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THE MAGIC WAND:
BAR CODE TECHNOLOGY IN THE CALIFORNIA COURTS

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I. INTRODUCTION

A. Bar Coding as A Data Collection Tool in State Trial Courts Project

This study examined the use of bar coding and scanning technology to collect statistical information in state courts. California courts are the major "laboratory" in which scanning and bar coding technology have been tested in the court environment through the STATSCAN system. The California Administrative Office of the Courts (AOC) and many trial courts in California now have considerable experience with using bar codes, scanning devices, microcomputers, custom-developed STATSCAN software, and telecommunications to collect statistical and operational data on a case-by-case basis. This project examined how bar code technology was applied in California with the aim of learning what the California experience can teach others.

Most state court administrative offices are concerned with trial court data to measure the workload of the courts, the pace of various types of litigation, the comparative use of judicial personnel, and other features of court business. The usefulness of statistical data rests not only on the type of data collected, but also on the ability of trial courts to collect the information efficiently and easily. Replacement of existing statistical collection systems, whether they are manual or automated, requires that the proposed methods fit into a wide variety of court contexts to gain support and acceptance.

The following issues, which reflect the concerns of state court administrators in determining the most cost-effective and practical solution to gathering statistical information, are adressed by this study:

- What type of data can be collected through scanning?
- How does the use of bar code technology affect the cost of gathering statistical information?

- How universally adaptable is a system like STATSCAN for various court environments?

- How easily and quickly can a system such as STATSCAN be implemented?

- How does a system like STATSCAN affect the accuracy and timely reporting of statistical data? What types of error checking can be employed, and does it effectively increase the accuracy?

- What level and type of support is required to implement and maintain this type of technology?

Trial court administrators have similar, as well as different concerns, reflected in questions such as:

- How does this technology fit with existing automated or manual systems? Does it replace or supplement what courts now have? Can scanning be integrated within an existing automated system?

- How does a statistical data collection system such as STATSCAN affect the work flow, division of staff responsibilities, and organization of clerical functions in the court?

- What level of staffing is required to support such a system, both in terms of the sophistication of staff and the number of staff?

- How acceptable is this technology to court staff? How easy is it to use? Is it equally convenient and effective for front counter personnel, file clerks, calendar clerks and in-court clerks?

- What type of training is required initially and on-going for staff to use the technology effectively?

- What does the experience of California courts indicate with respect to the pace of introducing the technology? Should it be gradually phased in or can scanning be introduced all at once?

- What types of data and data entry tasks are best suited to scanning?

- What are the differences between the more traditional method of automated data entry (terminal keyboard) and scanning? What are the advantages and disadvantages of each?

- What other court applications, aside from those that collect state statistical data, have potential for bar coding and scanning techniques?

The use of bar coding for other purposes in state trial courts was touched on briefly through examination of three non-statistical applications, although the emphasis of the project is to report on how bar coding may be employed to collect statistical information.

B. A Note on the Status of STATSCAN

A note about the STATSCAN project may help readers to put the material that follows into perspective. STATSCAN is a work "in progress." Changes, enhancements and refinements are continually being made to the programs, procedures and technology. Because of the timing of this research, many courts had not yet installed the latest version of the STATSCAN programs or had not had the opportunity to work with the most recent release to any substantial degree before our site visits. Inevitably, court personnel told us about their reactions to previous STATSCAN releases. Our findings with respect to the utility of bar code technology would, we believe, be the same if this study were conducted today. But, because of the recent progress made in developing reporting capabilities and the new step-by-step plan to eliminate manual statistical reporting in courts that can demonstrate high data quality, we believe court personnel would have expressed a more positive overall reaction to STATSCAN if the research were conducted now.

Readers may also wish to refer to an evaluation of STATSCAN conducted in early 1988 by Mr. Larry Polansky, Executive Officer of the Courts of the District of Columbia and Mr. Denis Moran, Director of the Wisconsin State Courts. Their report -- "STATSCAN Preliminary Evaluation Effort" -- is available from the California Administrative Office of the Courts.

C. Summary of Conclusions

The use of bar codes and scanning to collect data for court applications can be beneficial and cost effective, as demonstrated by several bar code applications reviewed for this study. It is, however, important to understand what data are appropriate to scan and what data are not. Bar coding is ideally suited to applications that require only codeable data. For all practical purposes, freeform textual information such as names and addresses

cannot be reduced to bar codes, although standard narrative information (e.g., minute entries) can be bar coded. Even though the hand-held devices used to collect scanned information often have alphanumeric keypads, text entry is slow and unreliable. The key pad may be used for dollar amounts, dates and other numeric information to a limited degree.

Because of the nature of the data collected, statistical reporting systems are ideal candidates for bar coding. File tracking and file archiving systems have also been implemented with success. Two case management systems that rely partially on bar coded information were reviewed as part of this study. Both systems provide a preliminary indication that scanning can be used to collect 70-90% of the information needed for case management systems, but keyboard data entry is also required. Additional research is needed to investigate this promising data collection method for complex applications such as case processing.

Applications that require a small number of data elements may be better candidates for bar coding than those using hundreds of elements. Bar codes must be physically scanned from menu pages, which if excessive in number, will make the job of selecting the right bar code cumbersome for staff. For example, the one-to-two page STATSCAN menus work well.

The type of scanning device should also be selected carefully for the application. Hand-held scanning devices not attached to the computer cannot be used for on-line data entry and update or for any activity that requires the operator to have access to the court's accumulated database. Such operations can be performed only in batch mode after the data have been downloaded to the computer. Wedge scanners attached directly to the computer eliminate these restrictions, but the cost of the scanner in addition to the microcomputer or terminal must be figured into the cost-benefit equation.

