and criminal cases of varying length and complexity, including several bilingual proceedings. Discrepancies between the paired transcript pages were compared with the audiotape to determine which transcript, if either, matched the tape. This procedure was used for two separate evaluations: one evaluation—of overall accuracy—attempted to resolve all discrepancies appearing in a 680-page subsample of the 2,483-page sample; the other evaluation—of functionally relevant discrepancies—attempted to resolve only those discrepancies in the 2,483 pages that panels of judges and lawyers determined would be "likely to make a difference" in any one of several potential uses of a transcript.

The overall accuracy evaluation showed that the audio-based transcript matched the audiotape in 56 percent of the 5,717 discrepancies that did not represent discretionary deviations under project transcription guidelines. The steno-based transcript matched the tape in 36 percent of such discrepancies and neither transcript matched the tape in 3 percent of the discrepancies. The audiotape could not resolve the remaining discrepancies. When these discrepancies were analyzed by individual courts and by the production

schedules under which the transcripts were produced, the audio-based transcript continued to match the audiotape more than did the steno-based transcript. To give the benefit of the doubt to the official transcript, all discrepancies that could not be resolved because the speech was ambiguous or the tape was unintelligible were counted as "steno-based transcript correct." With this adjustment, the audio-based transcript matched the audiotape in 58 percent of the discrepancies, and the steno-based transcript matched it in 42 percent of the discrepancies, a difference that was statistically significant.

For the second accuracy analysis, legal assistants screened all the discrepancies on the 2,483 pages, to eliminate those that could not possibly make a difference if one or the other transcript were used for trial or appellate purposes. Panels of judges and lawyers reviewed the 6,781 remaining discrepancies. The panels determined that 744 of the discrepancies submitted to them "were likely to make a difference" if one or the other of them had been used in trial or on appeal. Analysis of these discrepancies showed that the audio-based transcript matched the audiotape in 62 percent of the discrepancies, and the steno-based transcript matched the audiotape in 38 percent of the discrepancies, even when all discrepancies that could not be resolved because the speech was ambiguous or the tape was unintelligible (8 percent of the discrepancies) were counted as "steno-based transcript correct." (Some panel members stressed that many discrepancies that they could not conclude were "likely to make a difference" nevertheless represented intolerable errors of any court reporting system.)

Timeliness of Transcript Delivery

The timeliness of audio-based transcript delivery was evaluated according to whether the transcription company delivered transcripts to the clerk of court within the Judicial Conference deadlines for ordinary transcript (thirty days after order), expedited transcript (seven days after order), daily transcript (prior to the normal opening hour of court the next day), and hourly transcript (within two hours of the conclusion of the morning or afternoon session). Eighty-three percent of the audio-based transcripts produced on the ordinary production schedule were delivered to the clerk of court within the ordinary transcript deadlines, and 100 percent were delivered within thirty-five days; 64 percent of the steno-based transcripts were filed with the clerk of court within thirty days, and 77 percent were filed within thirty-five days; but it

is possible that more steno-based transcripts were delivered to the parties within the deadlines than were filed with the clerk. Eighty-nine percent of the audio-based transcripts ordered for expedited production were delivered to the clerk of court within the deadline, after discounting the time for mailing to and from the transcription company.

Almost without exception, audio-based transcripts ordered for daily and hourly production were delivered to the clerk of court within the Judicial Conference deadlines. (There was no effort to compare audio-based transcript delivery with steno-based transcript delivery on any schedule but ordinary production, because records did not allow certain determination of when the transcripts were delivered to parties; there is no evidence in project files to suggest they were not delivered to the parties on time.)

Costs

The project calculated the comparative costs to the government of the audio recording and official court reporting systems; costs for almost all transcript production are met by the parties. In calculating the cost of the audio recording system, it was necessary, among other things, to distinguish the portion of the time that the equipment operator devoted to court reporting duties from the time that they spent on regular duties in the clerk's office. Based on the costs incurred during the project, and projecting other costs that could be expected in normal operations but were not encountered during the project, the average annual cost of one audio-based court reporting system in federal district court is $18,604, compared to $40,514 for a corresponding official stenographic court reporting system. Projecting those costs over six years, the average cost of an audio-based court reporting system is about $125,000, compared to $275,000 for the official court reporting system.

Ease of Use

Information from judges using the project courtrooms, audio operators, and site monitors appointed by the Center to observe the conduct of the test in each location provided bases for evaluation of the ease or difficulty with which the audio recording system was used in the court. Of the judges, eleven of twelve said that the systems did not disrupt the conduct of proceedings, and five of seven said that the audio system was generally able to provide playback

of testimony during proceedings. Audio equipment reliability was satisfactory in some 4,200 hours of proceedings recorded in this study, but some equipment breakdowns occurred and six operators reported varying instances of relatively brief equipment failure. Two other operators reported equipment malfunctions that led to more serious problems, one of a half a day, the other on five separate days. Had the audio recording system been the official system, remedying the failures would have caused delays in the proceedings until the backup system could be activated. (Although backup systems were included in the cost projections for permanent installations, such backup systems were not purchased for the experiment.)

Other Comments

The last chapter of the report includes several observations about advisable steps for the federal courts to take were audio recording to be sanctioned as an official court reporting method. These steps include ensuring overall management of the court reporting function, reliable transcription service selection, and adequate operator training.

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.

ACKNOWLEDGMENTS

We are grateful to the judges in whose courtrooms the audio equipment used in this project was installed and to the clerks of court in the United States district courts in which those courtrooms are located. Although most of the judges came to the opinion that the audiotape equipment in their courtrooms neither affected the manner in which they conducted proceedings nor detracted from courtroom decorum, they had no way of knowing that this would be the case when they joined the project; obviously, the project could not have been carried out without their interest and participation. For the clerks of court, participation involved execution of new managerial activities, as well as commitment of personal and staff resources; the project could not have been completed had it not been for their initiative and competence.

Many people other than those at the Federal Judicial Center contributed to the initial design and refinement of the study. We are particularly grateful to Chief Judge Levin H. Campbell and United States District Court Judges Daniel H. Huyett, 3rd and Walter T. McGovern of the Judicial Conference Subcommittee on Supporting Personnel for their participation and assistance in several phases of the project. Many trial attorneys and federal judges, identified in appendix O, gave generously of their time and expertise to participate in the evaluation of transcripts produced during the course of the study.

Attorney Matthew L. Myers, United States District Court Judge Robert E. Keeton, and United States Circuit Court Judge Edward R. Becker contributed to the development and refinement of procedures used in the study's analysis of functional relevance of discrepancies between transcripts.

The *Audio Operator Manual* used in the training of court personnel assigned to courtroom recording duties could not have been written without the contributions of Amber Whitsett, Carolyn Embrey, and Nancy Farley; nor could the personnel have learned the procedures it set forth without the training provided by Embrey, Whitsett, and Tom Fillebrown.

Werner Janney's devotion to accuracy and precision facilitated development of the study's evaluation of overall transcript accura-

Acknowledgments

cy. Five legal assistants performed numerous tasks, including the summaries of the district court cases used by the expert panels. Production of the report manuscript in time for an initial distribution to the Judicial Conference Committee on Administration would have been impossible without the typing of Myrna Brantley and the editing of Helen Moriarty. The study was conducted within the Federal Judicial Center's Innovations and Systems Development Division, but many others at the Center and the Administrative Office of the United States Courts contributed to the design or execution of the project. These persons are too numerous to list in full, although special mention is due Gordon Bermant, director of the Innovations and Systems Development Division, who conceived its broad outlines and contributed to its conceptualization and continuing development.

I. INTRODUCTION

The Federal Judicial Center, assisted by the Administrative Office of the United States Courts, has executed for the Judicial Conference of the United States the statutory directive that the Conference "experiment with the different methods of recording court proceedings."[1] This report describes the research that was undertaken in fulfillment of that directive and presents its outcomes.

Statutory Authority for the Study

The statutory mandate for this research is found in the Federal Courts Improvement Act of 1982, signed by the president on April 2, 1982. The effective date of the act was October 1, 1982, except for section 401(a).[2] Section 401(a) is a prospective amendment to 28 U.S.C. § 753(b); 28 U.S.C. § 753(b) currently provides that court reporting in federal district courts may only be by "shorthand or by mechanical means" (augmented at the discretion of the court reporter with the reporter's electronic sound recording equipment). Section 401(a) would give "electronic sound recording or any other method" equal status with "shorthand [or] mechanical means" as a method of taking the record in United States district courts, "subject to regulations promulgated by the Judicial Conference and subject to the discretion and approval of the judge." (The phrase, "mechanical means," refers in practice to a stenotype machine.) The Conference's regulations are to "prescribe the types of electronic sound recording or other means which may be used."

Section 401(b), however, stays the effective date of section 401(a) until the effective date of the Judicial Conference regulations authorized by section 401(a) and provides that the effective date shall not occur prior to October 1, 1983. Section 401(b) furthermore provides that "[d]uring the one-year period after the date of the enactment of this Act, the Judicial Conference shall experiment with

1. Federal Courts Improvement Act of 1982, Pub. L. No. 97-164, § 401(b), 96 Stat. 25, 57 (1982).
2. *Id.* at § 402, 96 Stat. 25, 57 (1982).

the different methods of recording court proceedings." The act does not mandate that the Conference promulgate the regulations that the act authorizes; it does not specify the date on which the regulations are to take effect, except that it shall not be prior to October 1, 1983; and it does not mandate, and does not permit the Judicial Conference to mandate, that district judges use electronic sound recording as a court reporting method. Finally, section 401(b) makes clear that unless and until the regulations take effect, the amendment to 28 U.S.C. § 753(b) has no force. (See appendix A for the full text of 28 U.S.C. § 753(b) and for section 401 of the Federal Courts Improvement Act of 1982.)

The research mandated in section 401(b) and presented in this report is to aid the Judicial Conference in determining whether to promulgate regulations that would give effect to section 401(a).

Background of Section 401

Section 401 of the Federal Courts Improvement Act stems from June 1981 hearings on federal court reporting before the Senate Judiciary Subcommittee on Courts, chaired by Senator Robert Dole.[3] One impetus for those hearings was a General Accounting Office (GAO) study of federal court reporting.[4] William J. Anderson, director of GAO's General Government Division, told the subcommittee that[5]

> we 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.

Other witnesses took strong exception to this point of view. For example, Richard H. Dagdigian, then immediate past president of the United States Court Reporters Association, said:

> we respectfully submit that this subcommittee should dismiss out of hand any proposal that live court reporters be replaced in the U.S. district courts by any electronic recording system . . . .[6]

3. *Improvements in Federal Court Reporting Procedures: Hearings Before the Subcomm. on Courts of the Senate Comm. on the Judiciary,* 97th Cong., 1st Sess. (1981) [hereinafter cited as *Hearings*].
4. The report of that study was subsequently published as General Accounting Office, Federal Court Reporting System: Outdated and Loosely Supervised (1982).
5. *Hearings, supra* note 3, at 13.
6. *Id.* at 54.

Mr. Dagdigian also urged greater use of computer-aided transcription systems.[7] His prepared statement quoted from letters that United States district judges had sent to Chairman Dole and the subcommittee members, objecting to the substitution of live reporters by electronic sound recording. One wrote, for example,

> that any form of electronic sound recording will not adequately replace the live reporter. Great delay, confusion, and expense have been caused by the dependence on recording devices alone.
>
> If the expense of live reporters is a problem, it would appear that only a few mistrials, retrials, or insufficient appellate records would also be a very large expense, to say nothing of justice delayed.[8]

In November 1981, the Senate Judiciary Committee reported out S. 1700. Section 401 of that bill included the amendments to 28 U.S.C. § 753(b) as described above, but did not include section 401(b) as enacted, which directs experimentation and delays the effective date of amended section 753(b) until the effective date of Judicial Conference regulations.[9] Senator Howell Heflin introduced section 401(b) (as eventually enacted) on December 8, 1981. He said:

> 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. 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.[10]

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.[11]

7. *Id.*
8. *Id.* at 90-91, quoting from letter by Honorable Walter Nixon, United States District Court, Southern District of Mississippi.
9. S. 1700, 97th Cong., 1st Sess., § 401, 127 Cong. Rec. S11,077 (daily ed. Oct. 5, 1981).
10. 127 Cong. Rec. S14,702 (daily ed. Dec. 8, 1981).
11. 127 Cong. Rec. S14,694 (daily ed. Dec. 8, 1981).

Study Objectives and Limitations

The principal objectives of this study were to assess electronic sound recording and to provide the Judicial Conference with information to help it in deciding whether to promulgate the regulations that would give effect to the statutory amendment to the federal court reporting statute.[12]

The Center met this objective by placing audio recording systems in twelve courtrooms of United States district courts, located in ten of the twelve circuits, to operate from the fall of 1982 through the spring of 1983. As described fully in the chapters that follow, the Center compared the audio recording systems with the official reporting systems (i.e., stenographic) in those twelve courts as to their ability to produce records and transcripts.

The statute's reference to different methods of "recording court proceedings"[13] requires some explanation. Section 753(b) of Title 28 currently requires a court reporter to "record [proceedings] verbatim by shorthand or by mechanical means." As amended by section 401(a) of the Federal Courts Improvement Act, the law would require proceedings to "be recorded verbatim by shorthand, mechanical means, electronic sound recording, or any other method." Following this terminology, Congress 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.

The statute directs experimentation with what it calls "the different methods of recording court proceedings," and its prospective amendment to 28 U.S.C. § 753(b) would broaden the authorized reporting methods to include "electronic sound recording or any other method."[14] This study, however, only tested electronic sound recording systems (also called ESR, ER, and audiotape recording). The decision to do so was based on several factors. The most important was that electronic sound recording was the most prominent alternative method discussed during the legislative debate, for it appears to be the most feasible alternative to the use of stenotype reporters, be they assisted by computers for transcription or by

12. *See supra* pp. 1-2.
13. Federal Courts Improvement Act of 1982 § 401(b).
14. Federal Courts Improvement Act of 1982, Pub. L. No. 97-164, § 401(a), 96 Stat. 25, 56 (1982).

various stenomask or voicewriting devices. The need to limit the experiment was heightened by the relatively short time available, given that the Judicial Conference might wish information in time to allow it to promulgate regulations to take effect on or shortly after October 1, 1983. Of course, focusing the experiment does not preclude evaluation of other technologies or approaches in the future.

The study was limited in other ways. It did not include, for example, an analysis of the possible advantages of the use of audiotape as a substitute for written transcript for official or other purposes. Also, it did not consider the feasibility or cost of specialized transcript editing to reduce its bulk when it is submitted as part of the record on appeal. Nor did the study investigate the benefits and costs of centralized audio recording systems, in which two or more courtrooms are connected to a central bank of recording and monitoring equipment. Moreover, it did not deal in any way with some of the subjects in the General Accounting Office report,[15] nor did it evaluate the effectiveness of electronic sound recording (or any other method) for recording depositions or other evidentiary matters, such as wiretaps.

Organization and Development of the Project

This study was primarily the responsibility of the Division of Innovations and Systems Development of the Federal Judicial Center. The project received technical assistance and financial support from the Administrative Office of the United States Courts. The project's basic design was coordinated by the Federal Judicial Center-Administrative Office Joint Development Planning Committee, which deals with the work of the Center and the Administrative Office in developing technological applications. On May 27, 1982, the directors of the Center and the Administrative Office approved the basic project design and agreed to an allocation of responsibility for project funding over fiscal 1982 and 1983. Under the agreement, the Administrative Office met the costs for recording equipment and temporary district court personnel to serve as audio operators; the Center met most other costs.

On June 14, 1982, the Center distributed a plan for the conduct of the experiment to parties who had expressed an interest in the experiment, including the Task Force on Testing Guidelines for Alternative Court Reporting Systems, appointed jointly by the United

15. General Accounting Office, *supra* note 4. The report dealt also with management and supervision of court reporters, for example.

States Court Reporters Association and the National Shorthand Reporters Association. This task force was created to monitor research conducted pursuant to the legislation.[16] On September 9, 1982, the Center distributed amendments to the June 14 plan, prepared in part in response to comments received. On November 19, 1982, the Center released a revised version of the plan, incorporating the September 9 amendments and others. (See appendix B for the November 19 plan.)

16. Federal Courts Improvement Act of 1982 § 402.

II. EVALUATION CRITERIA

The criteria by which electronic sound recording was evaluated in this study were derived from the legislative history of the statutory mandate for the research. Senator Dole concisely stated those criteria in his opening statement to the June 26, 1981, hearings on federal court reporting before the Subcommittee on Courts of the Senate Committee on the Judiciary:

> The objective of the recording operation should be to provide for the accurate recording of all proceedings required by law, rule, or policy at the lowest reasonable cost and without delaying or interrupting the proceeding.
>
> The objective of the transcription operation should be to assure the production of an accurate transcript or reproduction of the record, if one is required, within the shortest feasible time limits and at the lowest reasonable cost.[17]

The evaluation applied four criteria, which follow from Senator Dole's statement, to the performance of audiotape recording of district court proceedings: transcript quality, timeliness of transcript delivery, system operating costs, and ease of use.

Transcript Quality

The statute, currently and in its prospective amendment, specifies that proceedings in the district court "shall be recorded verbatim."[18] Official court reporters differ about questions such as the appropriateness of correcting obvious grammatical errors or slips of the tongue. The dictionary standard of verbatim is "word for word,"[19] and that standard has provided the criterion used in this

17. *Hearings, supra* note 3, at 2.

18. 28 U.S.C. § 753(b); Federal Courts Improvement Act of 1982 § 401(a).

19. Webster's New Collegiate Dictionary. Court decisions make it clear that the reporter must record what is actually said in the courtroom as contrasted, for example, with copying a standard jury charge from which the judge delivered the oral charge. United States v. Taylor, 607 F.2d 153 (5th Cir. 1979); United States v. Perkins, 498 F.2d 1054 (D.C. Cir. 1974). But the cases do not deal with the propriety of correcting grammar or with the ambiguities at the margin of the definition of verbatim.

There has also been litigation about what portions of proceedings must be record-

evaluation. Nevertheless, some room for ambiguity remains when witnesses use verbal tics such as the first two words in "I, I . . . What I meant to say . . . ." The standards of transcript accuracy that were used in the study are discussed in chapter 5.

The statute further specifies the situations in which transcripts are to be produced from the record and states that the certified transcript "shall be deemed prima facie a correct statement of the testimony taken and the proceedings had."[20]

Thus, the statute calls for a "verbatim record" and for a transcript that is "a correct statement" of both the testimony and of other aspects of the proceedings. It is thus beyond question that an accurate transcript is essential, and the study was intended to determine if transcripts produced exclusively from audiotapes are accurate. The basic objective is captured by the following quotation from Judge Levin H. Campbell, currently chief judge of the First Circuit Court of Appeals and former chairman of the Judicial Conference Subcommittee on Supporting Personnel, in a November 30, 1981, letter to William J. Anderson of the GAO:

> 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.[21]

The study's commitment to evaluate the accuracy of transcripts did not carry with it the assumption that all differences between any two transcripts of the same proceeding are of equal significance. The goal was to measure accuracy without letting the study become nothing more than a fruitless analysis of trivial differences, recognizing that the adjective "accurate" has full meaning only in context. Chief Judge Campbell's statement accords fully with this

ed and whether reversal is required for failure to record when recording is mandated by the statute. E.g., United States v. Craig, 573 F.2d 455, 480 (7th Cir. 1977), *cert. denied,* 439 U.S. 820 (1978) (reporter not required to record tape recordings played in court and admitted in evidence); Strauss v. United States, 311 F.2d 926 (5th Cir.), *cert. denied,* 373 U.S. 910 (1963) (doubt expressed about necessity of recording bench conferences when statute refers to proceedings "in open court"); United States v. Selva, 559 F.2d 1303 (5th Cir. 1977) (different standard of reversible error when appellate counsel was not trial counsel).

20. 28 U.S.C. § 753(b); Federal Courts Improvement Act of 1982 § 401(a).

21. General Accounting Office, *supra* note 4, at 69-70.

concept of accuracy. The study's goal with regard to accuracy was to determine whether electronic sound recording is among those procedures "best calculated to advance the administration of justice." Chapter 5 of this report describes in detail the methods used to evaluate transcript accuracy and presents the results of the evaluations.

Timeliness of Transcript Delivery

Time limits for the delivery of transcripts of district court proceedings have been prescribed by Federal Rule of Appellate Procedure 11(b) and by Judicial Conference guidelines governing the production of ordinary, expedited, daily, and hourly transcripts.[22] Chapter 6 of this report describes the methods used to evaluate the timeliness of transcript delivery according to these standards and presents the results of the evaluations.

Costs for Systems Operation

Assertions regarding the cost of electronic sound recording systems have been prominent in the legislative history of section 401 of the Federal Courts Improvement Act. In his prepared statement to the June 1981 hearing on federal court reporting, GAO General Government Division Director Anderson asserted:

> We estimate that by using electronic recording systems, the Federal Judiciary could reduce its costs of recording proceedings from about $18.4 million to $4.8 million a year—a savings of about $13.6 million annually. . . . This estimated savings is based on exclusive usage of electronic recording systems and considers the annual operating costs of the new system such as personnel, office and tape storage space, equipment depreciation and maintenance, facility modification[,] amortization, and recording supplies.[23]

The costs described above are costs the federal government bears in maintaining a court reporting capability. They do not include costs to the parties who purchase transcripts; those costs are prescribed by the Judicial Conference in terms of chargeable fees, per

22. 6 Administrative Office of the United States Courts, Guide to Judiciary Policies and Procedures: Court Reporters' Manual (1983) at ch. 20, pp. 3-4.

23. *Hearings, supra* note 3, at 23-24. The figures presented in the 1981 testimony differ from those presented subsequently in the 1982 report, which estimate an annual savings of "about $10 million." General Accounting Office, *supra* note 4, at 27.

page, for various types of transcript.[24] A comparison of electronic sound recording and stenographic recording operating costs including—but not limited to—all cost components mentioned in Mr. Anderson's statement is reported in chapter 7 of this study.

Ease of Use

High transcript quality, timely transcript delivery, and low operating costs would not be sufficient to recommend audio recording's use if the technology proved disruptive to court proceedings or if it were to cause unreasonable administrative burden. This study, therefore, also evaluated the ease of use of electronic sound recording in the district court setting, that is, the effect of audio recording on the conduct of district court proceedings. The results of that evaluation are reported in chapter 8.