Hand-held scanners in use today also have limited memory to hold programs and data and small display screens. They cannot replace terminals or keyboards for many functions. On the positive side, hand-held scanning devices allow a large number of clerks to collect data without providing a terminal and cabling to each data collection point.

Applications that combine keyboard data entry with scanning should be carefully designed to segregate the two data collection methods or to minimize the need to alternate between them. Operators who are required to alternate between keyboard entry and scanning preferred to key enter all information because they found it cumbersome and slow to use both input devices.

STATSCAN and other applications have shown that bar code scanning is an effective, fast and reliable method of data collection. Experience of California courts with STATSCAN also shows that the method alone does not guarantee data accruacy. Adequate training, support and commitment to thorough implementation are necessary ingredients. Training staff what codes to scan and the proper scanning sequences may well be the most important ingredients in promoting data accuracy according to our research. Data and operational audits must be performed to insure data integrity. Collection of data on a case-by-case basis makes thorough auditing possible.

Adequate training in the use of the microcomputer hardware and software used with STATSCAN was found to be a major variable effecting each court's ability to use the system effectively. Courts with well trained and technically competent systems administrators achieved greater success than those without such staff. The commitment of the trial court was also a major factor in successful results.

This study adressed primarily the collection of statistical data through bar code scanning. Other applications of bar coding for court information

systems should be investigated much more fully than was possible during this effort. Several states and individual courts are beginning to make use of bar coding in new applications software, reportedly with some success. Bar coding has a place in court information systems, and further experience and research is needed to build on the California experience and this study.

II. OVERVIEW OF BAR CODE TECHNOLOGY

A. Introduction

Recent advances in technology have made available a number of new tools including small, hand-held computers known generically as "bar code* readers." These devices are now used extensively in many industrial and commercial environments to collect information for such applications as item tracking, inventory control, time-and-attendance recording, monitoring work-in-process, assembly verification, information sorting, order entry, document tracking, controlling access to secured areas, receiving, and retail trade point-of-sale operations. Many analogous applications are found in courts. Item tracking, for example, applies to case files equally as well as to retail products. Monitoring work-in-process in the court environment refers to tracking the progress of cases or to juror management. Controlling access to secured areas such as the evidence vault could be done in courts by use of bar coded badges just as they are used in private industry. When cases or items of evidence are viewed as the court's inventory, it is easy to see that they, like commercial products, can be identified and managed using bar code technology.

Hand-held scanning devices have gained wide acceptance in industry settings and are now being used in courts for several reasons. The devices are small, lightweight and portable. Data can be collected in places which could not easily be served by the traditional data entry terminal. Property or evidence rooms in courts present physical limitations on the use of

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* See page 9, below, for a definition of the term "bar code."

stationary data terminals similar to product warehouses. Scanning data directly into the hand-held devices eliminates the interim step of filling out data entry forms, a time-consuming process that can introduce delays and errors into the data collection process. By reducing (or in some cases eliminating) keyboard-based data entry tasks, the data collection process becomes faster, cheaper, more accurate, and less tedious.

Automatic I.D. News, a national publication specializing in research and documentation of scanning technology, emphasizes that bar code is not a system in itself. It is an extremely effective tool that provides the accurate and timely support of sophisticated management systems. Bar code technology, a tool for gathering data, specifically addresses only the first of three steps in the complete data processing system: input of information into an automated system with a tool that minimizes human error and speeds up that process. The two remaining steps - processing the data and output of the data - are not handled by bar code devices in most applications today. The "host computer" and application software, not the scanners, synthesize, combine, and calculate the data to produce reports and visual display of the information.

The decision to utilize bar code technology in any environment does not stop with the purchase of a scanner and the creation of a few bar codes. This technology is only one piece of the whole system. In order to achieve the greatest beneficial impact, bar coding and scanning should be carefully integrated into an overall plan for automation, one that provides for the needs of the entire organization.

B. Bar Codes

Bar codes are patterns of narrow and wide bars and spaces that represent numbers, letters or other punctuation symbols. Bar codes may be constructed to identify an item, its producer, or other data needed to identify or

regulate its movement. A scanner is used to "read" the symbols, interpret them, and transform them into data which can be input into a computer for processing. As any U.S. shopper knows, bar code technology has revolutionized the check-out process in supermarkets and retail stores. Today, most items are labeled with a bar code identifying the item, its manufacturer, size and other pertinent characteristic. By whisking the item across a scanner or using a "point and scan" technique, the item is identified. A computer records the sale and adjusts the store's inventory.

The most common bar codes are horizontal with vertical dark bars and light bars or spaces. Information is encoded in bar codes by varying the width of these bars and spaces, as shown in the example below.


C105

In this example, "C105" is a code that could represent a product name, a court case event, a case type or the identity of a court clerk, depending upon the application using the bar code. Although the entire name could be bar coded, codes are used instead to shorten the length of the bar code and to reduce the amount of storage space required in the computer.

A scanning device emits a beam of light as it moves over a bar code. Dark bars absorb the light; spaces reflect it back into the scanner. Thus, interpretation is possible by measuring the relationship between light and dark bars. Using mathematical algorithms, the scanner transforms the light fluctuations into electrical impulses that are measured by a decoder. These electrical impulses, once decoded, become the same transmission media used by computers -- data in the form of binary code.

The patterns of bars and spaces composing the bar codes is called a symbology. The most popular symbologies today are:

- UPC
- EAN
- JAN
- Code 39
- CODABAR
- 2 of 5
- Interleaved 2 of 5
- MSI
- Code 11
- Code 93

The Universal Product Code (UPC) and its worldwide counterparts, the European and Japanese article numbering systems (EAN and JAN), are extensively used in retail. Interleaved 2 of 5, a numeric symbology, and Code 39, an alphanumeric symbology, are popular in industrial and government applications. Code 128 and Code 93 are alphanumeric codes that offer higher density and self-checking.

Each bar code symbology is regulated, either formally or informally, by an organization that maintains the consistency and standardization of the code. Information on how to construct bar codes may be obtained from the standards organizations listed in Appendix B. Bar codes must be created within the specifications established by the coding authority. An improperly created label may not conform to established specifications recognized by the scanning device, and will be rejected or disregarded by the scanner.

Bar codes can be printed directly on products, case files, menu cards or documents to be scanned or on gummed labels, among other mediums. Some STATSCAN courts produce bar code labels for case files, while others order case jackets with pre-printed bar codes from a printer.

Because a high first-time "read rate" reduces operator frustration, the quality of the bar code image is extremely important. The printing process must be carefully regulated to ensure production of high quality bar codes that can be read accurately. Print quality of the label is affected by the paper absorbancy, the ink reflectance, contrast, voids and specks in the ink

or paper, edge roughness of the individual bars, and the shrinking or spreading of the ink after the label has been created. It is interesting to note that the slightest ink mark or incorrect lighting may cause adverse effects on the read-rate and accuracy of the scanning. Ink voids or ink specks will be interpreted as logical changes when they are detected by the scanner. This causes an illegitimate output which cannot be processed, and the bar code cannot be read. STATSCAN courts found that labels created by dot matrix or thermal printers often have too low a contrast, causing an inability to distinguish the dark bars from the light spaces, thus, "no read." (Dot matrix printers print in series of dots, leaving space around them with no ink.) Also, using ink that smears will cause a reduction in the reflectance of the white area, thereby reducing the contrast.

C. Scanning Devices

A portable bar code scanner is a small, hand-held device used to read bar codes. Scanners come in a variety of shapes and sizes: some scanners look much like oversized pencils (referred to as pencil-wands), others resemble large toy guns. Wands are usually attached by cables to hand-held units which look like large calculators.

Scanners use incandescent, visable red LED, infrared LED, laser-helium-neon or solid state diode light sources to read the symbol. Some devices require physical contact with the bar code; others read from distances up to several feet. Some are stationary; others are portable.

Over 35 vendors offer scanning devices. The most common types of scanners include laser scanners, optical character recognition scanners, magnetic ink character recognition scanners, and contact (wand) scanners.

Of the scanning devices that read bar codes, laser scanners have the highest first time read rate. They create no "wear" on printed bar codes

because they are non-contact devices. Bar codes can be read from as far as 12 inches away and rarely require scanning more than once. The drawback of the laser scanner is cost, which can be up to ten times the price of a contact scanner.

Contact scanners use a "wand" which is drawn across the bar code to read it. Scanner wands are designed with low resolution and high resolution characteristics. A wand designed for low resolution will not be as sensitive to printing anomalies such as voids and specks, but a high resolution wand will detect them, causing a "no-read" condition. A low resolution wand, however, may cause the user to scan more than once to read a bar code, resulting in some operator frustration. Scanning wands are designed to read at a specific distance -- usually in direct contact with the label or menu itself. Using thick plastic or glass to minimize wear can cause improper or incoherent reads, but protecting printed bar codes from wear by a thin, non-reflective lamination will increase the life of the bar code and will not adversely affect the wand's ability to read it.

Pencil wands may be used for direct data entry to supplement or replace keyboard data entry when used in a "wedge" scanner wired to a personal computer. More commonly, a wand is attached to a portable, hand-held terminal called a "brick" (so-called because of the resemblance in size and shape to a masonry brick). STATSCAN uses both wedges and bricks with pencil wands.

The hand-held brick is actually a small microcomputer with an alphanumeric keypad that serves as an alternate means of data entry and a small liquid crystal screen to display data and instructions for the operator. The hand-held unit receives data from the wand, decodes the data, performs limited editing of the data, and stores or transfers the data to a computer for processing. The device also date- and time-stamps the data elements. To

perform these functions, the device must have many of the same hardware elements as other computers: memory for storage of data and programs, a processor, and a communications "port". As the technology has improved, many of the newer hand-held devices contain the Intel 80286 processing chip that is commonly used in the "AT"-level personal computer. With up to 1 mb of random access memory (RAM) and 64 kb of read-only memory (ROM), RS232 compatibility for communications, and liquid crystal display (LCD) of 16 lines, these new hand-held units are much faster than previous models and seem to have everything but a hard disk.

D. Software for Portable Bar Code Devices

Like all computers, scanning devices must be programmed to accept and store data. Programs must be written to display data on the miniature screen, to edit the data, to display error messages, and to prompt the operator for required data elements. The various scanners manufacturers offer bar code readers that use different programming languages (i.e., TCAL, BASIC, C). In addition, each device is controlled by an operating system, usually a proprietary software product that works specifically with the manufacturer's line of devices.

The application software for scanning devices is usually developed on a microcomputer, then transferred to the unit's memory via the scanner's RS232 port. The programs may also be stored in the device in EPROMS, memory chips specially designed to hold programs. After the software application is loaded, the unit is ready to receive data through either a pencil or laser wand. STATSCAN bar code readers use EPROMS to conserve RAM space for data.

The application software resident in the scanner unit is much different from the software developed for the host computer. Although extensive code and edit checking is performed by the scanner, any error checking which

requires access to a previously accumulated pool of data must be performed by the host computer after the data are downloaded. STATSCAN microcomputer programs have extensive error checking. With the increasing memory size of the small hand-held units, future applications may more easily incorporate better logical error checking because the devices will be capable of holding large stores of accumulated data. For example, all cases on a judge's calendar for the week could be downloaded to the clerk's bar code reader which could then check data scanned for logical consistency. Regardless of the system complexity, the software design for the hand-held units must be compatible with the receiving software on the host computer. This means the creation and implementation of a standard data dictionary that is common to both environments.