24. Administrative Office of the United States Courts, *supra* note 22.

III. PREVIOUS STUDIES OF ELECTRONIC SOUND RECORDING OF COURT PROCEEDINGS

The Congress's directive that the federal judiciary experiment with various methods of recording court proceedings presumably reflects its view that research to date on the subject does not provide an adequate and up-to-date basis for deciding whether to allow amendment of the current federal court reporting statute.[25] Most of the extensive literature on alternative court reporting methods consists of personal testimonials and anecdotes. There have, however, been some data-based studies, which are reviewed below because they may offer some additional perspective on this study's evaluation criteria. (Appendix C contains a more extensive bibliography that the project staff prepared at the outset of the project.)

Transcript Quality

Studies of the transcript quality of electronic sound recording of court proceedings have examined either (1) the comparative accuracy of steno- and audio-based transcripts as determined by refer-

25. Over twenty years ago, the Administrative Office of the United States Courts explored the feasibility of using electronic sound recording machines in the district courts. In 1958, the Judicial Conference authorized the Administrative Office to continue testing of recording equipment that it had placed in certain district courtrooms (Report of the Proceedings of the Judicial Conference of the United States, September 1958 at 11). The federal courts' appropriation request for fiscal 1961 sought funds to purchase twenty-five machines; in testimony before the Senate Appropriations Subcommittee, Judge Prettyman reported that the judges of the District Court for the District of Columbia were using a machine in rotation to evaluate it (Hearings on H.R. 11666 Before the Subcomm. on Appropriations for the Departments of State and Justice, the Judiciary and Related Agencies of the House Comm. on Appropriations, 86th Cong., 2d Sess. (1960)). The equipment that the courts tested evidently used belts rather than tapes for recording, an adaptation of a system then in use in airport control towers. In any event, the request to purchase the twenty-five machines was denied; see Report of the Committee on Appropriations for the Departments of State and Justice, the Judiciary and Related Agencies

ence to audiotape recordings of the transcribed proceedings, or (2) the accuracy of audio-based transcripts as determined by reference to the official steno-based transcript.

Studies conducted in Los Angeles and Sacramento in the early seventies compared audio- and steno-based transcripts to audiotapes of the transcribed proceedings. For both studies, audio- and steno-based transcripts were produced from all proceedings recorded—regardless of whether parties ordered transcripts from the official court reporters.

The 1972 Los Angeles Superior Court study[26] was motivated by interest expressed by the state legislature. Fifteen days of proceedings were recorded by both audiotape and stenographic methods; the project used a six-channel reel-to-reel audiotape recorder and a single-channel disk recording machine. Some 2,000 pages of transcript were typed on the basis of records produced by stenographic and audiotape methods, 418 pages of which were subjected to detailed analysis. Discrepancies between the audio- and steno-based transcripts were checked against the sound recordings. Each transcription error was assigned to either a "major" or "minor" error category. The researchers found that the steno-based transcripts "in all but two (2) test proceedings, performed with a higher degree of accuracy than the parallel-tested reporting/recording systems."[27] The authors noted that errors in the steno-based transcripts appeared to be the result of mistakes in the taking of the record, rather than in the transcription of steno notes.[28] Although the authors concluded that audiotape recording was a suitable method for taking the record and producing the transcript of limited types of proceedings, they found it "apparent . . . that no electronic . . . recording system could be extensively implemented in this Court within the foreseeable future."[29]

Appropriations Bill, Fiscal Year 1961 (H.R. Rep. No. 1467, 86th Cong., 2d Sess. 17 (1960)).

More recently, bankruptcy courts in the Central District of California (Los Angeles) and the Southern District of Texas (Houston) have tested the use of electronic sound recording for their proceedings. Those tests, however, are in no way a part of the project described in this report.

26. Superior Court, County of Los Angeles, Recording and Transcription of Los Angeles Superior Court Proceedings (1972).

27. *Id.* at 33.

28. A National Bureau of Standards report, A Study of Court Reporting Systems (1971), also bears on the question of whether errors in steno-based transcripts have their origin in the taking—rather than the transcribing—of the record. In an analysis of four court reporters' transcripts of the same several hours of court testimony, the authors found a difference of some 10 percent in the number of words in the typed transcripts the reporters produced; see *id.* at 19 (figure I-1).

29. Superior Court, County of Los Angeles, *supra* note 26, at 51.

A 1973 study in Sacramento, administered by the California Council on Criminal Justice and funded by the Law Enforcement Assistance Administration,[30] used four kinds of multi-track reel-to-reel recorders to take the record in thirty-seven superior court cases. Audio- and steno-based transcripts of these proceedings were produced and analyzed. The researchers found that in thirty-five of the thirty-seven transcripts the majority of errors were in the steno-based versions, and that there were three times as many errors in the steno-based transcripts as in the audiotape transcripts.

An analysis by Arthur Young and Company of the data gathered for the study yielded a similar finding. The Arthur Young researchers concluded that, with regard to accuracy, the audio recording method of preparing court transcripts is a "feasible alternative to the conventional stenotype method."[31] In a response to the Sacramento study, the National Shorthand Reporters Association asserted that the study was flawed by midproject changes in research procedures.[32] These changes, they asserted, penalized the steno-transcripts for deviations from verbatim transcription that reporters had originally been told were to be regarded as discretionary and would not be counted as "errors."

Two studies evaluated audio-based transcripts by comparing them directly with steno-based transcripts rather than a sound recording. For a 1971 New York study,[33] several days of the same court proceedings were recorded by stenographic and by audiotape methods. A subset of the transcript pages produced on the basis of these records was compared for accuracy; evidently the standard for evaluating the accuracy of the audio-based transcript was the steno-based transcript, although the report does not make clear how the "errors" attributed to either system were verified. The committee members (judges, lawyers, court reporters, and administrators) faulted the audiotape recording systems for poor sound quality, and stated, among other things, that the steno-based transcripts were more accurate and that the audio-based transcripts more often omitted complete statements of participants and misidentified speakers than did the steno-based transcripts.

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30. A Study of Court Reporting: A Plausibility Study of Alternative Methods of Preparing Court Transcripts; An Analysis of the Use of Electronic Recordings (1973). The study was carried out by contractors.

31. The Arthur Young analysis is appendix E to the report, *id.* The language quoted is from the cover letter to the Arthur Young analysis.

32. National Shorthand Reporters Association, Rebuttal to "A Study of Court Reporting" (1975).

33. The commission was appointed by the presiding justices of the appellate divisions of New York's First and Second Judicial Departments. See Report of the Committee to Evaluate Electronic Recording Techniques (1971).

As part of a 1981 study by the Utah State Court Administrator's Office, one trial lasting several days was recorded on a four-track audiotape recorder.[34] A transcript was produced from the audiotape and compared with the steno-based transcript, which was the standard by which the accuracy of the audio-based transcript was determined. Those conducting the study found 107 errors and omissions in the audio-based transcript and concluded that the "high number of errors appearing in the study sample renders the record suspect and the integrity of the system diminished. Should the appellate court be compelled to base its' [sic] decisions on an incomplete and unreliable record, it would have to do so on less than the total evidence presented at trial or upon conjecture as to what may have been."[35]

Timeliness of Transcript Delivery

Literature on timeliness of transcript delivery[36] comes from two sources: studies of the timeliness of stenographic transcriptions in state courts and comparative experiments with electronic sound recording of state court proceedings.[37] The quantitative literature on

34. The results of this test are reported in a January 25, 1982, memorandum from Richard V. Peay, Utah State Court Administrator, to Utah Senator Kay Cornaby and Representative Lloyd Selleneit of the Joint Executive/Judicial Appropriations Subcommittee on "Studies Regarding Shorthand Reporters in the Utah District Court." Plans to evaluate electronic sound recording in a second district court were abandoned due to delay in equipment installation and radio signal interference from a nearby sheriff's office.

35. *Id.* at 11.

36. It is important to distinguish between the speed at which transcripts are produced and transcript delivery within deadlines. There is considerable debate regarding the speed with which various kinds of records of proceedings (paper steno notes, computer-readable steno notes, audiotapes, etc.) and various methods of transcribing the record (dictation of steno notes, use of notereaders, use of computer-aided transcription, transcription of original audiotape recordings of proceedings) can be completed. Such questions, however, are not within the purview of this study. The timeliness question addressed in this study is whether audiotapes of federal court proceedings can be transcribed and delivered to the court within official time limits (see note 22, *supra*).

37. A 1982 National Shorthand Reporters Association survey of attorneys practicing in the District of Columbia Superior Court—which uses a centralized multitrack audio recording system for taking the record of some proceedings—reported widespread attorney dissatisfaction with the audio system (B. Kajdan & J. Wilson, Survey of Attorneys in the District of Columbia Regarding Their Experiences with Court Reporting Services in the Superior Court (1982)). The authors reported that attorneys who responded faulted the system for producing incomplete and inaccurate transcripts and for the slowness of transcript delivery. Ninety-two attorneys of the 1,248 who were mailed questionnaires responded, and of the ninety-two, seventy-eight (or 6.25 percent of the 1,248 to whom questionnaires were mailed) had experience in courtrooms with audio recordings. The executive officer of the District of Columbia Superior Court has challenged the credibility and accuracy of the survey

this latter subject is minimal, even though electronic sound recording of court proceedings is not uncommon in state courts—particularly in limited jurisdiction courts. (There is no systematic accounting of the proportion of transcripts of federal court proceedings delivered to parties or to the court within the prescribed Judicial Conference guidelines.)

Although the state court studies may shed some light on the timeliness of stenographic transcript delivery, they obviously cannot be used to judge the timeliness of federal transcript delivery. Moreover, the studies are not necessarily representative of transcript delivery in state courts nationwide and may, indeed, depict worse cases, especially if they were undertaken to verify the existence of a suspected problem in the timeliness of stenographic transcript delivery. The state court studies do not report on timeliness of expedited, daily, or hourly transcript orders.

A 1975 study in Nebraska[38] found that, of stenographic transcriptions ordered for delivery within the state's sixty-day statutory limit, 13 percent (345) of the transcripts of criminal proceedings were delivered late and 11 percent (292) of the transcripts of civil proceedings were delivered late.[39] In an analysis of fourteen audio-based transcripts of limited jurisdiction court proceedings in one county, the same researchers found that all fourteen were delivered within the sixty-day limit, and almost all had been delivered within thirty days. (However, they noted that the extremely small sample of audio-based transcripts, gathered in only one county of the state, made the data of "extremely limited and . . . questionable value."[40]) In a 1976 study in Maryland,[41] the National Center for State Courts found that some 54 percent of stenographic transcripts ordered for delivery within the statutory limit of sixty days were delivered late.[42]

A 1978 study of timeliness of stenographic transcript delivery in New Jersey found that transcripts of general and limited jurisdic-

and offered data indicating that all transcripts ordered for production on the basis of audiotape recordings of proceedings in the court had been delivered within the statutory limit of sixty days. Letter from Larry P. Polansky, executive officer, District of Columbia Courts, to Edward B. McConnell, executive director, National Center for State Courts, June 1, 1982 (copy on file at Federal Judicial Center).

38. National Center for State Courts, Nebraska Court Reporting Project: Final Report (1975).

39. *Id.* at 38 (table I); the "Bill of Exceptions" is the transcript.

40. *Id.* at 49 (figure 13) and 48.

41. National Center for State Courts, Court Reporting Services in Maryland (1976).

42. This figure is drawn from the data provided in table VIII at 68, *id.* The percentage of stenographic transcripts exceeding the sixty-day limit ranged from 25 percent in one circuit to 75 percent in another. These data are for 1975; the report also presented data for 1974, *id.*

tion proceedings in that state were delivered in an average of 102 days.[43] In a reanalysis of the study data base performed for the Certified Shorthand Reporters Association of New Jersey, Arthur Andersen and Company found that the average elapsed time from transcript order to delivery was fifty-two days.[44] The limits, authorized by rule, for delivery of the transcripts analyzed in the study varied between twenty and thirty days.[45] A 1978 study conducted by the National Center for State Courts in Connecticut[46]—where the statute calls for transcript delivery "within a reasonable time"—found that stenographic transcripts ordered in that state, in all courts, took an average of fifty-eight days from order to delivery in 1975 and seventy-eight days in 1976.[47]

Another 1978 study, conducted by the Resource Planning Corporation for the Judicial Planning Committee of Wisconsin,[48] found that the median time for transcript preparation in general jurisdiction civil proceedings was eighty-eight days and that nearly 50 percent of the transcripts took more than the statutory ninety-day time limit for delivery.[49] In criminal proceedings, the median time for transcript preparation exceeded the ninety-day limit by fourteen days.[50] For limited jurisdiction proceedings, for which the statutory time limit is forty days, the median time for transcript delivery was between twenty and thirty days, although over 25 percent of the transcripts were filed late.[51]

The Los Angeles, Sacramento, and New York courtroom audiotape recording experiments discussed above[52] all monitored the timeliness of delivery of audiotape-based transcripts produced for the studies. The New York and Los Angeles projects concluded that the audio recording systems were incapable of producing transcripts as rapidly as the steno-based systems, and, unlike the steno-based systems, were generally unable to produce transcripts within

43. National Center for State Courts, Court Reporting Services in New Jersey (1978) at 32.
44. Certified Shorthand Reporters Association of New Jersey, Reply to National Center for State Courts Study of Court Reporting Services in New Jersey (1980) at 2. The reply also contested other National Center findings.
45. National Center for State Courts, *supra* note 43, at 31; see *id.*, n.16, at 12 for the governing rules.
46. National Center for State Courts, Transcripts by Connecticut Court Reporters (1978).
47. *Id.* at 1, 3.
48. Resource Planning Corporation, Wisconsin Court Reporting Study: Final Report (1978).
49. *Id.* at 15.
50. *Id.* at 16-17.
51. *Id.* at 8-9.
52. Superior Court, County of Los Angeles, *supra* note 26; A Study of Court Reporting, *supra* note 30; Report of the Committee to Evaluate Electronic Recording Techniques (1971).

the agreed-upon deadlines.[53] The Sacramento study found the audio recording system it used capable of timely delivery of daily copy transcript orders.[54] Because of the short duration of each of these studies, it was not possible for any of them to provide data concerning the audio recording method's ability to regularly provide timely delivery of regular or expedited transcripts.

Costs for Systems Operation

Some data are available on the costs of procuring and operating courtroom audio recording systems. They come primarily from two sources: (1) observed and/or estimated costs from state court systems where electronic sound recording is used as the official record for some types of proceedings, and (2) cost projections from pilot studies of electronic sound recording performance. System costs can vary widely because of the range of prices of equipment used for courtroom record-taking and the use or nonuse of full-time court personnel to monitor the equipment as it records proceedings. There are no direct comparisons of the observed costs of electronic and stenographic recording of proceedings within a single court system, but there have been estimates regarding the comparative costs of operating alternative recording systems.

The General Accounting Office has suggested that the federal courts could realize cost savings in excess of $10 million per year by adopting audio recording as the primary means of recording all district court proceedings.[55] This estimate, however—as some federal judges and others have noted—is based on a number of untested premises; most important, the GAO report assumes that savings based on state experiences and federal administrative agencies and Article I courts can be translated into the federal system.

The Sacramento report estimated the annual cost of electronic recording of state court proceedings at almost $395,000 for the first year of operation and $300,000 per year thereafter—in contrast to the estimated cost of almost $575,000 yearly operating cost of the state's stenographic recording system.[56] A reanalysis of the Sacramento study by the National Shorthand Reporters Association, however, asserted that the researchers had underestimated the audio recording system hardware and personnel costs and overesti-

53. Superior Court, County of Los Angeles, *supra* note 26, at 6; Report of the Committee to Evaluate Electronic Recording Techniques (1971) at 25.
54. A Study of Court Reporting, *supra* note 30, at 61.
55. General Accounting Office, *supra* note 4, at 28, 45, and 68.
56. A Study of Court Reporting, *supra* note 30, at 62-65.

mated court reporter costs. On these bases, the association questioned the Sacramento study's conclusion that significant cost savings could be realized through the adoption of electronic sound recording.[57]

The New Jersey study discussed above projected the yearly operating costs of electronic recording of that state's proceedings at $4.9 million, in contrast to the projected $9 million operating cost for an all-stenographic system to record the same volume of proceedings; these figures assumed statewide use of either system.[58]

A 1978 study conducted by the Resource Planning Corporation for the National Shorthand Reporters Association presented data that would suggest that the state of Alaska could reduce its court reporting expenses by 10 to 25 percent (or $67,000 to $185,000) by abandoning its electronic reporting system and switching over to stenographic reporting, if the court reporters also carried out duties normally performed by an in-court clerk.[59] Alaska has used audiotape as its official record of court proceedings for twenty-three years. In a 1979 report on the state's electronic sound recording system,[60] figures compiled by the state court administrative office suggested, however, that the audio recording system costs substantially less than would a stenographic system, regardless of the services other than court reporting performed by the stenographic reporter. A 1980 memorandum by the Division of Legislative Audit of the state of Alaska[61] concurred with the figures presented by the state court administrative office and suggested that the state was saving as much as $800,000 per year by using electronic, rather than stenographic, recording in its courts.

Ease of Use

Assertions have been made about the practicality of electronic sound recording of court proceedings, and about user satisfaction

57. National Shorthand Reporters Association, *supra* note 32, at 6-8.
58. National Center for State Courts, *supra* note 43, at 197-98 (for the audio costs) and 206-07 (for the steno-based costs).
59. National Shorthand Reporters Association, A Financial Analysis of Electronic Reporting in Alaska (1978) at 19. The data were gathered by Resources Planning Corporation. These data present cost figures in terms of average total cost per transcript page, rather than estimates of total system cost.
60. Office of Administrative Director, Alaska Court System, Electronic Court Reporting in Alaska (1979), *reprinted in Hearings, supra* note 3, at 226-91.
61. Letter from Gerald L. Wilkerson, CPA, legislative auditor, Division of Legislative Audit, State of Alaska, to members of the Legislative Budget and Audit Committee, *reprinted in Hearings, supra* note 3, at 224-25.

with electronic court reporting services. The literature, however, rarely presents verification of such claims.

For example, several witnesses testifying at the June 1981 Senate Judiciary Subcommittee hearings asserted—among other things—that electronic sound recording is vulnerable to alteration or erasure, does not lend itself to timely or accurate transcription, cannot conveniently record on-the-record proceedings outside of the courtroom, cannot separate multiple speakers, and is the source of delays in proceedings due to mechanical breakdowns and malfunctions.[62] Proponents of electronic sound recording, testifying at the same hearings,[63] asserted—among other things—that the problems cited by opponents of the technology had been eliminated through technological or administrative solutions, and that the technology provides greater flexibility with regard to immediate usefulness of the original record of proceedings and with regard to timely preparation of transcripts than does stenographic recording.

62. E.g., see *Hearings, supra* note 3, at 53-150, 203-20, 319-34.
63. E.g., see *id.* at 13-32, 220-301, 316-19.

IV. PROJECT DESIGN

The project plan called for the installation of an audio recording system in one courtroom in each of twelve district courts, to operate for five to six months. Each system included an audiotape recorder and microphones for recording proceedings in the courtroom and for recording in-chambers proceedings and telephone conferences heard by the judge in whose courtroom the equipment was installed.[64] As explained below, court personnel—assigned by the clerk of court—operated the system, monitoring the audio recording and keeping a detailed log of each recorded proceeding.

The law in effect during the project[65]—and in effect at the time of this report[66]—requires that the official record be taken by an official court reporter, "by shorthand or by mechanical means which may be augmented by electronic sound recording." Official reporters who use electronic sound recording as a backup device purchase equipment at their own expense (and all the official reporters in the project courtrooms used such equipment during the project).[67] Thus, the law created a situation whereby project audio recording systems could operate parallel to the official court reporters, allowing what Senator Heflin, who sponsored the project's legislative mandate, called "a comparison between the existing system and various electronic systems, side by side . . . ."[68]

The project plan provided that transcripts of proceedings ordered from the official court reporter would also be ordered from one of several transcription companies under contract to the Center for this project. The project transcripts would be produced from audiotapes and accompanying materials, such as notes logging the proceedings, provided by the court employee who operated the project audio system. The plan thus provided for the production of matched sets of transcripts—the official transcript, produced from

64. Except for the one reel-to-reel system installed in the District of Massachusetts courtroom, each system also included a tape duplicator for producing backup tapes of original recordings of proceedings. Use of the duplicator enabled the clerk's office to retain copies of records of proceedings when the original tapes were sent to a transcription company.

65. 28 U.S.C. § 753(b).

66. Federal Courts Improvement Act of 1982 § 401(b).

67. 28 U.S.C. § 753(e).

68. 127 Cong. Rec. S14,702 (daily ed. Dec. 8, 1981).

the stenographic record (steno-based), and the project transcript (audio-based)—that could be evaluated for transcript quality and timeliness of transcript delivery. The audio system equipment, installation, and operating costs—supplies and personnel—provided the basis for cost comparisons with the official reporting system.

The plan also provided for the recruitment of "site monitors" in each project site, persons of unquestionable integrity to provide the Center with periodic reports on the project and to serve as "fair witnesses" to the manner in which the study was carried out.

Toward these ends, the following sets of activities were carried out or administered by project staff in appropriate consultation with Center management, clerks of court at project sites, and Administrative Office personnel: site selection; selection of hardware and transcription services; formulation of guidelines for transcript preparation; audio operator job definition and recruitment; site monitor job definition and recruitment; evaluation of project courtroom sites and installation of equipment; audio operator training; and formulation of procedures for processing transcript orders. (Some of these materials are presented in appendixes, as specified below.) The Center made no decisions as to which, or how, official reporters worked in the project courtrooms, took the record, or prepared transcripts. The Center made only one request of official reporters in the test sites. As described below, the reporters were asked to complete the first part of a "transcript request form" whenever a transcript was ordered (in order to initiate the preparation of a parallel audio-based transcript).

Site Selection

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.

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 court 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 court.

The project courts and courtrooms were:

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

Selection of Hardware and Transcription Services

The timetable in section 401(b) of the Federal Courts Improvement Act of 1982 is such that the Judicial Conference could authorize district judges to use electronic sound recording as an official reporting method as early as October 1, 1983. Because the Center could not rule out that the Conference would do so, only equipment that was commercially available when the study began was considered for installation in project courts. Excluded from consideration

were any prototype units not yet in full production and recorders that would require modification for courtroom use.