With their newer product lines, most scanner manufacturers are moving away from proprietary operating systems and proprietary third-generation languages to offer MS-DOS compatibility and generic languages that are familiar to experienced microcomputer programmers. Although some industry representatives claim that programming the hand-held devices is a "simple process", we would dispute this claim and caution courts to obtain the required technical expertise. It is important to recognize that the data collection software must be just as carefully designed and executed as any other programming task.

E. Host Computers

Once data has been accumulated in the hand-held device, it must be "downloaded" (transferred) to a host computer for further processing. The host may be any microcomputer, minicomputer, or mainframe that can receive ASCII data through a modem or using a serial cable connected directly between the computer and the hand-held unit. The data received by the host from the scanner must be organized (or re-organized) by a software program into a

format compatible with the host's software.

The choice of a host computing environment is influenced by many factors, including the amount of data to be processed and stored, existing equipment used in the court, the number of people who will be directly involved in operating the computer, and the number and duration of tasks each must perform. In order to select a computer environment that will adequately support the application and not restrict its usefulness, the advantages and limitations of different microcomputer environments should be understood. Microcomputer-based systems fall into four categories, each of which has certain limitations and benefits. The categories refer to whether the operating system is single-user or multi-user (allowing one person or several to use the system) and single-tasking or multi-tasking (capable of processing one operation at a time or many operations simultaneously).

1. Single-User, Single Tasking Operating System

A single-user, single tasking operating system is designed to allow one person on a single computer to perform one task at a time. A personal computer is an example of this type of computer environment. MS-DOS is recognized as the standard in single-tasking, single-user operating systems. It has a large following of both users and application software developers. Hundreds of off-the-shelf packages for word processing, graphics, database management, spreadsheets, and many specific applications are available to run on microcomputers using this type of operating system.

By comparison with multi-tasking operating systems, single-user, single-tasking operating systems are uncomplicated and require little memory and simple hardware. These systems are inexpensive, widely available and generally easy to learn. But, they have limitations which make them inappropriate in certain situations. Consider the following example of a bar

code application that requires four separate types of tasks: downloading data from scanners, editing the data, on-screen inquiries, and producing printed reports. With a single-user, single-tasking system each task must be done sequentially. For a court with only a few scanners to be downloaded each day, a small database of cases to be edited and reports needed only periodically, this workload would present no problem for a single-user, single-tasking system. As the number of scanners to be downloaded grows and the number of hours required to edit data on-screen and run reports increases, scheduling work on the computer may become a problem. One solution to the dilemma of too few hours in the work day to perform all necessary work is to schedule the computer to perform certain tasks at night that do not require operator intervention (e.g., producing reports). Eventually, however, scheduling conflicts and physical distance of clerks from the computer may limit the computer's overall usefulness.

2. Single-User, Multi-Tasking Operating System

A single-user, multi-tasking operating system allows one person using a single system to perform multiple tasks simultaneously. The user could download data from a scanner, edit previously entered data on-screen, and run a report program all at the same time. Of course, since there is only one computer terminal, only one on-screen operation can be performed or viewed at a time. But, multi-tasking systems often have "windowing" features that allow the operator to toggle between different screens. The user could toggle between an inquiry screen and a spreadsheet program, or between the output from two report programs. The limitations of this type of system are that only one person can use it at a time, and physical distance from other users may present a problem for some applications.

3. Multi-User, Single-Tasking Operating Systems

Local Area Networks (LANs) are the most common example of multi-user, single-tasking operating systems. LANs connect multiple microcomputers by cabling or radio transmission to share peripheral equipment (e.g., modems, printers), software programs, and, frequently, a common database. This multi-user, single-tasking operating system controls, or overrides, the operating system of the connected microcomputers. Users retain all the functions of a standard single-user, single-tasking system when the microcomputer is disconnected from the LAN. This popular arrangement allows organizations with multiple single-user, single-tasking systems to take advantage of the increased capabilities of a LAN environment such as file-sharing, electronic mail, and enhanced security.

STATSCAN has been implemented on the Banyan LAN, using the Vines Operating System. Court staff can independently perform any STATSCAN computer operation from any microcomputer on the LAN. Data may be downloaded while reports are being run; previously entered data may be edited by a supervisor while a clerk looks up a case history at another microcomputer. Each microcomputer can perform only one task at a time. A report which takes several hours to run occupies one microcomputer workstation for the duration of the report processing, making it unavailable for any other purpose. Many courts have benefitted from implementation of Statscan on LANs because the availability of multiple workstations allows increased flexibility and less need to schedule computer tasks.

4. Multiuser, Multitasking Operating Systems

The multiuser, multitasking operating system is the powerhouse of operating systems and was formerly available only on minicomputers and mainframes. Today, due to the increased popularity of microcomputers and

tremendous advances in technology, multiuser, multitasking operating systems such as UNIX have been developed for the microcomputer. A multiuser, multi-tasking operating system allows several users to perform multiple tasks simultaneously. For example, implementation of STATSCAN in a multiuser, multitasking environment would give each user the capability of simultaneously more than one task.

In general, multiuser, multitasking operating systems such as UNIX and XENIX require a minimum of 20MB of hard disk and as much RAM as is economicallly feasible beyond a minimum of 1MB. This is due to the need of operating systems to allocate separate areas of memory and storage for each user, as well as the appetite of complex operating systems for memory and disk storage.

Multiuser systems can have a microcomputer, minicomputer, or mainframe as the host. The following chart identifies the range of workstations typically supported by each host in a multiuser environment, although specific manufacturers may offer systems in each category that exceed these ranges or support fewer users.

Number of Users	System Size
2-8	Microcomputer
8-32	Super microcomputer, LAN
32-48	Super microcomputer to small Minicomputer, LAN
48-64	Minicomputer, LAN
64-128	Minicomputer to Super minicomputer
128-256	Super minicomputer to small mainframe

Programming the host environment should be performed only after careful consideration of the integration levels desired. If the project is to be limited (both short-term and long-term) to the collection of statistical data

via scanning, with no integration of other systems whatsoever, the task is relatively straightforward. If the court plans to have an automated case management system integrated with scanning technology, the design and development process is much more difficult both because of the increased complexity of the application and the issue of how to integrate scanning with other data collection techniques.

The selection of the application software on the host end is critical because this decision will determine the ways in which the scanned data can be utilized. Applications developed with simple third generation languages such as COBOL or Basic tend to have inherent limitations when it comes to data manipulation and reporting capabilities. Selection of an appropriate database management system with good reporting capabilities will offer the greatest opportunity for courts to use their data.

III. THE STATSCAN SYSTEM

A. Historical Overview of the STATSCAN Project

In California, statistics submitted by the trial courts to the Judicial Council have always been reported in aggregate form. Using tick marks on data collection sheets, tallies are made of the number of cases filed in each reporting category, the number of cases disposed in each disposition category, the number of court hearings of various types, and so forth. These statistics were generally acknowledged to be informed estimates, not accurate counts, and they were not always submitted in a timely manner. Tick marks on a tally sheet provide no means of verification and have little use aside from providing statistical counts. (See Appendix C for superior court forms 1-A, 1-B, and municipal and justice court forms 2-A and 2-B for specific monthly reporting requirements.)

In 1982 the California Administrative Office of the Courts initiated the Management Information Statistics Project (MISP) at the request of the Municipal Court Clerk's Association in an effort to reevaluate and redesign the statistical reporting system and data elements to provide better information to manage the workload and resources of the courts. In addition, the MISP committee was charged with responsibility for finding a simpler, more accurate means of collecting and reporting statistical data on the enormous number of cases in the California court system. Each year almost 900,000 cases are filed in superior courts (courts of general jurisdiction) and over 9,000,000 non-parking cases are filed in municipal and justice courts (limited jurisdiction courts).*

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* California Judicial Council, 1987 Annual Report.

The MISP group proposed new workload reports that were much more comprehensive and required courts to collect information on the status, calendaring and age of all cases from filing to disposition. Although they could see the value of better information, most courts opposed the proposed reports primarily because of the cost and time to manually collect the information for a court's entire case inventory.

In an effort to find a simple, cost-effective solution to gathering and reporting this type of data on a case-by-case basis, the AOC began the STATSCAN project in 1985. The AOC also wished to provide a system which would not require trial courts to hire new staff to collect statistics, but at the same time, would allow the more timely reporting of case-by-case information for analysis.

The STATSCAN project faced the challenge of developing a data collection system that would be widely applicable to the diverse courts found in California and would be used by potentially hundreds of court staff in 83 superior court locations and 169 municipal and justice courts. In order to accomplish its goals, STATSCAN was founded on the idea of decentralized data collection at the time of the reportable event. This was a radical departure from previous manual statistical data collection which, in many courts, was highly centralized and was completed at the end of the month.

The STATSCAN project team took the approach that court caseloads have similar characteristics to product inventories found in private industry. They also found that many industries had solved the problems of identifying, tracking, and managing their inventories through bar coding their products.

In early 1986, four courts were selected as pilot sites for STATSCAN. The demonstration projects were set up primarily to test the feasibility of the new data collection method. Bar codes had been developed for a limited number

of case activities, scanning equipment had been chosen, and prototype software had been developed for both the scanners and the microcomputers. Staff in these four courts tested the feasibility of collecting court data with scanners, and the response was encouraging enough for the AOC to expand the project to almost 20 new courts in the fall of 1986. Although STATSCAN was not yet a complete system, it's potential for collecting more valuable information and at the same time, relieving the court of manual statistical reporting was evident to many court managers.

Questions still remained about what information should be collected and whether the old reporting system would be discontinued in favor of the new reports. These questions were never satisfactorally resolved, and as a result, the AOC continued to require courts to use the old reporting forms. This also posed a difficulty for development of STATSCAN into a statewide reporting system because the exact data elements to be collected and the nature of the reporting from the system was not clearly established at the start.

B. AB3300 - The Trial Court Delay Reduction Act of 1986

In late 1986, the California Legislature passed the Trial Court Delay Reduction Act (Assembly Bill 3300). In general, the Act required the Judicial Council to adopt standards of timely disposition for the processing of civil and criminal cases in the superior courts; to create an exemplary delay reduction program in nine specified courts; and to collect, maintain, and publish certain statistics regarding the processing of these cases.

The Judicial Council adopted time standards and a general principle of delay reduction and caseflow management. The implementation of trial court delay reduction and monitoring required a change in calendar management philosophy in the state. Central to a successful delay reduction program is

the concept that the court controls the progress of litigation from the filing of the case initiation document through adjudication. This concept forced courts to reexamine existing policies and procedures and to create a workable system for achieving the Act's goals.

Beginning in January, 1988 all superior courts were required to collect and report data to the Judicial Council regarding the time to disposition for cases within the jurisdiction of the Act. (See Appendix C, superior court addendum forms 1-C, 1-D, and 1-E.) For the first time, California superior courts were required to track and report the age of pending general civil cases, measured from the date of filing to disposition, rather than from the date the case was reported to be ready for trial. Criminal case disposition times are measured from the date of arrest or first appearance in municipal court to disposition (sentencing).

The Trial Court Delay Reduction Act had an immediate and dramatic effect on the direction of STATSCAN development. First, additional data elements and scanning instructions were incorporated into STATSCAN to assist superior courts to monitor the pace of litigation in their courts and to collect the information needed for the new statistical reports required by the Judicial Council.