Equipment for the project was procured from manufacturers by the Procurement and Property Management Branch, Administrative Services Division of the Administrative Office of the United States Courts, using Administrative Office appropriations, pursuant to the directors' agreement of May 27, 1982. Equipment for the project was chosen by Center and Administrative Office personnel, guided by specifications for electronic sound recording equipment in a courtroom setting—a set of standards for equipment purchased for federal courts—established by the Procurement and Property Management Branch. (See appendix D.) These specifications were developed for court-purchased equipment to be used for recording proceedings that may, by statute, be recorded exclusively by electronic sound recording equipment:[69] arraignments, pleas, and proceedings in connection with the imposition of sentences in criminal cases;[70] most magistrate proceedings;[71] and bankruptcy proceedings.[72]

The most important specifications applied to the selection of recorders for the project were the following:

> a minimum of four audio tracks, i.e., separate "channels" onto which material can be recorded by separate microphones, enabling playback of material recorded on individual channels, in isolation from material recorded on other channels
>
> off-tape monitoring enabling the machine operator to listen to recorded material a second or so after it is picked up by a microphone—thereby verifying that an audible record is indeed being taken
>
> a feature that prevents erasing or recording over previously recorded material under any circumstances
>
> a search function allowing the operator to locate any point on the tape for playback.

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

69. The specifications do not apply to equipment that court reporters may elect to purchase as backup for stenographic records of proceedings.
70. 28 U.S.C. § 753(b).
71. 28 U.S.C. § 636(c)(7).
72. 28 U.S.C. § 773(a).

by the Administrative Office, and this unit was placed in eleven project courts.

Because some proponents of courtroom audiotape recording assert that an eight-track recorder is preferable to a four-track unit, initial project plans called for use of eight-track machines in some project courts. The Baird MR 600/8 is an eight-track machine that uses standard ¼-inch reel tape, and was the only eight-track unit designed specifically for courtroom use that was available without special order. Although the Baird company initially agreed to install free-standing, single-unit recorders in three of the project sites, the company subsequently asked to withdraw from two of the sites and, therefore, they installed equipment only in the Boston courtroom, the site closest to the company's offices.

For reasons similar to those that restricted hardware considerations to units available without special order, 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. It was obviously not possible to duplicate the situation (e.g., as to the companies' proximity to the courts) that one would expect to exist had district courts regularly been using electronic sound recording for producing official transcripts. Project courts were assigned to transcription companies by Center staff. Once a specific court was assigned to a transcription company[73] court personnel worked directly with transcription company personnel. Center staff did not intervene in any way, such as to affect the quality of the transcripts or the timeliness of their delivery.[74]

73. Because of the high volume of daily copy transcript demand anticipated in one court, that court was assigned to two transcription companies.
74. For reasons unrelated to their ability to provide transcript, two of the eight transcription companies asked Center staff to be released from part or all of their transcription commitment to two project courts. One continued to provide transcripts for other project courts, and the other temporarily assigned its share of the work to another of the eight companies. In these instances, part or all of the courts' audiotape transcription was assigned to other transcription services by Center staff.

Formulation of Guidelines for Transcript Preparation

Although the transcription companies hired to produce transcripts for the project all had some experience producing transcripts of court and courtlike proceedings, they had no experience transcribing federal trial court proceedings. No existing set of guidelines covered numerous aspects of transcription about which the transcription companies would need guidance. Thus, a set of guidelines for the preparation of transcripts was developed for use in the project. The guidelines contain instructions for the transcription companies' preparation of transcripts and set forth the information that the courtroom audio operators would need to collect during proceedings, to supplement the record for subsequent incorporation into the typed transcript.

The transcription guidelines were based primarily on information provided by a technical panel that the Center convened in Washington, D.C., on August 13, 1982. Preparations for the panel meeting included a review of Judicial Conference transcript guidelines and pertinent Administrative Office and court reporter professional association literature, and an examination of transcripts from most project courts. All Judicial Conference regulations were incorporated into the project guidelines. Aspects of transcript format and content to be covered by the project guidelines were identified and incorporated into the technical panel meeting agenda.

The technical panel included a United States circuit judge, a district court judge, four official United States court reporters and one other court reporter, four representatives from audio transcription companies, a staff member from the Office of Court Reporting and Interpreting Services of the Administrative Office of the United States Courts, an audio operator training consultant, a representative from the American Bar Association's Action Commission to Reduce Court Costs and Delay, and an audio equipment vendor. Project staff members worked with the panel.

Working with the project staff, the panel considered the following subjects:

content specifications for the cover, appearance, and index pages of transcripts

literal transcription of grammatical or other errors

transcription of false starts, stutters, and verbal tics

transcription of testimony presented through an interpreter

notation of nonverbal behaviors

notation of time designations for various portions of proceedings.

An initial set of guidelines for the preparation of transcripts, based on outcomes of the technical panel meeting, was drafted and circulated to all technical panel members for review and comment. A set of "Revised Guidelines for the Preparation of Transcripts" (see appendix F) was issued October 12, 1982, based on comments received from persons who had reviewed the draft version.

The revised guidelines were distributed to all transcription companies involved in the project and to other interested parties. These guidelines were used by the transcription companies in the preparation of audiotape-based transcripts produced during the course of the study.[75]

Salient Characteristics of Official Reporters in Project Courtrooms

The identities and reporting methods used by the official reporters in the project courtrooms were in no way controlled by Center staff. Nevertheless, some information about the salient characteristics of the reporters is reported here for completeness and whatever pertinence it may have for evaluation of the results.

Project and court staff were able to identify twenty-nine official reporters as reporting proceedings in project courtrooms during the course of the study. These twenty-nine averaged approximately nine years as official federal court reporters. Two employed manual shorthand and the remaining twenty-seven used stenotype machines. Three of these twenty-seven reporters also used computer-aided transcription (CAT). All twenty-nine reporters brought audio recording equipment with them into the courtrooms and used it while making their official stenographic records (which, by statute, they are entitled to do).

75. Most of these guidelines were incorporated into regulations adopted as official policy by the Judicial Conference in March 1983. The guidelines as officially adopted can be found in Administrative Office of the United States Courts, *supra* note 22, at ch. 18.

Chapter IV

Audio Operator Job Definition, Recruitment, and Characteristics

Minimum qualifications for personnel employed to operate the audio recorders were provided by personnel employed to do the on-site training of audio operators. (See appendix G for job description and audio operator qualifications.)

Pursuant to the directors' agreement of May 27, 1982, the Administrative Office provided funds for the hiring of one temporary JSP-5 employee for six months of service in the clerk's office in each project court. Selection of personnel, pursuant to guidelines supplied by the Center, was at the discretion of the clerk of court at each project site. In six courts, the clerk of court chose to assign a current staff member to the project, and to assign the temporary employee to other duties in the clerk's office. Because of this, some audio operators (i.e., those who were current staff members of the clerk's office) had higher JSP grade levels than others (the temporary employees who were assigned to operate the audio equipment for the project in the other courts). In both cases, it was understood that the audio operators would perform standard duties in the clerks' offices when they were not performing project duties. (See appendix Q, table 25, for grade levels of audio operators in each project court.)

The clerk of court was also asked to designate one or more staff member as a "secondary audio operator" to stand in for the primary operator in case of illness or other situations in which the primary operator was unavailable. Secondary operators went through the same training program as did the primary operators.

The audio operators represented a wide range of educational backgrounds and levels of experience in the courts; they provided relevant information on a questionnaire sent to the twelve primary audio operators and three secondary operators in courts in which responsibility for operation of the system was fairly evenly divided between primary and secondary operators. 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. Nine of the operators had less than one year of experience working in the federal courts. Only one operator had any previous experience with courtroom audio recording equipment—that is, for United States magistrate's proceedings. Most, though, had some familiarity with home recording equipment.

Site Monitor Job Definition and Recruitment

The project plan called for the recruitment of one site monitor for each project court.[76] Site monitors were retained on contract to the Center for two main purposes. The first was to visit the court approximately once a week in order to observe the operation of the audio recording system, to review project tapes, logs, and transcripts, and to discuss project activities with appropriate court personnel, including the official reporters. On the basis of these visits, they were to submit biweekly reports to the Center, describing project-related activities in that court and bringing noteworthy situations to the attention of project staff. (See monitor report form in appendix H.) To this extent, the monitors were to serve as the Center's "eyes and ears" in the project courts.

Second, the monitors were to serve as "fair witnesses" to the manner in which the project was carried out by Center and project court staff. The Center considered it essential that only persons of unquestionable competence and integrity serve as monitors.

Recruitment of monitors was done primarily through judges participating in the study or, if the judge desired, through the clerk of court. Persons suggested by a judge or a clerk of court were contacted by a Center staff member who described the role that monitors were to play in the study. (See appendix I for monitor profiles.)

Evaluation of Project Courtroom Sites and Installation of Equipment

Guidelines for equipment installation were developed primarily by project staff, in consultation with the manufacturers of the equipment purchased for the project. Equipment was to be installed in a manner that would best enable the recording of all on-the-record proceedings, while minimizing system intrusiveness.

Equipment had to be set up in such a way as to test whether recording the full range of activities that make up district court proceedings fell within the limits of the technology. These activities are: voir dire; opening and closing statements; examination of witnesses; motions and rulings thereon, and other statements to and by the judge; bench or sidebar conferences; proceedings in chambers; and telephone conferences.

76. In one site, the monitoring responsibilities were shared by three persons in the same law firm, as requested by the judge.

Because of the wide variety of ways in which courts handle these on-the-record proceedings, each project courtroom was evaluated by project staff and a local vendor who, working under contract to the equipment manufacturer, was to install the audio recording system. (Because the reel-to-reel system used in the Massachusetts court was installed by the manufacturer, an employee of the manufacturer, rather than a vendor, performed the evaluation there.) The evaluation included study of the physical layout of the courtroom and an orientation—usually by the courtroom deputy—regarding the manner in which the judge or judges who would be using the courtroom during the course of the project conducted various phases of proceedings.

These initial site evaluations provided the basis for subsequent discussion with local vendors regarding the manner in which equipment was to be installed in each courtroom. In some instances, modification of the vendor's installation was subsequently recommended by the person who conducted the audio operator training for the Center, or by the audio operator.

Audio Operator Training

The training program for audio operators was developed by Center staff, on the basis of available literature, in consultation with persons who had experience training courtroom audio operators.

An audio operator manual was developed as a training and reference guide for project audio operators. (See appendix J.) The manual contained a description of the project and of the audio operator's responsibilities, detailed procedures for machine operation and logging, and forms and instructions for project reporting and record-keeping.

On-site training of primary and secondary audio operators was carried out in two parts. First, the vendor who installed the equipment spent up to two days demonstrating the operation of the equipment and familiarizing the operators with its use. Routine maintenance and trouble-shooting procedures were also covered in this portion of the training.

The equipment training was followed by three days of instruction by one of three trainers working under contract to the Center. All had experience in training audio operators for recording state court or administrative agency proceedings. This second part of the training included a review of hardware operation; detailed instruction regarding logging procedures, tape storage and retrieval, and transcript order processing; and procedures for reporting to the project staff at the Center.

Formulation of Procedures for Processing Transcript Orders

The project plan required that audio-based transcripts of proceedings in project courtrooms be ordered whenever parties ordered official transcripts of proceedings in those courtrooms from the official court reporter. The following procedures were formulated by project staff, in consultation with the technical panel that met at the Center on August 13, 1982, to discuss transcript format and content guidelines, as explained above.

Reporters who took the record in project courtrooms were asked to fill out the first part of the project transcript request form (see appendix K) as soon as possible after they had received assurance that they would be paid for a transcript ordered by the parties. The form was to be filled out in the clerk's office.

The clerk's office was to give the form to the audio operator, who would then locate the tapes and logs from the proceeding to be transcribed and send them to the transcription company responsible for that court, where the transcript would be prepared. The completed transcript, the tapes and logs, and the request form were to be returned to the clerk's office, where the audio-based transcript was to be date-stamped and filed. Finally, the tapes and logs were to be returned to the audio operator. The dates on which these events occurred were to be recorded on the transcript order form, enabling subsequent analysis of elapsed time between the various stages of processing. The date on which the steno-based transcript of the proceeding was filed in the clerk's office was to be recorded on a separate form. The exception to this procedure was for daily copy in the Northern District of California and the Eastern District of New York. In these instances, transcribers came to the court to work.

At the end of December 1982, each primary audio operator was asked to begin forwarding project materials to the Center. For every proceeding transcribed, operators were asked to send to project staff at the Center the following materials: the original audio-based transcript; a copy of the steno-based transcript; the original audiotape(s); and the log notes and any accompanying materials, such as lists of names and terms, witnesses, exhibits, etc. These materials provided the basis for the transcript accuracy analyses described in the next chapter of this report.

V. TRANSCRIPT QUALITY

This chapter presents the results of the project's two evaluations of the accuracy of audio-based and steno-based transcripts. One evaluation of overall accuracy compared a sample of the transcripts word for word to identify every discrepancy between the two. A second analysis focused on functionally relevant discrepancies between transcript versions. This chapter also summarizes comments of project judges and attorneys of record in project cases; both were invited to examine transcripts produced during the project and offer comment.

Both analyses were based on a random sample of 2,483 pages of audio-based transcripts produced during the project and corresponding pages from the steno-based transcripts. The sample was stratified according to court and production schedule. (See appendix L for details of sampling procedures.) Only those transcripts received at the Federal Judicial Center by April 18, 1983, were included in the population from which the sample was drawn. An additional 822 pages were not included because they were used for a pretest of the methodology. The population on which the analysis was based consisted of 17,815 pages of audio-based transcripts and the corresponding pages of steno-based transcripts.

The 2,483 pages in the sample were taken from 177 delivered transcripts from eighty-two different court cases heard in eleven of the twelve project courts.[77] Numerous types of cases were represented in the sample, including civil and criminal (both single and multiple defendant), patent cases, a highly publicized murder trial, a lengthy medical malpractice trial, and several bilingual proceedings. In five courts, the project judges were the only judicial officers to preside over proceedings during the test. In five others, the project courtrooms were used by several district judges, and in the two others, both judges and magistrates used the project courtrooms. (Furthermore, the amount of reporting in the project courtrooms is similar to that found nationwide, as table 20 indicates.)

77. Because steno-based transcripts of proceedings in one court did not reach the Center in time for inclusion in this analysis, only eleven courts are represented in this analysis. This court is, however, represented in the timeliness and cost analyses presented in subsequent chapters.

For each sampled audio-based transcript page, the corresponding page or pages were drawn from the steno-based transcripts. Professional proofreaders then marked all places where the audio-based pages deviated from the steno-based versions—using proofreaders' marks to make the audio versions conform precisely to the official transcript. As explained in detail below, the audiotape was used to resolve the discrepancies between the transcripts.

The overall accuracy evaluation proceeded on a 680-page subsample of 2,483 proofread pages, checking every discrepancy between transcripts against the audiotape, except those discrepancies that were solely orthographic and therefore not resolvable by the tape (e.g., "ten" or "10").

For the functional relevance evaluation, legal assistants on the Center staff reviewed each discrepancy on all 2,483 proofread pages and screened out those discrepancies that they determined could not possibly make a difference for any of the purposes for which transcripts are used. Federal judges and trial attorneys then reviewed the remaining discrepancies to determine which were functionally relevant and thus which of them should be checked against the tape to determine, if possible, which transcript was accurate. Figure 1 is a graphic representation of the design.

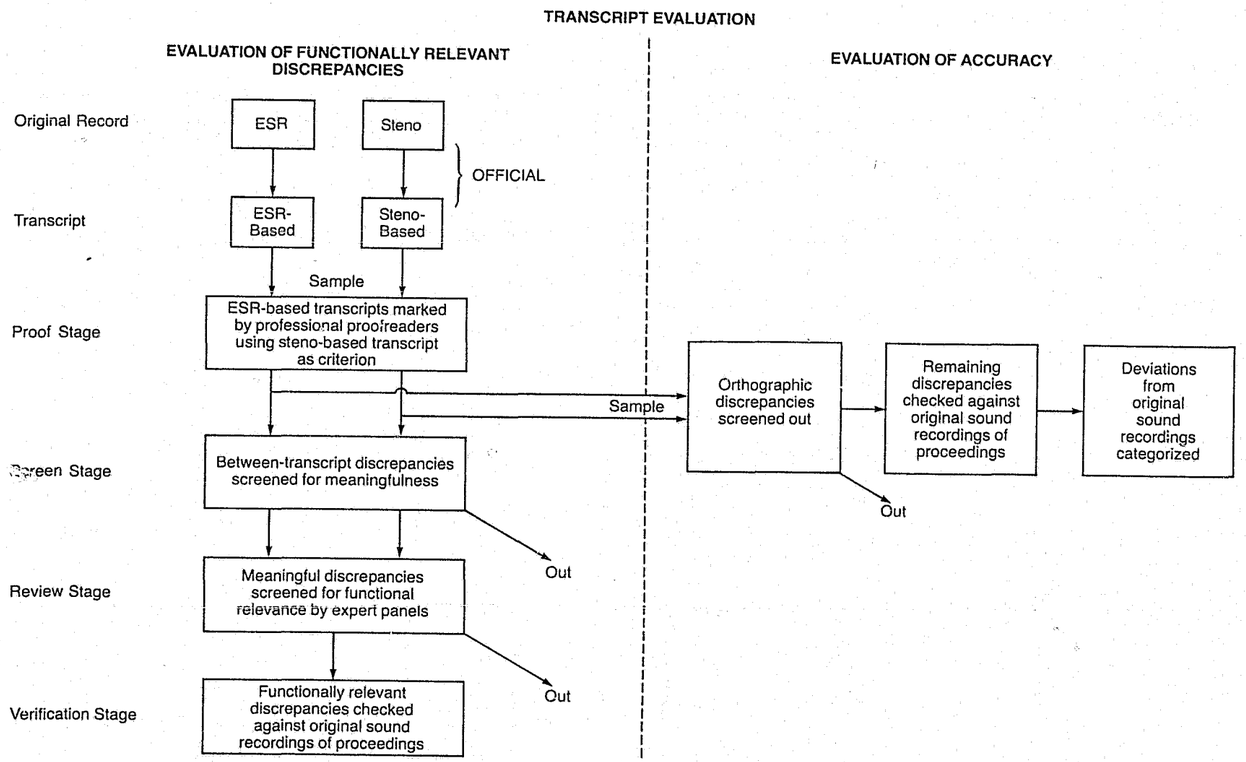
Evaluation of Overall Accuracy

The evaluation of overall accuracy examined all discrepancies without regard to their functional relevance.

Method

A subsample of 680 pages was drawn from the larger sample of 2,483 proofread pages, with the goal of including seventy pages from each court. When the total pages sampled from a particular court was fewer than seventy, the total number of proofread pages for that court was included in the overall accuracy analysis. This was true for three courts.

All discrepancies between transcripts identified by the proofreaders were screened to eliminate orthographic discrepancies that could not be resolved by listening to the audiotapes; this screening left 6,951 discrepancies for analysis. The 6,951 discrepancies were then checked against the audiotape to determine which version of the transcript was correct. Each discrepancy was assigned to one of the five outcomes below:


TRANSCRIPT EVALUATION
EVALUATION OF FUNCTIONALLY RELEVANT DISCREPANCIES
EVALUATION OF ACCURACY
Original Record
Transcript
Proof Stage
Screen Stage
Review Stage
Verification Stage
ESR
Steno
OFFICIAL
ESR-Based
Steno-Based
Sample
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
Between-transcript discrepancies screened for meaningfulness
Out
Meaningful discrepancies screened for functional relevance by expert panels
Out
Functionally relevant discrepancies checked against original sound recordings of proceedings

1. the steno-based transcript was correct and the audio-based transcript was incorrect
2. the steno-based transcript was incorrect and the audio-based transcript was correct
3. both transcripts were incorrect
4. the audiotape was clear, but the speech was ambiguous, and the discrepancy could not be resolved by listening to the recording
5. the audiotape was not clear, and the discrepancy could not be resolved by listening to the recording.[78]

(See appendix M for the guidelines used in coding the discrepancies.) Whenever either version of the transcript was marked incorrect, an error was scored; even deviations that were discretionary were categorized as "error" at this stage of the analysis. Then every error was categorized according to the manner in which that portion of transcript differed from the audiotape. The definitions for these error categories are given in appendix N. In addition to the analysis by comparison to the audiotape, discrepancies in spelling were checked to determine, when possible, which version was correct.

Results

Table 1 presents the results of the overall accuracy analysis of the 6,951 discrepancies that were checked against the original audiotape recordings of proceedings. The audio-based versions matched the audiotape on 54 percent of the analyzed discrepancies; the steno-based versions matched the audiotape on 37 percent of the analyzed discrepancies. Neither transcript accurately reflected the recorded material in 4 percent of the analyzed discrepancies. Another 4 percent of the discrepancies could not be resolved by listening to the audiotape, either because the tape was unintelligible or because the tape recording—regardless of its clarity—could not resolve the discrepancy. (An example of this latter category, i.e., "speech ambiguous," is, quoting from appendix M, "Hollow Hill(s) school district; the two transcripts differ over whether the unit has *Hill* or *Hills*, and the tape at this point offers no solution, though

78. The project's method was not able to identify all transcription errors; it was not possible to identify instances in which both the audio-based transcript and the steno-based transcript were incorrect but identically so, except if such a passage were discovered in the course of resolving a discrepancy located near the dual error. Several such errors were discovered by chance.

the next sentence shows that the speaker intended *Hills.*" As noted below, the final calculations of discrepancies give the benefit of the doubt in such situations to the steno-based transcript.)

TABLE 1
Overall Accuracy Analysis:
Outcomes of Comparing Transcript Discrepancies with Audiotapes

	Steno Version Matches Tape	Audio Version Matches Tape	Neither Version Matches Tape	Speech Ambiguous	Tape Unintelligible	Total[a]
% of discrepancies	37%	54%	4%	3%	1%	100%
No. of discrepancies	2,593	3,779	311	187	81	6,951

[a]Percentages shown in the rows may not add to 100 percent because of rounding.

In table 2 the errors in the steno-based and audio-based transcript pages are sorted according to category of error. In eight of the thirteen error categories, the audio-based transcript had fewer errors than did the steno-based transcript. The overall accuracy difference, then, is not the result of a large number of errors of a particular type by one method. Rather, it indicates differences in error rate across many types of errors. Furthermore, as explained below, the overall difference in error rate is not explained by discretionary deviations; the number of discretionary deviations was almost identical in the audio-based and steno-based transcripts.

The last three categories—verbal tic, false start, and speech omitted (verbal tic), defined in appendix N—represent discretionary deviations (as set forth in the transcript production guidelines produced for this study). "Errors" falling into any of those categories, therefore, were not counted as instances of inaccurate transcription. In order to adjust for these discretionary deviations, the discrepancies identified in the overall accuracy analysis were reanalyzed to discount the discretionary deviations. This adjustment left 5,717 discrepancies for analysis, as shown in table 3. Note that the difference between the 6,951 discrepancies in table 1 and the 5,717 discrepancies in table 3 (a difference of 1,234) is not calculated simply by subtracting the total number of discretionary errors shown in table 2 for both steno-based and audio-based transcripts (a total of 1,352) from the 6,951 discrepancies in table 1. This is because some discrepancies included discretionary "errors" in both the steno-based and audio-based transcripts; i.e., two "errors" rep-

TABLE 2
Overall Accuracy Analysis: Frequency of Errors for Each Kind of Transcript, by Error Category

Category of Error	Percentage (and Number) of Deviations: Steno Version Deviations from Tape	Audio Version Deviations from Tape
Omission of word(s)[a]	63% (998)	37% (582)
Addition of word(s)	58% (498)	42% (356)
Substitution of word(s)	56% (917)	44% (708)
Different form of word(s)	60% (377)	40% (255)
Speaker omitted	49% (85)	51% (88)
Speaker misidentified	47% (14)	53% (16)
Form of yes or no changed	60% (27)	40% (18)
Form contracted or expanded	70% (443)	30% (186)
Word order changed	56% (28)	44% (22)
Punctuation alters sense	50% (7)	50% (7)
Verbal tic omitted	54% (443)	46% (374)
False start omitted	47% (206)	53% (233)
Speech omitted (verbal tic)[b]	44% (42)	56% (54)

[a]The mean (average) number of words omitted per deviation was 1.74 in the steno-based transcripts and 1.65 in the audio-based transcripts.
[b]This category includes only omission of a verbal tic that constitutes a speaker's whole contribution at that point. See appendix N.

resented only one discrepancy (when both transcripts had discretionary errors but of different types). Moreover, elimination of all discretionary "errors" did not necessarily result in the elimination of all respective discrepancies, because one version of the transcript may have had a discretionary "error" and the other version had a nondiscretionary error.

There was little difference between the outcomes of the unadjusted and the adjusted analyses. Table 3 shows the results of the reanalysis, for all courts combined and according to individual project courts. For all courts combined, the audio-based version matched

TABLE 3
Overall Accuracy Analysis: Outcomes of Comparing Transcript Discrepancies with Audiotapes, by Court, Adjusted for Discretionary Errors—Percentage (and Number) of Discrepancies

Court	No. of Pages	Steno Version Matches Tape (Adj.)	Audio Version Matches Tape (Adj.)	Neither Version Matches Tape (Adj.)	Speech Ambiguous	Tape Unintelligible	Total[a]
All courts	680	36% (2,050)	56% (3,206)	3% (193)	3% (187)	1% (81)	100% (5,717)
A	75	37% (190)	54% (280)	3% (18)	3% (14)	3% (14)	100% (516)
B	71	55% (334)	36% (220)	6% (34)	3% (17)	1% (4)	100% (609)
C	70	31% (163)	61% (323)	3% (17)	4% (20)	1% (5)	100% (528)
D	33	45% (102)	46% (105)	3% (7)	5% (11)	0% (1)	100% (226)
E	77	30% (319)	63% (668)	3% (29)	3% (27)	2% (23)	100% (1,066)
F	71	26% (159)	68% (422)	3% (17)	3% (17)	1% (6)	100% (621)
G	29	25% (49)	71% (139)	2% (4)	1% (2)	1% (2)	100% (196)
H	70	36% (257)	54% (384)	3% (23)	5% (33)	1% (10)	100% (707)
K	29	20% (28)	71% (101)	4% (5)	3% (4)	3% (4)	100% (142)
L	83	34% (162)	59% (276)	3% (13)	4% (18)	0% (2)	100% (471)
M	72	45% (287)	45% (288)	4% (26)	4% (24)	2% (10)	100% (635)

[a]Percentages shown in the rows may not add to 100 percent because of rounding.

the audiotape on 56 percent of the analyzed discrepancies; the steno-based version matched the audiotape on 36 percent of the discrepancies. As table 3 shows, however, differences in overall accuracy between audio- and steno-based transcripts were not uniform across courts. For most courts, the audio-based version provided a closer match to the audiotape than the steno-based version. But in one court, the steno version was more accurate; in two other courts, the methods were essentially even.

The production schedules under which transcripts were produced affected the accuracy of the two methods of producing transcripts, although in each case the audio-based transcript matched the audiotape on more of the discrepancies than did the steno-based tran-

script. Table 4 presents the outcomes of the adjusted accuracy analysis according to production schedule; chapter 6 provides an explanation of the various production schedule configurations. The largest difference in overall accuracy was between steno-based transcripts that had been produced on an hourly schedule and audio-based transcripts that had been produced on an expedited schedule. In that situation, the steno-based transcript matched the audiotape recording on 22 percent of the discrepancies and the audio-based transcript matched the tape on 72 percent of the discrepancies, with 5 percent of the discrepancies falling into the other three categories. However, the 229 discrepancies in this particular production schedule configuration accounted for only 4 percent of the 5,717 nondiscretionary discrepancies and affect the overall results only slightly.

TABLE 4

Overall Accuracy Analysis:
Outcomes of Comparing Transcript Discrepancies with Audiotapes, by Production Schedule, Adjusted for Discretionary Errors—Percentage (and Number) of Discrepancies

Production Schedule	Steno Version Matches Tape	Audio Version Matches Tape	Neither Version Matches Tape	Speech Ambiguous	Tape Unintelligible	Total[a]
All schedules	36% (2,050)	56% (3,206)	3% (193)	3% (187)	1% (81)	100% (5,717)
Both ordinary	38% (1,109)	54% (1,572)	4% (108)	3% (89)	1% (24)	100% (2,902)
Both expedited	39% (324)	52% (432)	3% (28)	4% (35)	2% (15)	100% (834)
Both daily	29% (255)	63% (547)	3% (22)	3% (23)	2% (21)	100% (868)
Both hourly	27% (63)	61% (143)	6% (13)	4% (10)	2% (5)	100% (234)
Steno daily, audio expedited	38% (164)	53% (227)	3% (15)	4% (16)	2% (10)	100% (432)
Steno hourly, audio daily	39% (84)	55% (119)	1% (2)	5% (10)	1% (3)	100% (218)
Steno hourly, audio expedited	22% (51)	72% (166)	2% (5)	2% (4)	1% (3)	100% (229)

[a]Percentages shown in the rows may not add to 100 percent because of rounding.

The second and third largest differences in accuracy were between steno- and audio-based transcripts that had been produced on the same schedules. With both methods working on a daily schedule, the steno-based transcript matched the audiotape recording on 29 percent of the discrepancies; the audio-based transcript matched the audiotape recording on 63 percent of the discrepancies. With both methods working on an hourly schedule, the results were 27 percent and 61 percent respectively.

One final adjustment of the overall accuracy data was made prior to computation of the statistical significance of the outcomes of the analysis. All discrepancies that had been coded as "speech ambiguous" or "tape unintelligible" were recoded as "steno version correct." This adjustment served to give the benefit of the doubt to the official transcript of proceedings, and to count any ambiguity as a shortcoming of the audio recording systems. (Discrepancies on which neither was correct were excluded.)

TABLE 5

Overall Accuracy Analysis:
Outcomes of Comparing Transcript Discrepancies with Audiotapes, by Court, Adjusted for Discretionary Errors and Counting "Speech Ambiguous" and "Tape Unintelligible" as "Steno Version Correct"—Percentage (and Number) of Discrepancies

Court	Steno Version Correct[a]	Audio Version Correct	Significance Level[b]
All courts	42% (2,318)	58% (3,206)	.001
A	44% (218)	56% (280)	.01
B	62% (355)	38% (220)	.001
C	37% (188)	63% (323)	.001
D	52% (114)	48% (105)	NS
E	36% (369)	64% (668)	.001
F	30% (182)	70% (422)	.001
G	28% (53)	72% (139)	.001
H	44% (300)	56% (384)	.01
K	26% (36)	74% (101)	.001
L	40% (182)	60% (276)	.001
M	53% (321)	47% (288)	NS

[a]"Speech ambiguous" and "tape unintelligible" scored as steno version correct.

[b]The null hypothesis being tested is that in 50 percent of the discrepancies the steno version matches the tape and in 50 percent the audio version matches the tape. The hypothesis is rejected if there is less than a 5 percent chance of its being correct. The numbers indicate whether the probability of an incorrect rejection is .05, .01, or .001. NS indicates that the probability of getting such a split if the true proportions are .50 and .50 is greater than .05 and therefore the hypothesis is not rejected.

Table 5 presents the outcomes of this final adjustment (i.e., counting the steno-based transcript as correct whenever the speech on the audiotape was ambiguous or unintelligible), for all courts combined and for individual courts. For all courts combined, the audio-based transcripts matched the audiotape on 58 percent of the discrepancies, and the steno-based transcripts matched the audiotape on 42 percent of the discrepancies, which was statistically significant at the .001 level. Again, however, this difference was not evenly distributed across project courts. Indeed, the steno-based transcripts from three project courts were more accurate than the audio-based transcripts from those courts, although in only one court, Court B, did the difference reach statistical significance. Moreover, in one of the other three courts (Court D), the audio-based transcript was correct in more discrepancies before the benefit of the doubt was given to the steno-based transcript. For the other eight courts, the audio-based transcripts were more accurate than the steno-based versions, in each case at a level of statistical significance.

Table 6 shows the effect of this same final adjustment to the overall accuracy data according to transcript production schedule. The audio-based transcripts were more accurate than the steno-based versions, at a statistically significant level, for all production schedule categories in which both systems were operating under the same deadlines.

Spelling

The 680 pages of matched transcript sampled for this evaluation contained 337 differences in spelling. Table 7 presents the results of an analysis of these spelling differences. In 42 percent of these spelling differences, the spelling in the steno-based version was correct. In 10 percent of the spelling differences, the spelling in the audio-based version was correct. Another 42 percent of the differences could not be resolved because correct spellings of the proper names or specialized terms involved could not be obtained in time for the analysis. In 5 percent of the differences, neither version was correct.

Evaluation of Functionally Relevant Discrepancies

The analysis of overall accuracy did not distinguish in any way between discrepancies that were functionally relevant and those that were not. The second accuracy evaluation dealt precisely with that distinction. There are many different ways in which important

TABLE 6

Overall Accuracy Analysis: Outcomes of Comparing Transcript Discrepancies with Audiotapes, by Production Schedule, Adjusted for Discretionary Errors and Counting "Speech Ambiguous" and "Tape Unintelligible" as "Steno Version Correct"—Percentage (and Number) of Discrepancies

Production Schedule	Steno Version Correct[a]	Audio Version Correct	Significance Level[b]
All schedules	42% (2,315)	58% (3,206)	.001
Both ordinary	44% (1,222)	56% (1,572)	.001
Both expedited	46% (374)	54% (432)	.05
Both daily	35% (299)	65% (547)	.001
Both hourly	35% (78)	65% (143)	.001
Steno daily, audio expedited	46% (190)	54% (227)	NS
Steno hourly, audio daily	45% (97)	55% (119)	NS
Steno hourly, audio expedited	26% (58)	74% (166)	.001

[a]"Speech ambiguous" and "tape unintelligible" scored as steno version correct.

[b]The null hypothesis being tested is that in 50 percent of the discrepancies the steno version matches the tape and in 50 percent the audio version matches the tape. The hypothesis is rejected if there is less than a 5 percent chance of its being correct. The numbers indicate whether the probability of an incorrect rejection is .05, .01, or .001. NS indicates that the probability of getting such a split if the true proportions are .50 and .50 is greater than .05 and therefore the hypothesis is not rejected.

TABLE 7

Overall Accuracy Analysis: Spelling

	Steno Version Correct	Audio Version Correct	Unresolved	Both Wrong	Total
% of discrepancies	42%	10%	42%	5%	100%
No. of discrepancies	142	35	143	17	337

differences between transcript versions could have been defined and identified. We chose for our purposes to determine which transcript discrepancies would be likely to make a difference in one of several potential uses of a transcript, and for that determination we turned to judges and lawyers, as described below.

Chapter V

Procedure

All of the 2,483 paired transcript pages sampled for the overall accuracy analyses were used in the evaluation of functionally relevant discrepancies. Each of the audio-based transcript pages in this sample had been proofread, as described above. Next, legal assistants—one practicing attorney, one law-school graduate, two third-year law students, and one second-year law student—each reviewed different portions of the proofread pages. They were told to screen out those discrepancies that could not possibly make a difference for any purpose for which transcripts are used; that is, for example, if an appellate judge were reading the transcript on appeal, it would make no difference whether he or she read one version of the discrepancy or the other.

The legal assistants also prepared brief summaries of every case from which these pages had been drawn, providing information on the parties involved and the key issues, and summaries of testimony. The sample pages, with the discrepancies marked by the legal assistants, were submitted with the case summaries to fifteen three- and four-person panels of judges and attorneys. Panelists included ten appellate judges, twenty-two district court judges, five attorneys from the American College of Trial Lawyers, three United States attorneys, and six assistant United States attorneys. (See appendix O for names of the panelists.) The judges represented an approximate geographic cross-section of the federal judiciary, and included six judges who had presided over a proceeding in a project courtroom.

Materials were divided so as to attempt to give each panel approximately the same number of discrepancies, to give each panel a variety of cases, to give judges who had participated in the project some pages from their own courts, and not to give appellate judges materials from their own circuits. The same set of materials was sent by mail to each member of a panel. The panel members (working alone in their home cities) were asked to apply the following question to each discrepancy examined:

> 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 posttrial motions
> 2. to write an appellate brief, argue the case on appeal, or decide the case on appeal
> 3. to plan trial strategy

> 4. for other, unrelated proceedings, such as the preparation for administrative hearings, or trials in which the transcript might be submitted as evidence.

Panel members were to mark each discrepancy either "unlikely to make a difference" or "likely to make a difference" or to indicate that they were "undecided." The attorneys and judges returned their materials by mail, and the results for each panel were collated to determine where the panel members were in agreement and where their judgments differed.

Next, the panels assembled in Washington, D.C., on one of four separate dates to discuss the discrepancies over which there had not been consensus, and those over which all members had been "undecided." (Because of time constraints on the panel meetings, discrepancies over which consensus was lacking only because of one "undecided" vote were counted as having consensus, and therefore were not given further attention at the meetings.) At the panel meetings the judges and attorneys were asked to use the same criteria for their judgments that they had used individually. They were able to obtain information from the full transcripts when more context was necessary for their decisions, or to ask for information from the legal assistants. They discussed each of the remaining discrepancies and tried to reach consensus. When they could not reach consensus on any particular discrepancy, they were counted as "undecided."

After the panels met, the legal assistants compared the audiotape with the discrepancies that the panels indicated were likely to make a difference. They assigned discrepancies to one of the categories listed below:

1. the official transcript was correct and the audio-based transcript was incorrect
2. the official transcript was incorrect and the audio-based transcript was correct
3. both transcripts were incorrect
4. the audiotape was clear, but the speech was ambiguous, and the discrepancy could not be resolved by listening to the audiotape
5. the audiotape was not clear, and the discrepancy could not be resolved by listening to the audiotape
6. the discrepancy was of a type that could not be resolved by listening to the audiotape (see table 11 for example).

Results

A total of 6,781 discrepancies—as shown in the sample pages and their paired versions—were sent to the expert panels for their judgments on functional relevance. These discrepancies included 98 instances in which the audio-based transcript differed from the steno-based transcript because the audiotape transcriber had typed "(inaudible)" or "(indiscernible)." Each of the fifteen panels made decisions on an average of 452 discrepancies. Of the 6,781 discrepancies, they judged 744 "likely to make a difference" according to the criteria they were given.

TABLE 8

Functional Relevance Accuracy Analysis: Outcomes of Comparing Transcript Discrepancies Judged "Likely to Make a Difference" with Audiotapes— Percentage (and Number) of Discrepancies

	Steno Version Matches Tape	Audio Version Matches Tape	Neither Version Matches Tape	Speech Ambiguous	Tape Unintelligible	Other	Total
% of discrepancies	27%	57%	5%	5%	3%	3%	100%
No. of discrepancies	198	422	38	39[a]	23[b]	24[c]	744

[a]See table 9.
[b]See table 10.
[c]See table 11.

Table 8 presents the outcomes of the comparison of those discrepant portions of transcript with the audiotape recording. Of the 658 discrepancies for which the correct version could be determined on the basis of the audiotape, the audio-based transcript matched the audiotape more than twice as often as did the steno-based transcript. Twenty-four of the discrepancies that the experts judged "likely to make a difference" could not be resolved by listening to the audiotape. These were categorized as "other" in the table. Discrepancies assigned to the "other" category are described in table 11.

The "speech ambiguous" and "tape unintelligible" categories were used for discrepancies that in theory could be resolved by listening to the tape, but that in practice could not. Tables 9 and 10 present descriptions of the discrepancies assigned to those categories.

As in the overall accuracy analysis, one final adjustment was made to the functional relevance analysis: All discrepancies that had been coded as "speech ambiguous" or "tape unintelligible" were recoded as "steno version correct." This adjustment served to

TABLE 9

Functional Relevance Accuracy Analysis: Discrepancies Judged "Likely to Make a Difference" That Were Not Resolvable by Listening to Tape— Situations Producing "Speech Ambiguous" Designation

Type of Problem	No. of Discrepancies Unresolved
Simultaneous speech	6
Witness with heavy accent	5
Beginning or end of word "swallowed"[a]	6
Words with similar sounds[b]	11
Short word/grunt[c]	10
Homonym[d]	1
Total	39

[a]Examples: has/as, high/higher, include/exclude, him/them, reflected/reflector.
[b]Examples: interferogram's face/interferogram space, Miss DeLeon/Mr. Leon, band/bend.
[c]Examples: her/a, if/uh, her/uh.
[d]Example: no/know.

TABLE 10

Functional Relevance Accuracy Analysis: Discrepancies Judged "Likely to Make a Difference" That Were Not Resolvable by Listening to Tape— "Tape Unintelligible" Category

Type of Problem	No. of Discrepancies Unresolved
Noise from machine being demonstrated in courtroom[a]	6
Microphone placement[b]	10
Bench conference or sidebar[c]	2
Noise in courtroom (laughter)	2
Fuzzy sound	1
Speaker identification[d]	2
Total	23

[a]In one patent case a machine was being demonstrated during much of one day's proceeding.
[b]Comments by a clerk or marshall were sometimes not picked up clearly when that person was away from a microphone. In one case voir dire took place in a lobby where the judge had decided not to have microphones placed since the installation was temporary. In one court a conference table was used, and microphones were sometimes not set up properly.
[c]At bench conference or sidebar conference, whispering by the parties was sometimes difficult to distinguish.
[d]If the identity of a speaker could not clearly be determined by listening to the tape, the discrepancy was scored as "tape unintelligible" even though the content of the speech was clear.

give the benefit of the doubt to the official transcript of proceedings, and to count any ambiguity as a shortcoming of the audio recording systems.

TABLE 11
Functional Relevance Accuracy Analysis: Discrepancies Judged "Likely to Make a Difference" That Were Not Resolvable by Listening to Tape—"Other" Category

Type of Discrepancy	No. of Instances
Spelling[a]	12
Information on exhibits[b]	3
Stage directions[c]	6
Identification of stage of proceedings[d]	1
Punctuation[e]	2
Total	24

[a]All but one discrepancy involved proper names, and the correct spelling was not determined. The other discrepancy represented what was apparently a typographical error in the steno version.
[b]Stenotype version: "Defendant's exhibit VT marked..."
Audio version: "Exhibit VT was marked..."
Audio version did not note exhibit admitted.
Steno version did not note exhibit admitted.
[c]Stenotype: "outcry by one of the spectators."
Audio: "wail by _____ (person named)."
Stenotype: "shakes head in negative" (referring to attorney responding to judge's question "Does anybody want anything else?").
Audio: no indication.
Stenotype: noted attorney "reading from deposition" after attorney broke from reading to address jury and returned to reading.
Audio: name of attorney only.
Stenotype: "a document handed to witness."
Audio: no indication.
Audio: "indicating" after attorney refers to someone present in courtroom.
Stenotype: no indication.
Two forms of presenting reading from deposition.
[d]Start of cross-examination section, using a deposition, noted by audio and not by steno version.
[e]Quotation marks used by audio version for passage read from letter; not by steno version.
Quotation marks used by steno version for passage read from deposition; not by audio version.

Table 12 presents the results of this final analysis. Of the discrepancies for which one version could be determined to be correct, the stenotype version was correct in 38 percent of the cases, and the audio version was correct in 62 percent of the cases. This difference is statistically significant at $p < .001$.

Because some steno-based transcripts in the study that had been produced under daily or hourly deadlines were paired with audio-based transcripts that had been produced under expedited copy deadlines, and because it was reasonable to assume that accuracy would not be completely independent of production deadline, one further analysis of the discrepancies judged "likely to make a difference" was carried out. For this analysis, only those discrepancies drawn from transcripts produced under identical delivery deadlines were evaluated. Again, all instances of "speech ambiguous" and "tape unintelligible" were counted as "stenotype version correct." Table 13 shows the results of this reanalysis. Again, the stenotype

TABLE 12
Functional Relevance Accuracy Analysis: Outcomes of Comparing Discrepancies Judged "Likely to Make a Difference" with Audiotapes, Counting "Speech Ambiguous" and "Tape Unintelligible" as "Steno Version Correct"—Percentage (and Number) of Discrepancies (Statistically Significant at .001)

	Steno Version Correct[a]	Audio Version Correct	Level of Significance
% of discrepancies	38%	62%	.001
No. of discrepancies	260	422	

[a]"Speech ambiguous" and "tape unintelligible" scored as steno version correct.

TABLE 13
Functional Relevance Accuracy Analysis: Outcomes of Comparing Discrepancies Judged "Likely to Make a Difference" with Audiotapes, Counting "Speech Ambiguous" and "Tape Unintelligible" as "Steno Version Correct," for Transcripts under the Same Production Schedule—Percentage (and Number) of Discrepancies (Statistically Significant at .001)

	Steno Version Correct[a]	Audio Version Correct	Level of Significance
% of discrepancies	38%	62%	.001
No. of discrepancies	218	353	

[a]"Speech ambiguous" and "tape unintelligible" scored as steno version correct.

version was correct in 38 percent of the cases, and the audio version was correct in 62 percent of the cases.

A caveat is in order concerning the evaluation criteria that the panels were asked to apply to the discrepancies, that is, to categorize them as "unlikely to make a difference" or "likely to make a difference" or to indicate that the panelists were undecided. As noted, the panels identified 744 of the 6,781 discrepancies as "likely to make a difference," but this number may understate the severity of the problem of inaccurate transcript production. Several panel members stated that they regarded many other discrepancies to be unacceptable as transcription errors, even though the panelists were unable to state that the particular errors were "likely to make a difference" in the context of those cases from which the transcripts were produced. Some panel members indicated that the

discrepancies might well have made a difference in a totally different case, and that, as a general principle, the discrepancies were intolerable products of any federal court reporting system.