Next, a microcomputer-based case management system -- Sustain -- was licensed from a private vendor and interfaced to STATSCAN to enable courts to use STATSCAN data both for statistical reporting and to support case processing. In order to install and use both systems in the same hardware environment, the single-user STATSCAN system had to be implemented on a network of personal computers. Although STATSCAN was still available to courts as a stand-alone statistical system, the option of obtaining case processing capabilities to support delay reduction case management and time

standards monitoring was a powerful incentive for many superior courts faced with the increased workload. Three of the nine delay reduction program courts opted to implement the STATSCAN-Sustain combination immediately. (A fourth elected to do so a year later.) Two courts with an existing case processing system elected to interface STATSCAN to their existing system to produce the required statistical reports and to provide individual case data to the AOC. Another court had previously implemented STATSCAN.

The requirements of AB3300 and the urgency to implement STATSCAN quickly in the delay reduction courts provided a tremendous impetus to the development of the system. The capabilities of STATSCAN have been greatly enhanced by the interface to a case processing system and the addition of new data elements and inventory and statistical reports. From mid-1987 until well into 1988, the small AOC STATSCAN staff were occupied with modifying STATSCAN and installing the system in the specially-designated delay reduction courts. The completion of the originally envisioned statistical reporting system was delayed considerably by redirection of staff and programming resources to support the superior courts' delay reduction efforts.

Since mid-1988, efforts have resumed to expand the statistical system, to implement STATSCAN more fully in the more than 40 courts which now use it, and to provide additional reporting capabilities for trial courts to use the data effectively.

C. STATSCAN Configuration

STATSCAN is built on the use of bar coded information, portable hand-held scanning devices to record the data, and microcomputers. When a case is filed in a court, a clerk places a bar code label, which corresponds to the court's case number, on the case file jacket and in some courts, on the case docket. As case events occur, clerks use the scanning devices to record the case file

number and the appropriate bar codes from menu cards. (See Appendix D.) The data are stored in the portable scanner until transmission to the microcomputer. Once the data are downloaded to the microcomputer, a data verification program is run to check the information for errors. Once errors have been corrected, the data are ready for transmission to the AOC.

STATSCAN uses contact (wand) scanners attached to hand-held portable "bricks" for data collection. Telxon currently holds the contract with the California AOC to supply the PTC-701 model hand-held data terminals used in California courts. Utilizing a Motorola 1802 microprocessor chip, the PTC-701 unit processes data in an 8-bit data stream.

The STATSCAN project selected IBM PC-compatibles and the Banyan local area network as the host computing environment because this equipment can support a wide variety of court environments -- from the very small one-judge court to the large metropolitan court. The STATSCAN system has been implemented in both single-user and local area network environments.

One of the key features of STATSCAN is the electronic transmission of data to a central host computer located at the AOC office in San Francisco. Courts' systems are equipped with Telebit Trailblazer modems transmitting data at a speed of 19,200 baud. A menu item in the STATSCAN software at the local site allows the court to "ready" the equipment for automatic transmission at a predetermined time. Transmission is performed automatically at night. An error checking communications software package is used that also produces reports for the AOC technical staff to alert them to any problems experienced during data transmission.

Figures 1 and 2 (following pages) show the hardware environments in which STATSCAN has been implemented.