Comments of Judges and Attorneys

The project plan (see appendix B) provided that "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 critiques that they may care to offer." Each clerk of court was asked to post a notice (see appendix P) advising attorneys of this portion of the plan and indicating the conditions under which they would be sent copies of audio-based transcripts. The judges were well aware that they could inspect copies of audio-based transcripts, as were the site monitors, and they were specifically invited to make comments on a questionnaire sent to them at the conclusion of the test.

Only four of the twelve judges had examined audio-based transcripts at the time they filled out the questionnaires sent to them at the end of the project (see chapter 8); three commented that the audio-based transcript appeared comparable to the steno-based versions. The fourth suggested that the court reporter version was superior.

The site monitors, in reports provided either during the project or at the conclusion of the data gathering, were evenly divided about the quality of the audio-based transcripts, as compared to the steno-based versions. Two concluded that the audio transcripts were more accurate; two concluded that the official reporters' transcripts were more accurate. One monitor concluded that the court reporters' copy was superior but suggested that errors in the audio transcript were minor, and easily correctable. Four monitors noted differences between the two kinds of transcripts, without offering an opinion about which they thought was better.

Finally, two attorneys requested copies of audio-based transcripts of proceedings in which they had been involved. Both sent comments to project staff at the Center. Neither noted any significant differences between the physical appearance of the matched transcripts. One attorney faulted the audio-based transcript for incomplete appearances of counsel, noted "numerous discrepancies between the audio- and steno-based transcripts," and enclosed a partial list of those discrepancies. The other attorney noted that the "tape-based transcript appeared to be more complete than the official version" and enclosed a detailed analysis of the two versions.

VI. TIMELINESS OF TRANSCRIPT DELIVERY

The Judicial Conference has, pursuant to statute,[79] set deadlines by which court reporters are to honor various classes of transcript orders, as well as prices that may be charged for transcripts according to the various delivery schedules. This chapter presents the results of several analyses of the timeliness by which transcripts produced during the project were delivered within respective time limits established by the Conference. The Conference has established four transcript delivery categories:

> **ordinary transcript**—"to be delivered within thirty (30) calendar days after receipt of an order."
>
> **expedited transcript**—"to be delivered within seven (7) calendar days after receipt of an order."
>
> **daily transcript**—"to be delivered following adjournment and prior to the normal opening hour of the court on the following morning whether or not it actually be a court day."
>
> **hourly transcript**—"[a] transcript of proceedings ordered under unusual circumstances to be delivered within two (2) hours"[80] (i.e., typically within two hours of the conclusion of the morning or afternoon session).

In all twelve project courts, an audio-based transcript of proceedings was ordered whenever an official transcript of proceedings from a project courtroom was ordered from the court reporter. In all twelve project courts, transcripts ordered from the official court reporter for regular or expedited delivery were ordered from project transcription companies for delivery under the same deadline. In two large metropolitan courts that normally have a high volume of daily and hourly transcripts, the Center contracted with transcription companies to produce daily and hourly transcripts from the audio record. Whenever daily copy was ordered from the official reporters, daily copy of the audio-based transcript was or-

79. 28 U.S.C. § 753(f).

80. Administrative Office of the United States Courts, *supra* note 22, at ch. 20, pp. 3-4.

dered from the transcription company. At the request of the clerk of court in one of these courts, a limited number of audio-based transcript pages were also ordered for hourly delivery from the transcription company. In the other project courts, whenever parties ordered daily or hourly copy from the official reporter, orders for expedited copy of the audio-based transcript were placed with the audiotape transcription companies. (Obviously, the staff evaluated the timeliness of the two systems' transcript production on these differing standards; that is, the official reporters' ability to produce daily or hourly copy was not compared to the transcription companies' ability to produce expedited copy. See tables 4 and 6 in chapter 5, *supra.*)

Procedures and Types of Analyses

The transcript request form (see appendix K), which court reporters at project sites filled out to notify the clerk of court of requests for transcripts of proceedings from project courtrooms, included spaces on which the court reporter, audio operator, or transcription company, as appropriate, was to note the dates of various phases of the processing of the transcript order. The dates on which the following events occurred were to be noted: court reporter received transcript order from party or court; request form submitted to clerk's office by court reporter; request form received by project audio operator; tapes and logs sent to transcription company; tapes and logs received by transcription company; tapes, logs, and completed transcript sent to court by transcription company; audio-based transcript received by the clerk's office; and tapes and logs refiled by audio operator.

In the following analyses, each scheduled delivery of a transcript was treated as a separate order. For example, an ordinary transcript order for a five-day trial was analyzed as one transcript order; an order for daily transcript during the same five-day trial was analyzed as five separate daily copy orders. The information on the transcript request forms provided the bases for ascertaining the timeliness of audio-based transcript delivery to the clerk of court, which is, as noted, the main focus of this analysis of timeliness of transcript delivery. For practical purposes, official transcript delivery times are available only from case files, which may be regarded as a limitation on the project's data collection method.

In only one category—ordinary transcript—does the report compare the timeliness of audio-based and steno-based transcript delivery, and even that comparison demands qualification. Several reasons limit the value of comparing the delivery of steno-based transcript to the clerk of court with that same delivery by the audio transcription company. First, the force of local practices, in combination with the regulations in effect at the time of the project, created a standard for the delivery of official transcript to the clerk of court that was looser than the standard that the project imposed for delivery of audio-based transcript. At the time of the project, the only statutory or Judicial Conference requirement for the filing of the court's copy of the official transcript was the statutory admonition that it be filed "promptly,"[81] and local practices varied as to when the court's official copy was in fact expected to be filed. Comparative data are presented for the filing of ordinary transcript with the court, because the official court reporters in the project courts were specifically advised of the importance of filing the copy with the court so as to allow comparative measurement of the two filings, and because the case files give accurate information on the date on which the official transcript was delivered. In the case of expedited, daily, and hourly transcripts, however, information from the case files as to when these official transcripts were delivered to the court is not sufficiently precise to allow reliable comparison. Even small errors in the filing times as recorded in the case files could lead to seriously flawed conclusions about the timeliness of official transcript delivery. In any event, there is no strong reason to believe that, during the project, the steno reporters did not provide expedited, daily, and hourly transcripts *to the parties* within the deadlines prescribed by the Judicial Conference. (It bears emphasis, in this regard, that the time that the steno-based transcript was delivered to the court may well follow the time that it was delivered to the parties.)

Results

Ordinary Transcript Delivery

Seventy-four orders for ordinary transcripts of proceedings (i.e., delivery within thirty days) in project courtrooms were processed within the 174-day project observation period. The date on which the steno-based transcript was filed in the clerk's office was available from the case file; the corresponding date for the audio-based

81. 28 U.S.C. § 753(b). The Judicial Conference has since specified that "[t]he transcript copy should be delivered to the court reporter supervisor concurrently but not later than 3 working days after delivery to the requesting party. Upon receipt, the court reporter supervisor shall file the copy with the clerk of court." Administrative Office of the United States Courts, *supra* note 22, at ch. 17, p. 6.

transcript was available from the transcript request form. As indicated above, the dates on which the steno-based transcripts were filed in the clerk's office are not necessarily the dates that the transcripts were delivered to the parties who ordered them.

Table 14 shows—for both the audio- and steno-based transcripts and regardless of transcript size—the percentage of these orders received in the clerk's office within the mandated thirty-day deadline. Of the audio-based transcripts—regardless of where the transcription company was located—83 percent were delivered to the court within the thirty-day deadline and 100 percent were delivered within thirty-five days. Of the steno-based transcripts, 64 percent were filed in the clerk's office within the thirty-day deadline, and 77 percent were filed within thirty-five days.

TABLE 14
Transcript Delivery Schedule for Regular Transcript Orders

	Audio-Based Version			Steno-Based Version					
	Submission within			Submission within					
Court	30 Days	35 Days	No. of Orders	30 Days	35 Days	40 Days	50 Days	More Than 50 Days	No. of Orders
A	2	4	4	1	2	2	4	0	4
B	7	11	11	2	4	5	7	3	10[a]
C	5	5	5	5	5	5	5	0	5
D	3	3	3	3	3	3	3	0	3
E	21	21	21	16	18	18	19	2	21
F	3	3	3	3	3	3	3	0	3
G	4	7	7	5	6	6	6	1	7
H	1	1	1	1	1	1	1	0	1
J	1	4	4	0	1	1	1	1	2[a]
K	2	2	2	1	1	2	2	0	2
L	10	10	10	4	6	6	8	1	9[a]
M	6	7	7	6	7	7	7	0	7
Total	65	78	78	47	57	59	66	8	74[a]
(% of total)	(83%)	(100%)		(64%)	(77%)	(80%)	(89%)	(11%)	(100%)

Average size of audio-based transcript: 198 pages[b]
Largest transcript: 3,098 pages (Court A)
Number of transcripts exceeding 400 pages: 12

[a]The order(s) for an official transcript(s) was cancelled after the audio-based transcript was completed and filed with the clerk of court.

[b]The average size of the steno-based transcript was not computed, but presumably bears a close relation to the size of the audio-based version.

Expedited Transcripts

Eighty-seven orders for expedited audio-based transcripts of proceedings (i.e., delivery within seven days) in project courtrooms were processed within the project observation period. Table 15 shows that 65 percent of the orders were completed within the mandated seven-day deadline; 82 percent were completed within ten days of the court's receipt of the transcript order; and 100 percent were completed within thirty days of receipt of the order. These figures are regardless of transcript size.

TABLE 15
Transcript Delivery Schedule for Expedited Transcript Orders—Audio-Based Transcripts

		Submission within				
Court	No. of Orders	7 Days	10 Days	15 Days	30 Days	7 Days Eliminating Mailing[a]
A[b]	9	2	2	2	9	2
B	7	2	7	7	7	7
C	0	0	0	0	0	0
D	2	1	2	2	2	2
E	39	30	35	39	39	37
F	11	11	11	11	11	11
G	0	0	0	0	0	0
H	4	4	4	4	4	4
J	2	1	1	2	2	2
K	2	1	1	2	2	2
L	3	2	2	3	3	3
M	8	3	6	8	8	7
Total	87	57	71	80	87	77
(% of total)		(65%)	(82%)	(92%)	(100%)	(89%)

Average transcript size: 54 pages

[a]The number of transcripts completed within seven days with the actual time (in days) taken to mail transcript materials between the clerk's office and the transcription company subtracted from the number of days actually reported.

[b]Because of the unique type of audio recording equipment installed in this court (eight-track reel system) and the limited number of transcription companies, under contract, with the specialized transcribing equipment necessary to prepare audio-based transcripts, most audio-based transcripts prepared during the project for this court could only be provided on a regular order basis.

Almost all orders for expedited transcript required that tapes and logs be mailed out for transcription and that the completed transcript be mailed back to the court. It is important to know the amount of time between order and delivery of audio-based transcripts that was taken up by the mails. The use of audio recording for transcript production on an expedited, daily, or hourly basis would, of course, depend on the availability of transcription services to make delivery on such schedules feasible. The procedures

for processing transcripts during this project created a record of when tapes and logs were mailed for transcription and received by the transcription company, and when the completed transcript was mailed to the court by the transcription company and filed by the court. Thus it was possible to conduct a separate analysis of timeliness of transcript delivery that eliminated the time that materials were in the mail. The far right column of table 15 shows that—after eliminating the time materials were in the mail—89 percent of the orders for expedited delivery of audio-based transcripts were completed within seven days.

Daily and Hourly Transcripts

Daily transcripts (to be delivered prior to the normal opening hour of the court on the following morning, regardless of whether it actually is a court day) were produced from the audio record in two of the twelve courts participating in the project. (In neither case was there any reliance on the mails.) There were fifty-five orders for daily transcripts processed within the project observation period.[82] Fifty-four of these were delivered to the court within the Judicial Conference deadline. (See table 16.)

TABLE 16
Transcript Delivery Schedule for Daily Transcript Orders—Audio-Based Transcript

Court	No. of Orders	No. Submitted within Judicial Conference Guidelines[a]	Average Transcript Size
E	47	46[b]	135 pages
H	8	8	151 pages
Total	55	54	

[a]For the transcript to meet Judicial Conference regulations for daily copy, the audio-based transcript had to be delivered to the clerk of court's office prior to the normal opening hour of the court on the following morning whether or not it actually is a court day.
[b]One transcript order was delivered several days late due to a major snowstorm.

Hourly transcripts (typically expected within two hours of the conclusion of the morning or afternoon session of the court proceedings) were produced from the audio record in one of the twelve project courts. Of the ten hourly transcript orders (all from a single

82. Project procedures called for court reporters to notify the clerk's office of requests for daily copy of proceedings in project courtrooms forty-eight hours prior to the commencement of proceedings. This notification was necessary to enable transcribers to come to the courthouse to prepare transcript. In a few instances project personnel were not made aware of daily copy orders until the commencement of proceedings. Six of the the audio-based daily copy orders in table 3 are of proceedings for which notification of daily copy orders were too late for production of transcript on the day of proceedings. In these instances, transcribers produced the transcript in court, under daily copy deadlines, but at a later date.

TABLE 17
Transcript Delivery Schedule for Hourly Transcript Orders—Audio-Based Transcripts

Court	No. of Orders	No. Submitted within Judicial Conference Guidelines[a]	Average Transcript Size
H	10	9[b]	79 pages

[a]For the transcript to meet Judicial Conference regulations for hourly copy, the audio-based transcript had to be delivered to the clerk of court's office or authorized court officer within two hours of the conclusion of either the morning or the afternoon session of the court proceedings.
[b]One transcript order was submitted ten minutes late.

multi-day proceeding) processed at that court, nine were delivered within the Judicial Conference deadline.[83] (See table 17.) (Figures for both daily and hourly transcripts are regardless of transcript size.)

83. Companies that produced either daily or hourly audio-based transcripts during the project employed two or three typists on any given day for this task, which does not appear to be an unduly large complement.

VII. COSTS FOR SYSTEMS OPERATION

This chapter presents the results of two separate analyses of the costs, to the government, of the audiotape and official reporting systems analyzed in this study. The first is a comparative evaluation of costs for stenographic and audiotape recording of proceedings in the twelve project courtrooms. The second is a projected comparative cost evaluation of stenographic and permanent audiotape recording systems, based on actual costs incurred in the project systems, projected personnel and equipment cost increases, long-term maintenance costs, and other factors relevant to the operation of a permanent system.

The major cost components of both systems, for both comparisons, are the same: personnel base salary and fringe benefits (the major cost component, regardless of recording method); space and furniture (including office and storage space); equipment and supplies; government-paid equipment maintenance costs; and facilities modification and equipment installation costs. These cost components are presented in text or tables below.

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]

Calculating Personnel Costs

Official staff court reporters in the district courts are full-time, salaried government employees, appointed by the court for an in-

84. The Conference acted pursuant to 28 U.S.C. § 753(f). For a list of the prescribed fee rates, see Administrative Office of the United States Courts, *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.

definite term. Their personnel costs to the government are, thus, their salary and benefits. Such court reporters' salaries are payment for recording proceedings in court and in chambers, and for production of whatever amount of transcript is ordered by a judge, as distinct from the parties. (For the entire calendar year of 1982, full-time reporters produced, on an average, 136 pages of judge-ordered transcript.[85]) Salary is independent of the number of hours spent taking the record or producing transcripts for judges who request them. Salary does, however, vary according to professional skill—as indicated by professional association certificates of merit—and according to length of service.[86] Federal court reporters receive additional, nonsalary, remuneration for preparation of all transcripts other than those ordered by a judge. This includes payment from parties who order transcripts, and from the federal government for transcripts when provided to indigent parties including those proceeding in forma pauperis and under the Criminal Justice Act.[87] Reporters may also earn income for private reporting services, for private or government parties, such as taking depositions.[88]

Although calculation of a staff reporter's cost to the government is relatively straightforward, determining the personnel cost of utilizing deputy clerks for taking audio records of district court proceedings is more complex than merely calculating their salaries.[89] The deputy clerks who served as audio operators also performed a range of duties in the clerk's office when they were not performing court reporting duties. It was, therefore, necessary to identify that part of their time devoted to audio recording work: equipment monitoring and log-taking during proceedings, related record-keeping and filing, and the duplication of materials for shipment to

85. Office of Court Reporting and Interpreting Services, Administrative Office of the United States Courts, Average Time in Attendance and Pages of Transcripts of United States Court Reporters for Calendar Year 1982.

86. 28 U.S.C. § 753(e); Report of the Proceedings of the Judicial Conference of the United States (Mar. 1979) at 16, 17. For a complete narrative summary, see Administrative Office of the United States Courts, *supra* note 22, at ch. 5.

87. 28 U.S.C. § 2255; 18 U.S.C. § 3006A(d)(1). According to the Office of Court Reporting and Interpreting Services, Administrative Office of the United States Courts, Report on Earning of Federal District Court Reporters, the average district court official court reporter receives an additional self-reported gross revenue of $26,980 for production of official transcripts of proceedings. This figure does not include income from private reporting.

88. Administrative Office of the United States Courts, *supra* note 22, at ch. 15.

89. Other court employees, such as the clerk of court or other supervisory personnel, were involved during the project, primarily in implementing the system and providing general oversight. However, these duties were minimal and their costs were not attributed to the audio system. In any event, the amount of supervisory time devoted to the audio system was not more than would be devoted to comparable supervisory duties for the official court reporting system.

transcription companies. In order to determine the personnel costs associated with the operation of the electronic sound recording systems, detailed weekly timesheets were collected from all primary and secondary audio operators throughout the period of in-court operation of the recording systems. Analysis of these timesheets made it possible to determine the amount of time that the deputy clerks devoted to all court reporting activities. (See appendix Q (table 25), *infra.*)

Across the twelve project courts, an average of twenty-four and one-quarter hours per week (60.4 percent of a forty-hour week) was required of audio operators for all court reporting activities. (See table 18.) Fifteen of these hours (38 percent of the work week) were spent taking the record of proceedings in court or in chambers; seven hours (17 percent of the work week) were spent on other court reporting duties; and two and one-quarter hours (5¼ percent of the work week) were spent on sick leave, annual leave, and holidays.[90] The remaining fifteen and three-quarters hours of the work week were spent on non-court-reporting duties.

Comparative Analysis of System Costs in Project Courts

Table 19 presents a comparison of the average yearly operating costs of the audiotape and stenographic recording systems in the twelve project courtrooms. Annual personnel and supplies costs have been projected on the basis of observed costs during the six months of the project. Audio equipment, equipment maintenance, and equipment installation costs have been adjusted, as is conventional, to reflect the estimate of a useful life of audiotape recording equipment; that useful life is estimated conservatively at six years.

The average annual cost of the court-operated audio recording system is $15,441 per system, and the average annual cost of the corresponding stenographic recording system in project courts is $39,212 per system.

Approximately one-third the total cost of the audio system expense is the annual cost of equipment, installation, maintenance, and supplies. There are no corresponding government expenses for the stenographic systems because official court reporters purchase their own equipment and supplies. In other words, the cost to the government of maintaining the audio recording systems analyzed in this study—personnel, equipment, and other costs—is less than

90. See appendix Q (table 25).

the cost to the government of meeting court reporters' salary expenses. The substantial difference in personnel costs between the two systems is due not only to base-salary differences between official court reporters and the deputy clerks who operated the audio systems, but also to the assignment of some 40 percent of the deputy clerks' salaries to payment for the non-court-reporting duties they carried out for the clerks' offices.

The substantial cost difference between the two kinds of reporting systems—an average of almost $24,000, or 61 percent—is certainly not uniform across all project courts. The differences ranged from $15,054 to $27,982, and tended to be smaller in the larger metropolitan courts, which have high volumes of daily or hourly transcript production, above-average bench time, and clerical personnel employed at higher grade levels than those employed in smaller courts. (That is to say, as compared to those in low-volume courts, the clerical personnel serving as audio operators in high-volume

TABLE 18

Experimental Courts: Personnel Salary Costs

Court	Deputy Clerk: Audio Operator		Court Reporter
	% of Time for Reporting[a]	Annual Court Reporting Cost[b]	Annual Court Reporting Cost[c]
A	54%	$ 9,321	$31,326
B	75%	10,106	31,326
C	57%	9,898	32,109
D	51%	8,328	31,326
E	87%	16,034	32,422
F	49%	7,261	32,892
G	52%	7,258	32,109
H	50%	8,630	33,282
J	47%	7,348	32,892
K	62%	12,072	32,892
L	58%	7,766	31,326
M	83%	$11,217	$33,672
Average	60.4%	$ 9,603	$32,298

[a]The proportion of time spent on all audio reporting activities (see tables 25 and 27 for detailed description and derivation of percentage figures). This calculation includes personnel time for taking the record of proceedings and completing all administrative and clerical tasks related to the preparation and delivery of transcripts, as well as the proportion of annual leave, sick leave, and holidays allocated to court reporting services.

[b]The projected annual personnel costs related to *all* court reporting activities for audio operators (see tables 25 and 26 for detailed analysis and derivation of costs).

[c]Source: Personnel Division, Administrative Office of the United States Courts. The official court reporters' base salaries for reporters participating in the study. According to the clerk of court, one official court reporter always or usually reported court proceedings in Courts A, B, D, F, J, K, and M during the project, but two or more official court reporters shared reporting responsibilities in Courts C, E, G, H, and L during the project. For court locations where two or more reporters shared reporting duties, the average salary for the reporters was used in this analysis.

TABLE 19

Experimental Courts: Cost Comparison between Audio Recording and Official Court Reporter Systems—Average Annual Cost per System

Category	Audio Reporting System	Official Court Reporter System	Reference Table(s)
Personnel			
Salary	$ 9,603	$32,298	[18, 25, 26]
Fringe benefits[a]	1,085	3,650	
Facilities & furnishings			
Space: office & storage	1,023	3,240	[28]
Telephone	240	24	
Audio equipment & supplies			
Equipment: recorders, duplicators & accessories[c]	1,153	0[d]	[29]
Audiotapes: for recording & duplicating	1,320	0[d]	[29]
Equipment maintenance	850[e]	0[d]	
Installation & facility modifications[f]	$ 167	$ 0	[29]
Total	$15,441	$39,212	

Average cost difference between systems: $23,771 (61% reduction)
Smallest cost difference (Court E): $15,054
Largest cost difference (Court G): $27,982

NOTE: The reference table(s) column refers to additional tables in this chapter or appendix Q that describe how the particular itemized cost was derived, including the method of cost analysis and raw data used to calculate the particular cost item.

[a]Source: Personnel Division, Administrative Office of the United States Courts. The government contribution as of January 1, 1983, toward fringe benefits totals 11.3 percent of salary for both official court reporters and deputy clerks. This figure is composed of health insurance (2.5 percent), life insurance (.5 percent), retirement (7.0 percent), and FICA (1.3 percent). Annual leave and sick leave are considered an extension of salary and are already included in the salary item.

[b]Source: Space and Facilities Branch, Administrative Office of the United States Courts. In accordance with rules of the Judicial Conference of the United States, court reporters pay for telephone service except for an intercom service to permit interoffice communications within the courthouse. 28 U.S.C. § 753(e). A deputy clerk normally is provided a standard telephone instrument.

[c]Source: Procurement Division, Administrative Office of the United States Courts. This category includes recording and duplicating machines, microphones, cabling, and other accessories provided during the project. General Services Administration guidelines indicate audio recording equipment for general use normally has an estimated useful life of five to eight years; Federal Property Management Regulations stipulate that equipment may be replaced when repair costs exceed 80 percent of replacement value. 41 C.F.R. 101.25-403(b). The annual cost calculation listed in the table was derived by dividing the number of years of the useful life of the equipment (conservatively estimated at six years) into the court's total equipment purchase cost of $6,917 (see table 29).

[d]According to statute, 28 U.S.C. § 753(e), all such equipment and supplies are provided by the court reporter, i.e., at no expense to the government.

[e]Equipment used during the project was under a full one-year warranty; however, after the first year, a normal maintenance agreement for servicing equipment would be approximately $850 (maintenance contract price quoted by official dealer in Washington, D.C., metropolitan area equals approximately 12 percent of purchase price of recording and duplicating equipment). (Data on file at the Procurement Division, Administrative Office of the United States Courts.)

[f]The annual installation and facility modification expenditures listed in the table were based on average installation costs ($1,002) of an audio system divided over the useful life (six years) of the equipment (see table 29).

courts were likely to be paid more and were required to spend a greater amount of their time on audio recording activities, with corresponding increases in necessary supplies and other costs.)

As shown in table 20, the average number of hours per year spent recording proceedings, as projected from findings in the twelve project courts, is close to the reported number of hours per year that court reporters spent reporting proceedings. Based on audio system use in this study, the projected annual use of the audio systems for recording of proceedings is 788 hours per year. This figure is only slightly higher than the 728 hours per year per court reporter that the Administrative Office of the United States Courts estimates official court reporters spent recording official proceedings. The difference between these two figures may be due to the higher-than-average demand for reporting services in the project courts.

Comparative Nationwide Cost Projections

The two remaining tables in this section show projections for permanent audio system costs, based on costs observed in project courts, with appropriate adjustments for cost increases that can be anticipated such as permanent installation of an audio system, adjustments of audio operator salaries, and court-ordered transcripts, which are to be provided by the official reporter at no cost[91] but which did not happen to be ordered during the project. That is to say, the annual costs estimated from the data observed in the six-month period of the project need to be adjusted upward to take full account of all costs that can be anticipated if the audio recording system were in permanent use.

Table 21 presents such comparative projected annual costs for the two kinds of reporting systems for calendar year 1984; when all costs are estimated, the annual audio system cost rises from $15,441 to $18,604, and the corresponding cost of the official system rises from $39,212 to $40,514. The projected cost difference between the two systems remains substantial, despite the cost increase for the audio system caused primarily by its permanent installation. The projected annual cost of the audio system ($18,604) is 54 percent (or $21,910) less than the projected annual cost of the stenographic system ($40,514).

Table 22 presents a comparative six-year cost projection, showing the projected expenditures in the year that they would be incurred. (The data in table 21, in part, spread costs—such as equipment acquisition and installation expenditures—over the useful life of the audio system.) Because the initial outlay for equipment and installation occurs at the beginning of system use, cost differences between the two systems are not equally distributed over the anticipated six-year useful life of the audio system hardware. Even after including all first-year expenditures for equipment purchase, installation, and facilities modification, however, an average audio system would still cost $10,000 less than the stenographic system during the first year of the audio system's use. Projected savings increase annually thereafter, from over $16,000 the second year to

91. See Office of Court Reporting and Interpreting Services, *supra* note 85; see tables 21 and 22, Court-ordered transcripts; the additional expenditure for providing court-ordered transcripts has been added to the cost of an audio recording system.

TABLE 20

Experimental Courts: Annual Number of Hours of Recording Proceedings by Reporting System

Court	Projected No. of Hours Using Audio[a]	Official No. of Hours Reporting Proceedings for Judges and Magistrates (1982)[b]
A	875	944[c]
B	750	762[c]
C	929	783[d]
D	674	800[c]
E	1,044	1,226[d]
F	765	695[c]
G	640	667[d]
H	657	720[d]
J	618	466[c]
K	817	976[c]
L	619	635[d]
M	1,064	674[d]
Average	788	779
National average		728

[a]See table 25, Deputy Clerk Work Activities. These figures were calculated based on the number of weeks and hours of recording during the experiment.

[b]Source: Division of Court Reporting and Interpreting Services, Administrative Office of the United States Courts, Average Time in Attendance and Pages of Transcripts of United States Court Reporters for Calendar Year 1982. This report is based on quarterly reports (AO Form 48) submitted by each official court reporter to the Administrative Office of the United States Courts. These hours represent the time spent by the official court reporter or his designated substitute reporter recording official proceedings for district judges and magistrates. There are some additional hours spent by some reporters traveling on official court business. The national average is an additional twenty-six hours each year primarily spent traveling on official court business.

[c]According to the clerk of court, one official court reporter always or almost always reported court proceedings in the courtroom during the project. The hours listed represent this reporter's work hours provided by the official reporter to the Division of Court Reporting and Interpreting Services.

[d]According to the clerk of court, several court reporters reported court proceedings in the experimental courtroom during the project. The hours listed represent the average number of the reporters' work hours provided by the official reporters to the Division of Court Reporting and Interpreting Services. For Courts C, E, G, and L, the information listed represents the average number of hours for all reporters regularly assigned to the particular locality. For Court H, the information is based on four full-time reporters who reported during the experiment. For Court M, the information is based on the one full-time court reporter.

TABLE 21

Cost Comparison between Audio Recording and Official Court Reporter Systems: Projected Average National Cost Estimated per Reporting System for Calendar Year 1984

Category	Audio Reporting System	Official Court Reporter System
Personnel		
Salary[a]	$11,442	$33,724
Fringe benefits[b]	1,293	3,811
Facilities & furnishings		
Space: office & storage[c]	927	2,955
Telephone[c]	240	24
Office furnishings[c]	160	0
Audio equipment & supplies		
Equipment: recorder, duplicators & accessories[d]	1,700	0[e]
Audiotapes: for recording & duplicating[f]	1,050	0[e]
Equipment maintenance[g]	1,020	0[e]
Installation & facility modifications[h]	500	0
Court-ordered transcripts[i]	$ 272	$ 0
Total	$18,604	$40,514

Average cost difference between systems: $21,910 (54% reduction)

[a]Source: Personnel Division, Administrative Office of the United States Courts.

The federal court reporter salary was calculated based on the average salary of federal court reporters effective January 1, 1983, $32,427 (see below for derivation of figure), and includes an additional 4 percent cost-of-living adjustment added to base salary in anticipation of a cost-of-living adjustment that might become effective October 1, 1983.

Federal Court Reporter Base Salary (October 1, 1982)	Number of Full-time Reporters
$31,326	234
32,892	248
34,459	70
$32,427 = National average	552 = Total

When the regular complement of salaried official court reporters is insufficient to provide court reporting services to all judicial officers—this includes not only active district judges and magistrates but also senior judges and visiting judges—requesting reporting services on a particular day, the United States district courts are permitted, with the approval of the Administrative Office of the United States Courts, to obtain additional contractual court reporting services. 28 U.S.C. § 753(g). In a few district courts, contract court reporting funds are provided in lieu of the court employing an additional full-time salaried court reporter. The United States district courts expended $865,000 for contractual court reporting services in calendar year 1982.

It is difficult to accurately project contractual reporting costs on a per reporting system basis. Therefore, in this projection, the additional expenditures for contractual reporting services have been excluded from the analysis.

Based on skills, education, and work experience requirements, the Personnel Division, Administrative Office of the United States Courts, and the Subcommittee on Supporting Personnel, Judicial Conference of the United States, have evaluated primary audio operator duties and classified such positions in the salary range of JSP-5 through JSP-7.

As a general policy for projecting long-term salary costs for comparison purposes, the Personnel Division, Administrative Office of the United States Courts, employs the fourth step of the full operating level (the highest attainable JSP grade) as the appropriate salary level. The base salary level for a deputy clerk audio operator is therefore projected at a JSP 7-4 ($18,215 per annum as of October 1, 1982). An additional 4 percent cost-of-living adjustment to base salary has been added to the audio operator salary in anticipation of a cost-of-living adjustment that might become effective October 1, 1983.

(Continued)

Notes to Table 21 (Continued)

The average proportion of audio operator time spent on any court reporting services is estimated, based on project analysis, to be 60.4 percent (see tables 25 and 27).

[b]The government contribution toward fringe benefits totals 11.3 percent of base salary for both official court reporters and deputy clerks. Effective January 1, 1984, however, new federal employees will be subject to a 7 percent FICA deduction with corresponding government contribution, thereby increasing the government contribution for fringe benefits to 17 percent of base salary. Social Security Amendment of 1983, Pub. L. No. 98-21, 97 Stat. 141 (signed April 20, 1983). For purposes of estimating fringe benefit costs, the 11.3 percent figure was used, on the assumption that most employees in 1984 will have entered on duty prior to January 1, 1984.

[c]Source: Space and Facilities Branch, Administrative Office of the United States Courts. As of January 1, 1983, the national average for the amount of space provided for each full-time federal court reporter was 312 square feet and for each full-time deputy clerk was 162 square feet, at an annual cost of $9.47 per square foot. These figures represent the actual amount of court space (total of office and storage space) provided on average to a court reporter and a deputy clerk in the federal district courts. The cost per square foot represents the court's expenditure for space and facilities based on a Standard Level User's Charge (SLUC) at each court facility issued by the General Services Administration. This cost represents the fair market value for the facilities and includes the building, maintenance, and standard usage charges such as cleaning and electricity. Court reporter space is entirely allocated toward court reporting services. Audio operator space is allocated at 60.4 percent, which is the proportion of all court reporting services provided by deputy clerk personnel.

In accordance with Judicial Conference policy, each deputy clerk is normally provided with standard telephone service, which averages $20.00 per month. Each court reporter pays for his or her own telephone service, except for interoffice communications within the courthouse, for which the cost to the government averages $2.00 per month.

In accordance with Judicial Conference guidelines, official court reporters are furnished with excess furniture and furnishings, if possible. The cost of furniture for a deputy clerk would vary depending upon grade level. Furniture expenditures vary by court, with some courts using excess furniture; other courts spend an estimated $1,600 per position for furnishings with a useful life of at least ten years.

[d]Each experimental court was equipped with recording and duplicating equipment totaling approximately $7,000. An additional spare recording machine with additional microphones totaling approximately $3,200 is included in this estimate. The spare recording unit is available for one or more of the following purposes:

1. backup recording unit if permanent recorder malfunctions so as to avoid any substantial delays or disruptions in recording proceedings
2. a portable unit for relocation to divisional offices where a judicial officer does not normally preside
3. a listening unit for judicial staff, counsel, or jurors to review previous recorded testimony or statements
4. a recording unit for magistrate proceedings.

The total initial cost for the recording equipment totals $10,200. Assuming a minimum six-year useful life of the equipment, the annual amortized cost of the equipment excluding maintenance charges would be $1,700.

Several other audio recording manufacturers offer equipment somewhat comparable to the type of machinery used in this study. The price for the other audio recording systems is less than the cost of equipment used in this cost analysis.

[e]Most federal court reporters provide an audio recording system as a backup method of recording proceedings. 28 U.S.C. § 753(b). In accordance with Judicial Conference regulations, all audio equipment and supplies are provided at court reporter expense. 28 U.S.C. § 753(e).

[f]Based on audiotape usage during the project, the average court will need 650 cassette tapes for recording and duplicating audio records for 790 hours of judicial proceedings. In calendar year 1982, the average federal court reporter reported 730 hours of testimony for federal district judges and magistrates.
(Source: Statistical Summary: National Average, Office of Court Reporting and Interpreting Services, Administrative Office of the United States Courts, Average Time in Attendance and Pages of Transcripts of United States Court Reporters for Calendar Year 1982.) On a nationwide basis, the annual tape costs per system are estimated at 600 tapes per year at a cost of $1.75 per cassette.

According to GSA and manufacturer price information, high-quality leader tapes matching tape standards used in this study will cost in bulk purchases from $1.00 to $1.75 per cassette depending on quantity ordered.

[g]Estimated annual maintenance for servicing each complete recording system; first-year maintenance under full warranty for parts and labor. Annual maintenance cost after first year calculated at 12 percent of purchase price, equaling 10 percent annual maintenance cost over the six-year useful life of the equipment.

[h]The average installation cost among the twelve experimental court sites was approximately $1,000. However, in many courts involved in the experiment, the equipment and facility modifications completed were for only the temporary installation of the system. For district courts considering the permanent installation of an audio recording system as a primary method of recording court proceedings, an estimated $3,000 would be a more realistic estimate of the necessary facility modifications and equipment installation costs. The installation and facility modification costs are also prorated over the six-year useful life of the audio recording system.

[i]Federal judges and magistrates occasionally request typed transcripts from the official court reporters. In accordance with statutory provisions, the official court reporter provides such transcripts as part of the base salary, at no cost to the government. In 1982, a federal court reporter, on average, produced 336 transcript pages at court request (Office of Court Reporting and Interpreting Services, Administrative Office of the United States Courts, Average Time in Attendance and Pages of Transcripts of United States Court Reporters for Calendar Year 1982). If an audio recording system was used, the court would pay for the preparation of such court-requested transcripts.

TABLE 22

Nationwide Estimate: Cost Comparison between an Audio Recording and Official Court Reporting System—Initial Year and Six-Year Cost Projection

Category	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	Total
Official court reporter							
Personnel[a]	$33,724	$35,073	$36,476	$37,935	$39,452	$41,030	$223,690
Benefits[b]	3,811	4,314	4,851	5,425	6,036	6,688	31,125
Space[c]	2,955	3,042	3,120	3,198	3,276	3,354	18,945
Furnishing & telephone[d]	$ 24	$ 26	$ 28	$ 30	$ 32	$ 34	$ 174
Yearly total	$40,514	$42,455	$44,475	$46,588	$48,796	$51,106	$273,934
Audio recording system							
Personnel[a]	$11,442	$11,900	$12,376	$12,871	$13,386	$13,921	$ 75,896
Benefits[b]	1,293	1,464	1,646	1,841	2,048	2,269	10,561
Space[c]	927	954	978	1,015	1,040	1,065	5,979
Furnishing & telephone[d]	1,840	265	290	315	340	365	3,415
Audio equipment[e]	10,200	—	—	—	—	—	10,200
Audiotapes[f]	1,050	1,050	1,050	1,050	1,050	1,050	6,300
Equipment maintenance[g]	0	1,225	1,285	1,350	1,420	1,490	6,770
Installation[h]	3,000	—	—	—	—	—	3,000
Court-ordered transcripts[i]	$ 272	$ 272	$ 272	$ 272	$ 272	$ 272	$ 1,632
Yearly total	$30,024	$17,130	$17,897	$18,714	$19,556	$20,432	$123,753
Difference between systems	$10,490	$25,325	$26,578	$27,844	$29,240	$30,674	$150,151

NOTE: For an explanation of the derivation of the first-year costs, see table 21 and accompanying notes.

[a]Assumes a 4 percent cost-of-living salary increase per year after the first year.

[b]Effective January 1, 1984, new federal employees will be subject to a 7 percent FICA deduction with corresponding government contribution, thereby increasing the government contribution for fringe benefits from 11.3 percent to 17 percent of base salary. To reflect increased government contributions because of new personnel, the fringe benefit rate is increased 1 percent per year after the first year.

[c]Assumes a $.25 per square foot increase per year after the first year.

[d]Assumes a 10 percent increase per year in telephone service costs after the first year.

[e]Cost for the purchase of recording equipment and accessories (see tables 21 and 29 for more detailed description).

[f]Cost for the purchase of audiotapes (see tables 21 and 29 for explanation of derivation of figures).

[g]Assumes an initial maintenance cost of 12 percent of equipment cost and an additional 5 percent increase per year for increased labor costs.

[h]The estimated cost for the facility modifications and installation of an audio recording system.

[i]Payment for transcripts prepared at court's request (see note i to table 21 for detailed explanation).

over $20,000 the sixth year. Over the course of the six-year useful life of the audio system hardware, the stenographic system would cost a projected total of almost $275,000, and the audio system almost $125,000—a difference of slightly over $150,000.

According to the Administrative Office of the United States Courts, in December 1982, 552 full-time reporters were employed in the ninety-five United States district courts. The projections computed in this study suggest that if all 552 reporters were replaced by deputy clerks, using audio equipment such as described in this report, the annual cost reduction would be on the order of $12 million. Of course, should audio recording be allowed and used as an official court reporting method, it is not at all clear that all judges would elect to use their statutory discretion[92] to adopt such a method. Moreover, the court reporting configurations that courts might elect to use could, for good reason, allow for various combinations of both systems.

92. See *supra* pp. 1-2.

VIII. EASE OF USE

This chapter presents the results of the project staff's research on any effects the audio recording systems may have had on court proceedings and administration generally within the project courts. This research derives mainly from information solicited, by questionnaire and other means, from judges, court personnel, site monitors, and attorneys in the project courts.

The Judges' Views

Shortly after the termination of audiotape recording of proceedings for this study, the twelve judges in whose courtrooms the equipment had been installed (see the list in chapter 4) were sent a questionnaire soliciting their opinions regarding various aspects of the recording systems' performance. Because the project courtrooms were used by other judges during the course of the study, a similar questionnaire was sent to twelve other judges who had presided over proceedings in the project courtrooms. The judge questionnaire invited comment on:

> effects of the operation of the audio systems on the manner in which they conducted proceedings
>
> effects of the operation of the audio systems on courtroom decorum
>
> performance of the audiotape system and operator in providing readbacks of testimony during proceeding, and
>
> performance of the audio system in taking the record of various kinds of events within the proceeding—voir dire, in-chambers conferences, attorney questioning of witnesses, bench conferences, etc.

The judges were also asked for suggestions for modification of procedures followed by the courtroom audio operator, and whether they wished to discuss any aspects of audio system performance, or the project generally, with a project staff member.

Questionnaires were returned in time for inclusion in this report by all twelve project courtroom judges (i.e., in whose courtrooms

CONTINUED

1 OF 3

the equipment had been installed and who thus had the bulk of judicial experience with the audio systems[93]). Of the twelve project courtroom judges, eleven indicated that the operation of the audio systems affected neither the manner in which they conducted proceedings nor decorum in their courtrooms. The eleventh judge indicated that the operation of the system restricted movement in his courtroom, that the audio system microphones sometimes confused witnesses, and that defendants in criminal cases were uneasy with microphones on counsels' table.[94]

Seven of the twelve judges offered comment regarding the performance of the audio operators in providing playbacks of portions of testimony during proceedings. Of these, two suggested that the audio operator was not able to provide such playbacks as quickly as the official court reporter could locate and read back the requested portion of proceedings. Two other judges noted that the speed with which such playbacks were provided increased with audio operator practice, resulting in satisfactory performance.

The three remaining judges indicated that there was no problem with the audio operators' performance in providing such playbacks during proceedings. One of these judges wrote that, although it is his policy to discourage readback of *questions* asked by an attorney, he does permit the reading back of witnesses' answers. On playback of such answers, he wrote, the audio operator was superior to the official court reporter.

Four judges commented that it took some time (five to seven minutes) to move the audio recording system from the courtroom to chambers. One judge noted the weakness of the audio system in recording voir dire, but attributed that observed weakness to the court's having prohibited facilities modification enabling the placement of a microphone in the area in which voir dire was conducted.

With regard to modification of procedures used in the project, one judge suggested that recorders and microphones be placed in a

93. Questionnaires were returned by ten of the other twelve judges who used the project courtroom. The observations provided by the ten other judges, who used project courtrooms on occasion, were similar to those provided by the judges in whose courtrooms the equipment had been installed.

94. Personnel in this court had expressed concern early in the course of the project about the possibility of the audio system's picking up privileged conversations between attorneys and their clients. Proceedings in that court were recorded for some time with the attorney-table microphones switched off. Two microphone stands equipped with push-to-disconnect switches (switches that cut off operation of the microphone only while they are held in the off position, and reactivate the microphone when released) were shipped to this court, enabling resumption of attorney-table microphones.

manner that would minimize obtrusiveness. Another suggested that playback procedures be improved.

The Audio Operators

Toward the end of the period of in-court operation of the project audiotape systems, a questionnaire was sent to the primary audio operator at each project court, and to the secondary audio operator at the three courts in which responsibility for operation of the system had been fairly evenly divided between the primary and secondary operators. All fifteen questionnaires were completed and returned to the Center.

The audio operators were asked for information and comment regarding

> the frequency with which they were called upon to perform various activities during proceedings—playing back testimony during proceedings, recording bench/sidebar conferences, in-chambers proceedings, telephone conferences, voir dire, and playbacks of evidentiary audiotapes, videotapes, or films during proceedings—and any difficulties encountered in the course of these activities
>
> noteworthy problems encountered in the course of day-to-day recording and logging of court proceedings
>
> any equipment breakdowns that resulted in proceedings going unrecorded
>
> the tasks they were called upon to perform for the clerk's office when they were not engaged in court reporting activities.

Nine of the fifteen audio operators had been called upon to play back testimony in open court in the course of the project. Some of them noted difficulty in pinpointing the requested portion of testimony. Others mentioned that the sound quality of the testimony played back was poor.

All of the operators recorded bench or sidebar conferences. Some noted that identifying speakers on their log notes was difficult during the conferences, that monitoring whispered speech was difficult, and that microphone placement for the conferences was awkward.

Eleven of the operators had recorded proceedings in chambers during the project. A number of these noted difficulty in carrying equipment back and forth between the courtroom and chambers. The same difficulty pertained for one of the two audio operators who was called upon to record telephone conferences during the course of the project.

All of the audio operators had recorded voir dire. The distance between the microphones and the jurors during the voir dire was reported as a problem by some.

Eight of the operators had recorded in-court playbacks of taped or filmed materials during the project.

Problems encountered during the course of day-to-day recording and logging of proceedings included: wandering attorneys, testimony presented from locations away from microphones, background noises, and logging of rapid-fire exchanges.