FIGURE 1

LOCAL ENVIRONMENT - OPTION ONE

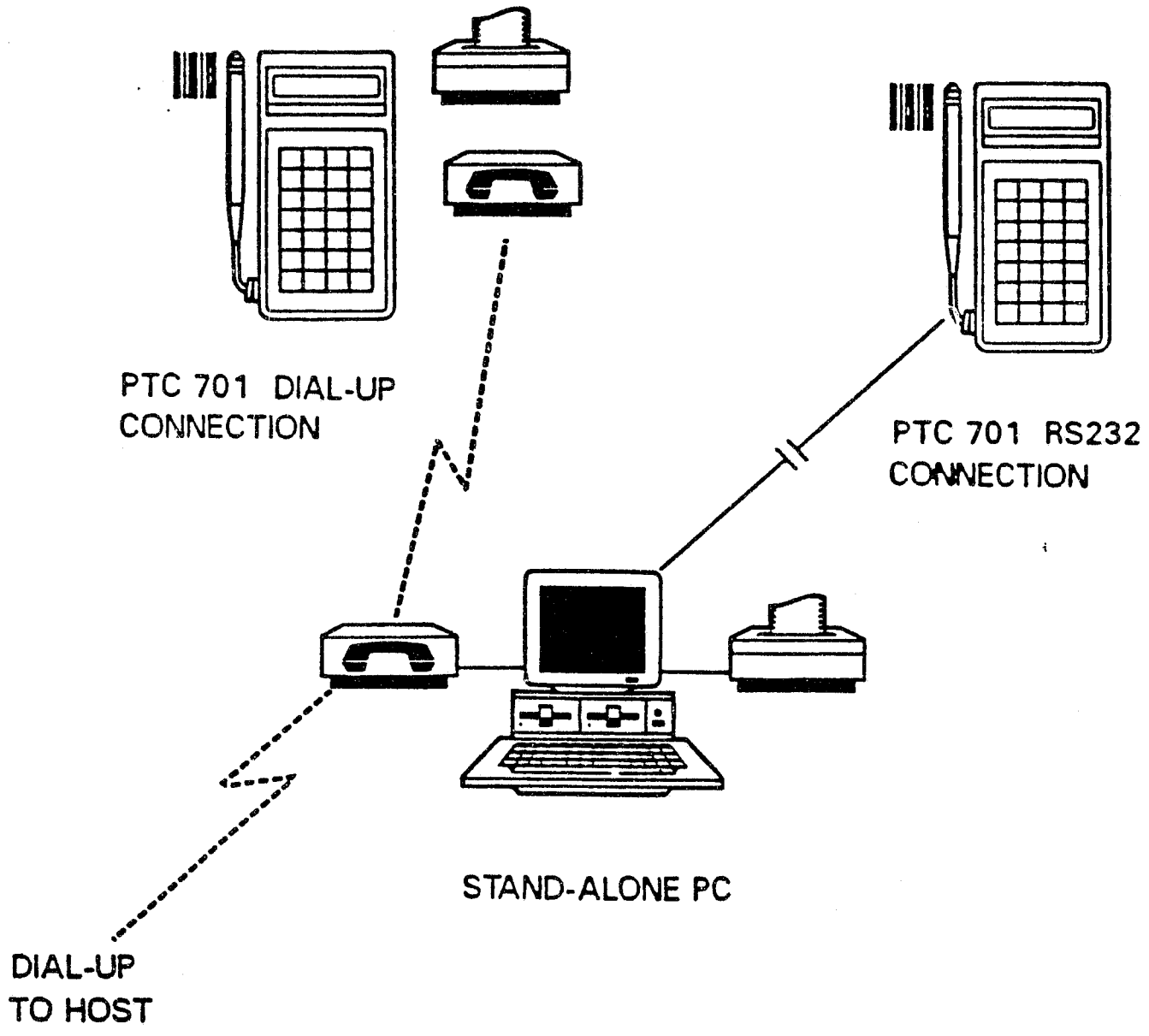
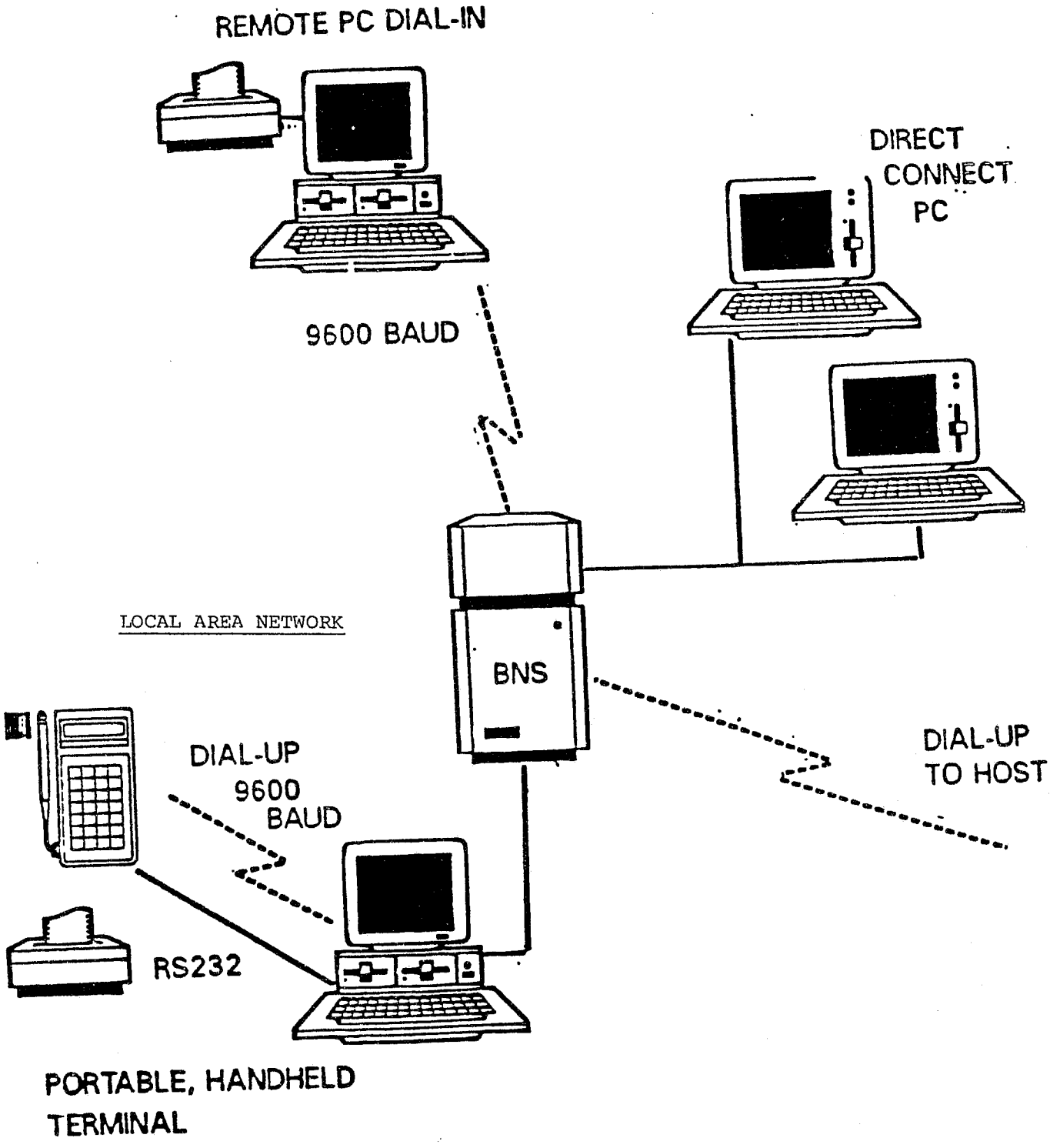


FIGURE 2

LOCAL ENVIRONMENT - OPTION TWO



D. STATSCAN Data

1. Data Element Structure

The STATSCAN application uses the Code 39 symbology to construct data elements which may be up to ten characters in length.* Using the Code 39 bar code symbology gives the STATSCAN system the ability to generate all alpha and numeric characters, six special characters ($, /, +, %, -, and .), and a blank or "space" character. These characters are combined into codes that represent data elements. For example, the code for "jury sworn" (Q61) is a combination of dark and light bars that are interpreted by the scanner as the three-character code "Q61."