Audio operators from eight of the twelve project courts reported instances of equipment failures that resulted in proceedings going unrecorded. In none of the instances reported by respondents to this questionnaire did the audio operator assume that a record was being taken, only to discover later that nothing had been recorded.[95] In each of the instances reported below, the audio operator was aware of a problem, and took steps to get the equipment back into service. Because the audiotape systems were not taking the official record, the proceedings did not stop for equipment repairs. Had the audiotape systems been taking the official record, these occurrences would have resulted in interruptions in proceedings until the backup system could be put into operation, or minor repairs effected. Although backup systems were included in the cost projections for permanent installations (see tables 21 and 22), such backup systems were not purchased for the experiment.

The following equipment breakdowns resulting in unrecorded proceedings were reported by audio operators from the 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)

95. Although it was not reported by any of the audio operators responding to this questionnaire, one incident in which an audio operator mistakenly assumed that a record was being taken did occur in one project court. During the first week of operation of the system in that court, one of the audio system microphones was turned off during a recess in a proceeding. After the recess, the audio operator resumed recording, but was not monitoring his recording over his headphones—a violation of project procedures. Because he was not listening to the tape, he did not know that testimony was going unrecorded. Some twenty minutes of testimony were thus "lost." This audio operator was subsequently relieved of audio system responsibilities.

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).

When not engaged in audio system-related duties, the audio operators performed a wide range of tasks in the clerk's office, including intake, docketing, typing, filing, processing jury questionnaires, photocopying, processing appeals, and caseload data entry into computer terminals.

The Site Monitors

Site monitors were to submit biweekly reports to the Center concerning project activities in their courts. (See appendix I for monitor profiles.) Prior to the termination of in-court audiotape recording, the monitors were sent specifications for a final report they were to submit to the Center. Most project monitors regularly submitted biweekly reports during the course of parallel operation of the audiotape and stenographic systems. All but two submitted final reports, and one of these submitted no reports at all during the course of the project, despite repeated requests by the project staff.

The final report specification letter to the monitors asked them to summarize their observations about audiotape system performance in the court they had been observing. The monitors were encouraged to include any information they thought was relevant to evaluation of the systems they had observed. They were asked to be certain, however, that their final report addressed these four areas of concern:

the recording of proceedings: the range of proceedings recorded, the effect of system operation on the conduct of proceedings, the effect of system operation on courtroom decorum

transcript quality

equipment reliability

perceptions of interested parties.

Monitor reports of the range of within-proceeding activities recorded by the systems they observed were similar to those received from the audio operators. Overall, the monitors reported that the operation of the audiotape recording systems did not have untoward effects on the manner in which the judges conducted proceedings, nor on courtroom decorum.

The monitors provided mixed evaluations of the equipment used in the study. Monitors reported a range of minor problems with the equipment, and were, in some instances, critical of the service provided by local vendors responsible for equipment repairs.

Regarding the perceptions of interested parties, the monitors suggested that project activities were, for the most part, conducted without attracting attention from most quarters. They indicated that judges appeared to become less aware of the presence of the systems over the course of the project, and that attorneys appeared to take little notice of the recording operation. Most monitors specifically noted that court reporters in the respective sites expressed concern about the use of electronic sound recording as the primary method of reporting court proceedings.

Other Observers

Clerks of court from two districts participating in the project responded to letters from the project inviting their observations regarding the operation of the audio systems in their courts. Both noted the usefulness of the availability of the project audio operator for other work in the clerk's office when the audio system was not in use. Both offered speculations regarding potential cost savings to litigants attendant to the use of audiotape recording as the official record of proceedings. One emphasized, as have other clerks in conversations with project staff, that backup equipment would be a necessary part of an official audiotape-based system, and such cost calculations are included in chapter 7's cost projections (see tables 21 and 22).

IX. CONCLUSIONS

Summary

Project audiotape recording systems were in operation in twelve courtrooms for some six months. The systems were used to record 4,213 hours of district court proceedings. From audiotape recordings of proceedings taken by audio operators trained for the project, 28,486 pages of transcript representing 230 transcript deliveries were produced. Performance of the audiotape recording systems was evaluated with regard to transcript quality, timeliness of transcript delivery, monetary costs for system operation, and ease of use.

Transcript Quality

Transcripts produced from records taken by the audio recording system were more accurate than the transcripts produced by the stenographic reporting method.

An assessment of overall accuracy, in which transcripts were compared to the audiotape to resolve every discrepancy, indicated that the audio-based transcript provided a closer match to the tape than did the steno-based transcript. In those cases in which one version was correct and the other incorrect, the audio-based transcript matched the audiotape on 58 percent of the discrepancies and the steno-based transcript matched the audiotape on 42 percent of the discrepancies.

An assessment of overall accuracy for individual courts indicated that the audio-based transcript provided a closer match to the audio recording of the proceedings (i.e., was more accurate) in eight of the eleven courts from which transcripts were analyzed. The steno-based transcript was more accurate in one court, and in two courts the two methods were essentially even.

An assessment of overall accuracy for different transcript production schedules ("regular": thirty-day production; "expedited": seven-day production; "daily," and "hourly") indicated that the audio-based transcript provided a closer match to the audio recording of the proceedings in all the conditions in which both versions (steno- and audio-based transcripts) were produced under the same transcript production schedules.

The overall difference in accuracy was also reflected in most of the categories of deviations from the audiotape, with the audio-based transcripts having fewer word omissions, word additions, substitutions of words, and different forms of words.

An analysis of discrepancies in spelling indicated that the steno-based transcripts had fewer words misspelled than did the audio-based transcripts.

An assessment of accuracy with regard to discrepancies judged likely to be legally significant indicated that the audio-based transcripts provided a closer match to the tape than did the steno-based transcripts. In those cases in which one version was correct and the other version incorrect, the audio-based transcript matched the audiotape on 62 percent of the discrepancies and the steno-based transcript matched the audiotape on 38 percent of the discrepancies. This difference held up when cases in which the two versions were not produced under the same production schedule were eliminated.

Timeliness of Transcript Delivery

Audio-based transcripts were, for the most part, produced and delivered within the time guidelines promulgated by the Judicial Conference of the United States.

An assessment of the delivery of "regular" audio-based transcripts (delivery within thirty calendar days after receipt of order) indicated that 83 percent of transcripts were delivered within thirty days and 100 percent were delivered within thirty-five days—regardless of transcript size and proximity to the court of the transcription company. This compared favorably with the submission of comparable steno-based transcripts to the court (64 percent within thirty days and 77 percent within thirty-five days). An assessment of the delivery of "expedited" audio-based transcripts (delivery within seven calendar days after receipt of order) indicated that 65 percent of transcripts were delivered within seven days but 89 percent were delivered within seven days not counting mail service time.

The late delivery of some "expedited" audio-based transcripts was primarily caused by the use of transcription services outside of the court's metropolitan area.

An assessment of the delivery of "daily" (delivery following adjournment and prior to the normal opening hour of the court on the following calendar day) and "hourly" (delivery within two hours) audio-based transcripts indicated that 98 percent of these audio-based transcripts were delivered within the prescribed guidelines.

Costs for Systems Operation

Installation and operation of the project audio recording systems were accomplished at costs to the federal government that compared favorably (lower initial, annual, and long-term expenditures) to federal government expenditures for stenographic reporting systems.

Cost analysis of the two types of reporting systems, based on the actual expenditures among the twelve experimental courts participating in the project, indicated that the average annual cost of a court-operated audio recording system is $15,341 per system, compared to $39,212 for a stenographic reporting system—an average difference of approximately $24,000 (61 percent).

The projected average annual costs in 1984 (including personnel, equipment, supplies, and facility modification expenditures) in a United States district court for the two types of reporting systems would be $18,604 for an audio recording system, compared to $40,514 for the stenographic reporting system—a difference of $21,910 (54 percent). Over the course of a six-year period, the expenditures for an audio recording system would be almost $125,000, compared to $275,000 for a stenographic reporting system.

Nationwide cost projections for the two methods, based on the 552 full-time salaried court reporters working in the ninety-five United States district courts, suggest a cost difference between methods of approximately $12 million annually.

Ease of Use

On the basis of observations provided by United States district court judges, audio operators, site monitors, and clerks of court, it appears that the project audio recording systems had few adverse effects on the conduct of proceedings and did not pose unreasonable administrative burdens.

Almost all United States district court judges reported that the audio recording systems neither affected the manner in which the court conducted proceedings nor detracted from courtroom decorum.

Although audio operators reported some procedural difficulties, they all were able to provide the record of all types of court proceedings on the basis of the limited training they received for the project.

Overall, audio equipment reliability was satisfactory.

Further Considerations

It is important to emphasize that the results summarized above are not the outcome of unsupervised audiotape recordings transcribed by personnel without specialized experience in the production of transcripts of court proceedings. Rather, they are the outcome of careful application of the technology within systems that included clearly specified procedures, carried out by personnel who either received specialized training or—in the case of project transcription services—had backgrounds that prepared them to competently carry out their responsibilities. The audio operators in the project courtrooms each received up to two days of training from the equipment vendor and three days of instruction by persons familiar with the use of audio recording in state court or administrative agency proceedings. Without training such as the week they received, the audio recording system could not be expected to perform well.

It 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.

The implementation of official district court audiotape recording systems—should the Judicial Conference choose to promulgate regulations permitting their use—would require careful attention to at least the following system components:

Orientation of court personnel to audiotape recording systems. Judges should be informed of the performance limits of the audiotape recorders. Although the technology is flexible, it does have limits (e.g., it cannot record speakers who are not within range of microphones). Clerks of court should be informed of the administrative responsibilities that accompany use of a court-managed audio-based court reporting system.

Personnel selection and training. In order to assure the completeness of the record, only competent, responsible personnel can be trusted with the monitoring of the audio equipment. Because of the need for complete, accurate logs of proceedings, personnel must be trained as to how to keep these logs.

Equipment, installation, and supplies standards. Only equipment meeting at least those standards specified by the Administrative Office of the United States Courts should be used. Installation must be by qualified personnel. Because poor quality tapes—particularly cassettes—may be unreliable, only good quality audiotape should be used.

Transcription service selection. Only transcription services with satisfactory records producing transcripts of court and courtlike

proceedings should be employed for transcript production. Timely delivery of expedited, daily, and hourly transcripts depends on the availability of transcription services that can meet these schedules.

System management. In courts using audiotape recording, management of records storage and retrieval and monitoring of transcript quality and timeliness should be incorporated in the court's reporting management plan.

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.

APPENDIX A

28 U.S.C. § 753(b) (1976)

Federal Courts Improvement Act of 1982, Public Law 97-164, § 401, 96 Stat. 25, 56-57 (1982)

(b) One of the reporters appointed for each such court shall attend at each session of the court and at every other proceeding designated by rule or order of the court or by one of the judges, and shall record verbatim by shorthand or by mechanical means which may be augmented by electronic sound recording subject to regulations promulgated by the Judicial Conference: (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 Judicial Conference shall prescribe the types of electronic sound recording means which may be used by the reporters.

The reporter shall attach his official certificate to the original [1] 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. An electronic sound recording of proceedings on arraignment, plea, and sentence in a criminal case, when properly certified by the court reporter, shall be admissible evidence to establish the record of that part of the proceeding.

The reporter shall transcribe and certify 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 hereinabove 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 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 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 re-

[1] So in original. Should be "original."

porter 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 taken by the reporter.

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.

Federal Courts Improvement Act of 1982,
Public Law 97-164, § 401, 96 Stat. 25, 56-57 (1982)

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.

APPENDIX B

Plan to Evaluate Different Methods of Recording Court Proceedings in United States District Courts, as amended (Nov. 19, 1982)

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 Development. 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 consid-

ered 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

	1982 APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	1983 JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
Literature review	XXX																	
Examination of experiences in state courts, bankruptcy courts, and magistrates proceedings	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX																	
Development of procedures for data collection, hiring monitors, etc.		XXXXXXXXXXXXXXXXXX																
Transcript guidelines preparation			XXXXXXXXXXXXXXXXXXX															
Installation of equipment				XXXXXX														
Training of operators				XXXXXXX														
Parallel reporting by audio and steno systems							XXXXXXXXXXXXXXXXXXXXXXXXXX											
Preparation of transcripts							XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX											

November 19, 198

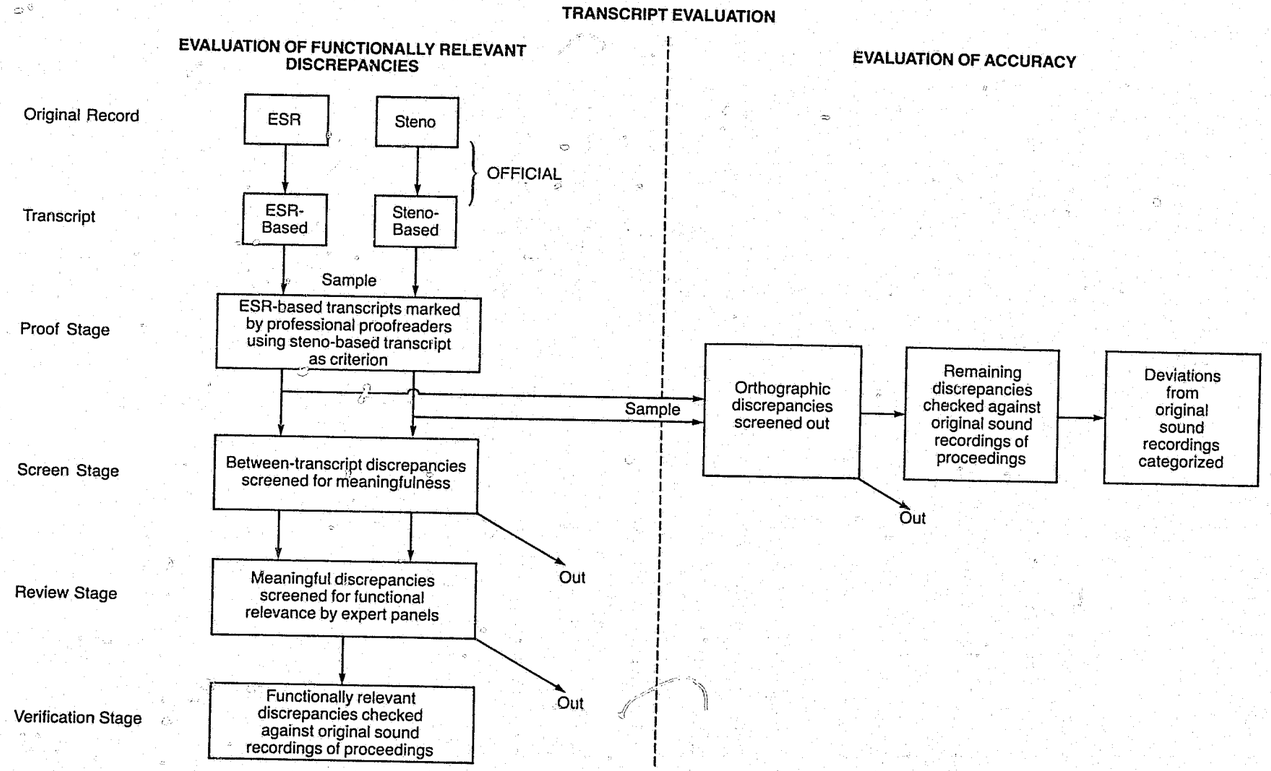
	1982 APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	1983 JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
Monitor meetings & reports					X	X	X	X	X	X	X	X	X	X				
Data collection & analysis				X	X	X	X	X	X	X	X	X						
Preparation of FJC report										X	X	X						
FJC review & revisions													X	X				
Preparation of draft Judicial Conf. regulations (if requested)										X	X	X	X	X	X	X	X	X
Presentation to Judicial Conf. committee															X	X		

6/14/82

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)


TRANSCRIPT EVALUATION
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
Verification Stage
Functionally relevant discrepancies checked against original sound recordings of proceedings

APPENDIX C
Partial Bibliography:
Court Reporting Reports and Studies

This bibliography was distributed with the September 9 amendments to the project plan as described in chapter 1.

PARTIAL BIBLIOGRAPHY
(As of Aug. 11, 1982)
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APPENDIX D
Specifications for Electronic Sound Recording Equipment in a Courtroom Setting

"Specifications for Electronic Sound Recording Equipment in a Courtroom Setting"

Administrative Office of the United States Courts,
Guide to Judiciary Policies and Procedures
Vol. VI, Court Reporters' Manual (1983), ch. 16., pp. 8-10

The specifications used to select equipment for the project courtrooms were, at the time of the selection, in the form of a draft document in the Administrative Office of the United States Courts. Those specifications are presented below in the form in which they were subsequently adopted by the Judicial Conference of the United States. (In their draft form, they included this requirement, since deleted: "System must have alternate power supply to maintain all system functions in the event of a power loss.") At the time of this report, these specifications apply only to equipment for use in proceedings before United States Magistrates and United States Bankruptcy Judges.

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Chapter XVI
4/13/83

G. Specifications for Electronic Sound Recording Equipment in a Courtroom Setting. Standards for equipment purchased by the court have been established by the Procurement and Property Management Branch, Administrative Services Division of the Administrative Office.

An electronic recording system should include as a minimum all available features to insure continuous, uninterrupted recording. The following features should be a factory standard without any modifications being made by dealers. The minimum requirements are as follows:

1. Standard Cassette Unit - dual deck configuration.

2. Four track head recording from four separate program sources.

3. Monitor feature which monitors signal on tape and not source, and include a headset for such monitoring.

4. Recording speed of 15/16 inch per second.

5. Automatic gain for each input.

6. Equipped with speaker for playback, either external or internal, and have external output jack.

7. Provide protection from over-recording; have ability to detect signal on tape prior to contact with recording head thereby preventing any over-recording.

8. Not capable of erasure in any situation.

9. Automatic changeover from one deck to the other must occur in the following situations:

   a. Detection of recorded signal on tape prior to contact with recording head.

   b. Tape motion stops.

   c. Broken tape.

   d. End of tape, at least two minutes before end.

10. Key lock to secure all functions as well as lock cassette in unit.

11. Playback must be possible from each channel individually and collectively.

12. The system should have public address output.

13. Acquisition - Search Function, capable of quickly locating any point on tape for playback, and be able to search to point of last recorded signal and be ready to record where last recording left off.

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

   a. Detection of signal on tape prior to contact with recording head.

   b. Tape motion stops.

   c. Broken tape.

   d. Power loss.

   e. End of tape and tandem deck is not ready to record.

   f. Broken microphone line.

15. Four digit electronic index display system should also be able to provide a remote index display; in acquisition-search situations, the index should be accurate within two digits.

16. Rewind tape to beginning upon insertion of tape.

APPENDIX E
Transcription Services

Transcription Services

Bowers Reporting Company
14024A Marquesas Way
Marina del Ray, CA 90921
and
110 Gough Street
San Francisco, CA 94102

Nancy E. Gass
3381 Pine Ridge
Jackson, MI 49201

Terry Gribben's Transcription Service
111 Sand Spring Drive
Eatontown, NJ 07724

J&J Court Transcribers
20-10 Florister Drive
Trenton, NJ 08690

Steiber's Transcription Service
P.O. Box 2781
Orlando, FL 32802

Betty Sturman's Transcribing Service
84 Fletcher Avenue
Manasquan, NJ 08736

TIW
51 Monroe Street
Suite 1600
Rockville, MD 20850

Video/Audio Recording Services
2100 - 28th Street
Sacramento, CA 95818

APPENDIX F
Revised Guidelines for the Preparation of Transcripts

October 12, 1982

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

Appendix F

Preface

These transcript guidelines were developed for a project to experiment with audio recording equipment in twelve federal district courts between September 1982 and the spring of 1983. The standards were originally suggested by Frances B. Lowenstein, Esq., of the Innovations and Systems Development Division of the Federal Judicial Center with the assistance of a technical panel which included federal court judges, lawyers, court reporters and transcription companies. Previously effective Judicial Conference regulations governing transcripts produced in federal court proceedings are incorporated into these guidelines.

We have attempted to produce a straightforward manageable document. Your comments and suggestions for improvement are always welcome. Please call or write to me at the following address:

Frances B. Lowenstein, Esq.
Innovations & Systems Development Division
Federal Judicial Center
Dolley Madison House
1520 H Street, N.W.
Washington, D.C. 20005

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FTS 633-6400

I. BACKGROUND

The Federal Judicial Center (hereafter, referred to as the 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" (The Federal Courts Improvement Act of 1982, Sec. 401(b), P.L. 97-164, effective April 2, 1982). Subsequent to this legislative directive to experiment, the Center designed a plan to carry out the congressional mandate. (See Plan to Evaluate Different Methods of Recording Court Proceedings In United States District Courts, June 14, 1982). The basic design of the study as set forth in the "Plan" is to install electronic sound recording (ESR) equipment in twelve courtrooms in order to evaluate the performance of the audio recording equipment, the performance of those directed to operate it, and the transcripts produced from the audiotapes. According to the "Plan," when a transcript is requested from the official court reporter, procedures will go into effect by which the audio recording will be sent to one of several transcription companies to prepare typed transcripts of the audio record.

The "Plan" also provided for the creation of a technical panel to develop guidelines for the preparation of the typed transcripts during this project to supplement those prescribed by the Judicial Conference. The panel was directed to develop instructions specifying clearly what should be typed from the tape recordings.

The technical panel met on August 13, 1982 at the Federal Judicial Center in Washington, D.C., and included, among others, two federal court judges and five court reporters. The guidelines developed are to be followed by all transcription companies preparing typed transcripts from audio recordings. The court reporters who attended the August 13th meeting requested that the official court reporters involved in the study at the twelve court sites be bound by the same rules regarding transcript guidelines as established for the ESR-based transcripts.

II. TRANSCRIPT PAGE FORMAT

Front and Back Covers

Each volume of transcript shall have either acetate or hard front and back protective covers.

Cover Page

The cover or title page, which is designated as page 1, shall contain at least the following information (See Appendix A):

- court name
- district
- case name
- case number
- judge presiding
- type of proceeding
- date and time of proceeding
- volume number (if multi-volume)
- name and address of each attorney and name of party represented
- whether a jury was present
- if steno based, court reporter's name, address and telephone number,

  or

  if ESR based, audio operator's name, plus name, address and telephone number of transcription company.

Appearance Page

All names and addresses of each attorney and the name of the party represented may be listed on a separate page following the cover page whenever such a listing cannot be made on the cover page due to space limitations. All names and addresses should be single spaced. (See Appendix B)

Index

Each volume of transcript shall have its own individual index listing the contents of just that volume. The individual index may be either at the beginning or end of each volume.

Index (continued)

This index shall indicate the pages at which the direct examination, cross-examination, redirect examination, recross-examination, and the recall of each witness begins. The index shall also indicate on behalf of whom the witness or witnesses were called, such as "PLAINTIFF'S WITNESSES," "WITNESSES FOR THE STATE," "DEFENDANT'S WITNESSES," "WITNESSES FOR THE DEFENSE." (See Appendix C)

A separate table in the index should indicate the page at which any exhibit was marked for identification and received in evidence. (See Appendix C)

In a protracted case (i.e., a transcript of one thousand pages or more) in addition to the individual index, there may be a master index set forth in its own separate volume, which will consist of a compilation of all of the individual indexes.

The Typed Page

A page of transcript shall consist of 25 lines typed in double space, prepared for binding on the left side, with 1 3/4 inch margin on the left side and 3/8 inch margin on the right side. Typing shall be 10 letters to the inch. Transcripts shall be typed in black ink on 8 1/2 by 11 inch paper (minimum of 13 lb. bond paper).

It is preferable that transcripts be prepared using upper and lower case type. However, all upper case is acceptable if a transcriber/court reporter using computer equipment, such as Computer-Aided Transcription (CAT), can only produce upper case type.

Each transcript page shall be line-numbered 1 through 25. (preprinting is optional). Line margins on the top, bottom, left and right of the page (i.e., a preprinted box) and the preprinted name of the company are optional.

Page and Volume Numbering

Pages shall be numbered at the top right margin above line 1 (outside the optional preprinted box).

There are two acceptable ways of numbering pages in multi-volume transcripts.

Each volume of transcript should be numbered consecutively. One volume of transcript should be at least equal to one day of court proceedings. Pages may be numbered consecutively for each volume of transcript, with the cover page of each volume designated page 1. Using this method, page numbers will begin with a volume number followed by the page number.

Example: 1 - 14 (Volume 1, page 14)
2 - 54 (Volume 2, page 54)
(See Appendixes D thru H).

If preferred, the transcriptionist may number pages consecutively for an entire multiple-volume transcript.

Example: 56 (Volume 1, page 56)
521 (Volume 3, page 521)

Page Heading (a/k/a "Headers")

A page heading is brief descriptive information noted to aid in locating a person and/or event in a transcript. (See Appendixes D through H). A page heading should be provided on each page of witness testimony; a page heading is optional for other types of person and/or event notations. Listing the last name of the witness or other party and the type of examination or other event is sufficient. Page headings shall appear above line 1 on the same line as the page number. This information is not to be counted as a line of transcript.

Parentheses

Parenthetical notations are generally marked by parentheses; brackets may, however, be used.

Parenthetical notations shall begin with an open parenthesis on the fifth space from the left margin, with the remark beginning on the sixth space from the left margin. (See Appendix D, line 4; Appendix G, line 4).

Indentations

Q & A - All "Q" and "A" designations shall begin at the left margin. A period following the "Q" and "A" designation is optional. The statement following Q and A shall begin on the 4th space from the left margin. Subsequent lines shall return to the left margin. (See Appendixes D through H)

Since depositions read at a trial have the same effect as oral testimony, the indentations for "Q" and "A" should be the same as described above. In the transcript, precede each question and answer read with a quotation mark. At the conclusion of the reading, use the closing quotation mark.

Colloquy - Speaker identification shall begin on the tenth space from the left margin, followed directly by a colon. The statement following shall begin on the third space after the colon. Subsequent lines shall begin at the left margin. (See Appendixes D through H)

Quotations - Quoted material other than depositions shall begin on the tenth space from the left margin, with additional quoted lines beginning at the tenth space from the left margin, with appropriate quotation marks used.

Interruptions of Speech and Simultaneous Discussions

Interruptions of speech shall be denoted by the use of a dash at the point of interruption, and again at the point the speaker resumes speaking. At the discretion of the transcriber, simultaneous discussions may also be noted in this manner. (See Appendix D, line 18; Appendix E, line 10).

Word Division

Within the bounds of reason, the transcriber/court reporter shall use standard word division to limit the amount of blank space at the right hand margin.

Punctuation and Spelling

Punctuation and spelling shall be appropriate standard usage. For example, if a question in "Q" and "A" is indeed a question, it should be followed by a question mark. (See Appendixes D through H)

Certification

A transcriber/court reporter shall affix a dated and signed certificate on the last page of each volume of transcript. If more than one transcriber/court reporter was involved in the production of the transcript being certified, then the certifications of each transcriber/court reporter involved shall be required at the end of each volume.

Sample certification:

I [We] certify that the foregoing is a correct transcript from the record of proceedings in the above-entitled matter.

_____ _____
Date Signature

_____
Signature

A rubber stamp may be used for this purpose in order to save time and space. Certification should be typed on the final transcript page. No charge will be permitted for the certification page if it is a separate page of transcript.

III. TRANSCRIPT CONTENT: VERBAL

A. General Rule

Except as noted in Section III, the transcript shall contain all words and other verbal expressions uttered during the course of the proceeding.

B. Striking of Portions of the Proceeding

No portion of the proceeding shall be omitted from the record by an order to strike. Regardless of requesting party, the material ordered stricken, as well as the order to strike, must all appear in the transcript. (See Appendix D, line 19)

C. Editing of Speech

The transcript should provide an accurate record of words spoken in the course of proceedings. All grammatical errors, changes of thought, contractions, misstatements, and poorly constructed sentences should be transcribed as spoken. (See Appendix E, line 8). In the interest of readability, however, false starts, stutters, uhms and ahs, and other verbal tics are not normally included in transcripts; but such verbalizations must be transcribed whenever their exclusion could change a statement's meaning.

D. Reporting of Audio/Video Recordings

Generally, audio/video recordings played in court are entered as an exhibit in a proceeding. Since such recordings are under the direct control of the court, audio/video recordings need not be transcribed unless the court so directs.

E. Private Communications and Off the Record Conversations

Private communications and off the record conversations inadvertently recorded should not be included in the transcript.

F. Call to Order, Swearing In or Affirmation of Witness or Jurors

Standard summary phrases shall be used for customary introductory statement such as the call to order of court and the swearing in or affirmation of witnesses. (See Appendix G).

F. Call to Order . . . (continued)

The following phrases can be employed:

(Call to Order of the Court)
(The Jury is Sworn)
(The Witness is Sworn)
(The Witness is Affirmed)

G. Identification of Speaker

All witnesses must be properly identified throughout the transcript, initially by their full name, thereafter by the following designations or courtesy titles, in capital letters centered on the appropriate line of the page:

Speaker	Proper Transcript Identification
the judge	THE COURT
attorney	MR., MRS., MS. OR MISS + (last name)
witness (in colloquy)	THE WITNESS
interpreter	THE INTERPRETER
criminal defendant (in criminal cases)	THE DEFENDANT

(See also Appendixes D through H)

H. Testimony Through Interpreter

When interpreters or translators are used, the transcript should include only the English voice. However, each time another language is spoken, the transcript should so indicate by use of an asterisk. (See Appendix G, line 18 and line 22)

III. TRANSCRIPT CONTENT: NONVERBAL

A. Designation of Portions of Proceedings and Time of Occurrence (parenthetical notations)

Parenthetical notations in a transcript are an audio operator's/court reporter's own words, enclosed in parenthesis, recording some action or event. Parenthetical notations should be as short as possible consistent with clarity and standard word usage.

The following parenthetical notations should be used to designate portions of proceedings. Designations requiring a time notation are listed first:

- proceedings started, recessed and adjourned, with time of day and any future date indicated where appropriate.
  (Recess at 11:30 a.m.)
  (Recess at 12:30 p.m., until 1:30 p.m.)
  (Proceedings concluded at 5 p.m.)

- jury in/out (Jury out at 10:35 a.m.)
  (Jury in at 10:55 a.m.)

  If a jury is involved, it is essential to indicate by the proper parenthetical notation whether the proceeding occurred in the presence of the jury, out of the presence of the jury, out of the hearing of the jury, prior to the jury entering the courtroom, or after the jury left the courtroom.

- defendant present/not present: In criminal trials this designation must be made if not stated in the record by the judge.

- bench/side bar conferences (See Appendix D, line 21)

  This designation should note whether the bench/side bar conference is on or off the record. If all the attorneys in court are not participating in the bench/side bar conference, the parenthetical notation should so indicate.

  Examples:

  (Bench conference on the record).
  (Bench conference off the record with Mr. Smith, Mrs. Jones, and Mr. Adams.) (See Appendix H, line 13)
  (At side bar on the record)
  (At side bar:)
  (End of discussion at side bar).

- discussions off the record

  This designation should note where the discussion took place.

  Examples:

  (Discussion off the record at side-bar)
  (Counsel confer off the record at counsel table)

- chambers conferences

  This designation should note the presence or absence of parties in chambers.

  (discussion off the record in chambers with defendant not present)
  (discussion on the record in chambers with defendant present)

B. Speaker/Event Identification

References to speakers and events that occur throughout proceedings should be properly noted in capital letters and centered on the appropriate line. (See Appendix D, lines 7 and 8)

Examples:

AFTER RECESS

DIRECT EXAMINATION

CROSS-EXAMINATION

REDIRECT EXAMINATION

RECROSS-EXAMINATION

PLAINTIFF'S EVIDENCE

PLAINTIFF RESTS

DEFENDANT'S EVIDENCE

DEFENDANT RESTS

PLAINTIFF'S EVIDENCE IN SURREBUTTAL

C. Non-Verbal Behavior, Pauses

It is the responsibility of the attorneys, as well as the judge in some instances, to note for the record any significant non-verbal behavior, i.e., physical gestures, and lengthy pauses on the part of a witness. If counsel or the court refer to the witness's affirmative or negative gesture, the audio operator/court reporter may use the following parenthetical to indicate physical gestures:

(Nods head up and down)
(Shakes head from side to side)
(Indicating)

Ultimately, however, the inclusion of parentheticals to indicate any type of non-verbal behavior or pauses is solely at the discretion of the audio operator/court reporter. (See Appendix F, line 14)

D. Readback/Playback

All readbacks and/or playbacks, and the party requesting should be noted parenthetically as follows:

1) If the question and/or answer requested to be read or played back appears on the same page as the request, the following parenthetical should be used:

   (The last question and/or answer was read/played back).

   If, however, the question and/or answer, or both, appear on a previous page, the audio operator/court reporter should replay or restate the question and/or answer or both, in full, with appropriate quotation marks and parenthesis. The following parenthetical should be used for playbacks:

   (The record was replayed)

E. Indiscernible or Inaudible Speech

Incomplete records of proceedings are unacceptable in a court of law. It is therefore highly undesirable to have any portion of a transcript labeled "indiscernible" or "inaudible."

Every effort must be made to produce a complete transcript. The transcriber will not, however, be held accountable for audio operator neglect or error. Use the indication "inaudible" or "indiscernible" only when it is impossible to transcribe the record.

[APPENDIX A]

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF MISSOURI
EASTERN DIVISION

DENISE M. OLIVER and ELIZABETH ANN MOODY,	)	Docket No. 81-1224 C
Plaintiffs,	)	St. Louis, Missouri August 28, 1982 9:30 O'Clock A.M.
v.	)	
WILLIAMS FOUNDATION HOSPITALS, C.Z. TORT, F.W. WINSTON,	)	
Defendants.	)	

VOLUME III
TRANSCRIPT OF TRIAL
BEFORE THE HONORABLE ROBERT JUSTICE, and a jury.

TRANSCRIPT ORDERED BY: JOSEPH LAW, ESQ. (GUEST, JONES & LAW)

APPEARANCES:

For the Plaintiffs:	Guest, Jones & Law BY: JOSEPH LAW, ESQ. 1029 M Street, Suite 400 St. Louis, Missouri 63124
For the Defendants:	Wills, Miller, Johnson & Smith BY: GEORGE S. SMITH, ESQ. 903 West 4th Street St. Louis, Missouri 63101
Audio Operator	Cynthia F. Stroud
Transcribed by:	WISE and MARKS, Inc. 308 Southcrest Blvd. St. Louis, Missouri 63101

[APPENDIX B]

APPEARANCES:

For the Government:

FRANCIS K. LABEAU, ESQ.
Assistant United States Attorney
632 West Main Street
Lafayette, Louisiana 70501

For the Defendants:

For Jonah W. Mills:

JAMES FIELD, ESQ.
and
DAVID A. SIMMONS, JR., ESQ.
Field and Simmons
225 Odell Street
Lake Charles, Louisiana 70602

For Frank B. Stacy:

EMORY A. LAWRENCE, SR., ESQ.
P.O. Box 1835
Lafayette, Louisiana 70502

For Lee D. Lewis:

ALFRED S. GRAY, ESQ.
Gray, Latrobe and Bourgeois
925 Europe Avenue
New Orleans, Louisiana 70160

For Patrick T. Means:

WILLIAM G. FOOTE, ESQ.
Evergreen & Foote
P.O. Drawer 3006
Baton Rouge, Louisiana 70802

For John H. Abbot:

C. KNOWLES BAKER
Land, Johnson & Baker
221 North Juneau
New Orleans, Louisiana 70163

[APPENDIX C]

INDEX

[APPENDIX D]

MR. JONES: That is all I have for this witness.

THE COURT: All right, suppose we recess for a short period now, say fifteen minutes.

(Recess at 10:30 a.m., until 10:45 a.m.)

MR. JONES: If it please the Court, Your Honor, the defendant is ready to proceed. I would like to call Ann Hannan.

ANN D. HANNAN, DEFENDANT'S WITNESS, SWORN

DIRECT EXAMINATION

BY MR. JONES:

Q. Would you give your full name, Ann?

A. Ann D. Hannan.

Q. And where do you live?

A. At 425 Rockway Place, Lake Summit.

Q. And how have, I mean, how long have you lived there?

A. For about twenty years.

Q. And what do you do for a living?

A. I work as a checker at Green Grocery on Long Street.

Q. How long have you worked there, Miss Hannan?

A. I was hired by Clem Staples, I mean, the deceased --

MR. PLASKY: I object. Your Honor, I would like the witness's answer stricken from the record as nonresponsive.

(Off-the-record discussion at side bar)

THE COURT: Objection sustained. Will you proceed.

BY MR. JONES:

Q. Miss Hannan, How many years did you work as a checker at

[APPENDIX E]

Green Grocery Store?

A. For ten years and maybe three, four months.

Q. Did you work all that time?

A. (Witness nods head)

Q. Was that answer a yes, Miss Hannan?

A. Yeah.

Q. Were you ever laid off for any reason?

A. No, never, cause Mr. Staples seen where I was livin' and he knew I needed the money.

Q. Why did you --

THE COURT: Pardon me, Counsel, for interrupting you but I would like to ask the witness one question.

BY THE COURT:

Q. I don't understand what you mean by that statement. Please explain what your living conditions were, Miss Hannan.

A. They were awful, Judge. The house had no electricity. We only got a water pump two years ago.

THE COURT: Thank you. You may proceed, Counsel.

MR. JONES: Your Honor, at this time I would like to call the Court's attention to the case of State versus Tilden which states:

"On June 20, 1969, the defendant was on his way home and was struck by an automobile which was traveling at an excessive rate of speed, and defendant sustained severe injuries and died an hour later."

THE COURT: I am familiar with that case. I had forgotten all about it. That was a surprise ruling by the State Supreme Court. Based upon that case it appears that I might dismiss the charges against the defendant in this case.

MR. PLASKY: I strongly object. I do not believe the circumstances in this case fit the circumstances in that case at all. Now, I have some questions of this witness, Your Honor.

CROSS EXAMINATION

BY MR. PLASKY:

Q. Did you force the plaintiff to drive into the country?

A. No.

Q. Did you ever see these car keys before? I will show you People's Exhibit 3.

A. That's it. See here (indicating) is the dented key.

MR. PLASKY: Let the record reflect the witness has identified the dent on the key. I have nothing further, Your Honor.

THE COURT: Mr. Jones, do you have anything else?

REDIRECT EXAMINATION

BY MR. JONES:

Q. Did you at any time ever mark another set of keys?

A. No, I didn't.

MR. JONES: That's all I have.

THE COURT: Are you sure that there is no more testimony?

MR. PLASKY: Nothing further.

THE COURT: You may step down. I am going to call a short recess.

(Recess from 3:35 p.m until 4:05 p.m.; all parties present)

THE COURT: You may proceed, Mr. Jones.

MR. JONES: May it please the Court. I have a witness, Mary Ramirez, and she only speaks Spanish. I have brought Jorge Lopez, a Spanish teacher who has been officially certified by the U.S. Courts to act as an interpreter.

THE COURT: Yes, Mr. Lopez has acted as an interpeter in this Court before.

MR. PLASKY: I know Mr. Lopez and agree that he be the interpreter.

THE COURT: I will have the deputy clerk administer the oath to Mr. Lopez and then to Mrs. Ramirez.

(JORGE LOPEZ sworn to interpret Spanish into English)

MARY RAMIREZ, DEFENDANT'S WITNESS, SWORN

(*indicates the witness's response in Spanish)

DIRECT EXAMINATION

BY MR. JONES:

Q. What is your name?

A. Mary Ramirez.

Q. Where do you live?

A. Now I live at 245 Davis Road, in Summerville, but I just moved there three months ago.

Appendix F

[APPENDIX H]

Ramirez - Direct 2-28

Q. Do you remember the afternoon of July 14, 1979?

THE INTERPRETER: I am sorry, I didn't hear the date. Did you say July 14?

MR. JONES: Yes.

THE INTERPRETER: She said, "Yes."

BY MR. JONES:

Q. And, where were you on July 14 at about 4 p.m.?

A. Shopping at SAVE-A-LOT.

Q. What time did you get to the store?

*A. One.

BY MR. PLASKY: Your Honor, may we go off the record?

THE COURT: Yes.

(Bench conference off the record)

THE COURT: You may proceed, Mr. Jones.

BY MR. JONES:

Q. May we have the last question and answer read back?

(The last question and answer was read.)

Q. At about 4 p.m. did you see anything unusual?

A. I saw that woman over there (indicating) take a steak and put it in a shopping bag. Her, her (indicating).

Q. You are pointing at the defendant, Lynn Roger, are you not?

*A. Yes, that woman right there.

MR. JONES: Let the record show that the witness has correctly identified the defendant.

THE COURT: I would like to make the record clear that

APPENDIX G
Audio Operator Job Description

Audio Operator Job Description

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.

Audio Operator Job Description

Operation of four-track cassette (or eight-track reel) audio recording system during designated court proceedings.

Preparation of detailed, legible logs of proceedings while recording. Maintenance of audiotape and log note files.

Routine maintenance of audiotape recording system hardware.

Duplication of audiotapes and log notes, processing of transcript orders as requested.

Timely completion of data sheets and reports, as specified by project staff.

Performance of other duties, as specified by the clerk of court, when not working on electronic sound recording system duties.

APPENDIX H
Monitor/Observer Report Form

Appendix H

Monitor/Observer Report Form

U.S. District Court Audio Recording Project

Monitor: Court:

Date:

Report Period: Month _____ 1 - 15 ___

16 - 31 ___

Monitor activities during report period

Court proceedings observed: (types and dates of proceedings)

Discussions with:

Files, transcripts, tapes reviewed:

SIDE 1 (OTHER SIDE FOR OBSERVATIONS AND COMMENTS)

Appendix H

Observations & Comments
U.S. District Court Audio Recording Project

Reporting/Recording Practices in Court

Equipment & Technical Issues

Quality of Tape Recordings

Logging Procedures

Transcript Production Procedures

Transcript Quality

Other Procedural Issues

Monitor's Perceptions of Participants:

Comments Received:

Additional Noteworthy Comments:

If additional space is needed, please attach a separate sheet.

APPENDIX I
Official Project Monitors/Observers

Official Project Monitors/Observers

District of Massachusetts (Boston), 1st Circuit

Joan D. Fuller, Esq., Partner, Ropes & Gray, Boston, Massachusetts

Eastern District of New York (Brooklyn), 2nd Circuit

W. Bernard Richland, Esq., Engaged in private practice of law, New York, New York; Adjunct Professor, New York Law School; former Corporation Counsel, City of New York

Eastern District of Pennsylvania (Philadelphia), 3rd Circuit

Thomas J. Finan, Jr., Graduate, June 1983, Northern Virginia Law School; former Judicial Intern, United States District Court for the Eastern District of Pennsylvania; former Deputy Clerk, United States District Court for the Eastern District of Pennsylvania

District of South Carolina (Columbia), 4th Circuit

Diane R. Follingstad, Ph.D., Associate Professor, Department of Psychology, University of South Carolina, Columbia, South Carolina

Western District of Louisiana (Opelousas), 5th Circuit

G. Dupre Litton, Esq., Senior Partner, Litton, Pierce & Malone, Baton Rouge, Louisiana; former Executive Counsel to Governor of Louisiana

Western District of Texas (San Antonio), 5th Circuit

Seagel V. Wheatley, Esq., Partner; Reese L. Harrison Jr., Esq., Partner; and Thomas D. Bracey, Esq., Associate, Oppenheimer, Rosenberg, Kelleher, & Wheatley, Inc., San Antonio, Texas

Western District of Wisconsin (Madison), 7th Circuit

Eldon J. Mueller, Esq., former Special Agent, Federal Bureau of Investigation, United States Department of Justice

Eastern District of Missouri (St. Louis), 8th Circuit

Anthony J. Sestric, Esq., Engaged in private practice of law, St. Louis, Missouri; former President, Bar Association of Metropolitan St. Louis, Missouri; former Member, Board of Governors, Missouri Bar Association

Northern District of California (San Francisco), 9th Circuit

Alexander B. Aikman, Esq., Senior Staff Attorney, Western Regional Office, National Center for State Courts, San Francisco, California; former Regional Director, Mid-Atlantic Region, National Center for State Courts, Williamsburg, Virginia; formerly in private practice of law

Western District of Washington (Seattle), 9th Circuit

David Boerner, Esq., Associate Dean and Associate Professor of Law, University of Puget Sound School of Law, Tacoma, Washington; former Chief Criminal Deputy, King County Prosecuting Attorney, State of Washington; former Assistant Attorney General, State of Washington; former Assistant United States Attorney, Western District of Washington

District of New Mexico (Albuquerque), 10th Circuit

Mario E. Occhialino, Jr., Esq., Professor of Law, University of New Mexico, Albuquerque, New Mexico; former Adjunct Professor, University College, Syracuse, New York and Utica College, Utica, New York

Northern District of Alabama (Birmingham), 11th Circuit

Judge James O. Haley, Professor, Cumberland Law School, Samford University, Birmingham, Alabama; Fellow, American College of Trial Lawyers; former state circuit court judge

APPENDIX J
Audio Operator Manual for U.S. District Court Audiotape Recording Project: Table of Contents

Appendix J

U.S. District Court Audiotape Recording Project

Audio Operator Manual

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