One main purpose of the STATSCAN system is to allow trial courts to collect both Judicial Council statistical information and data useful for operational purposes. Therefore, the structure of the data elements was designed to make a distinction between court-defined data elements and Judicial Council data elements. Two rules for the data element design were established to satisfy this purpose:

1. The Judicial Council reserved exclusive use of the alphabetic and special characters in the first position of any data element. All Judicial Council data elements are three positions long and begin with an alphabetic character. If an alphabetic character appears in the first position of the code string, the data element is transmitted to the AOC for statistical reporting.

2. Trial courts have exclusive use of all integers in the first position of the data element. Any STATSCAN data element beginning with an integer is not transmitted by STATSCAN to the Judicial Council.

This data element structure allowed the Judicial Council to define a set of codes which would capture all required statistical information, but still left the trial courts free to develop data elements the Judicial Council did

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* Case number may be 16 characters long and are court-defined. Case numbers may have any combination of alpha and numeric characters, but each case number must be unique.

not need. It also provides a mechanism for STATSCAN programs to easily distinguish which data elements should be transmitted electronically to the AOC and which should not.

AOC staff also recognized that trial courts might wish to refine a particular Judicial Council data element. Judicial Council data elements use only the first three of the ten positions in the code string (referred to as the Judicial Council prefix), leaving the other seven positions for an optional court-defined code extension. For example, one court has added its own code following the Judicial Council prefix to distinguish between different case types under each general Judicial Council case category. "A60", the Judicial Council code for "civil complaints" has been broken down by this court into 6 subcategories by adding two digits to the end of the code. ("A6011" represents civil complaints involving contracts, "A6020" are unlawful detainer cases, etc.). All six subcategories fall within the Judicial Council definition of "civil complaint."

Figure 3 below represents the Judicial Council coding structure. Figure 4 shows the court-defined data element structure.

FIGURE 3

JUDICIAL COUNCIL DATA ELEMENT STRUCTURE

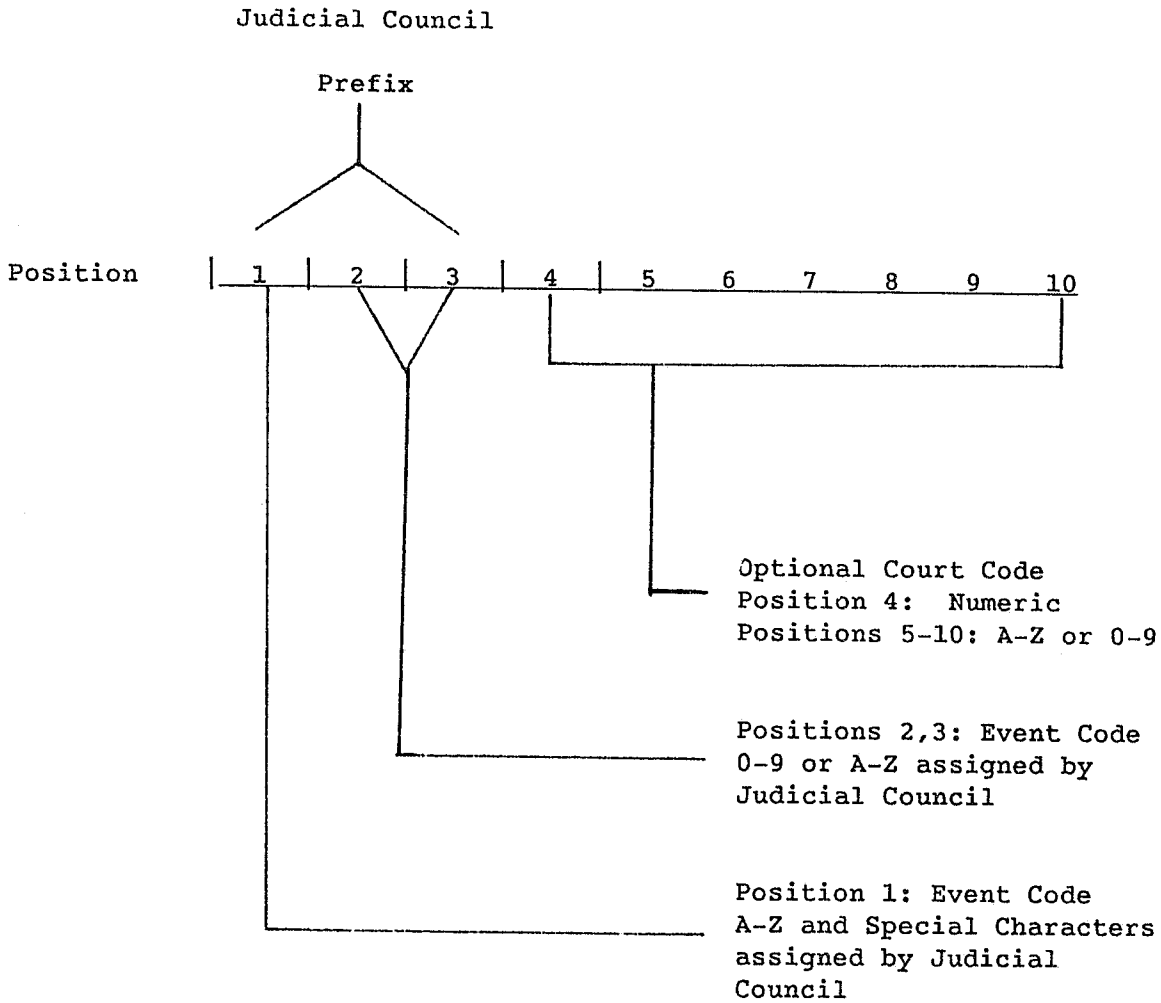
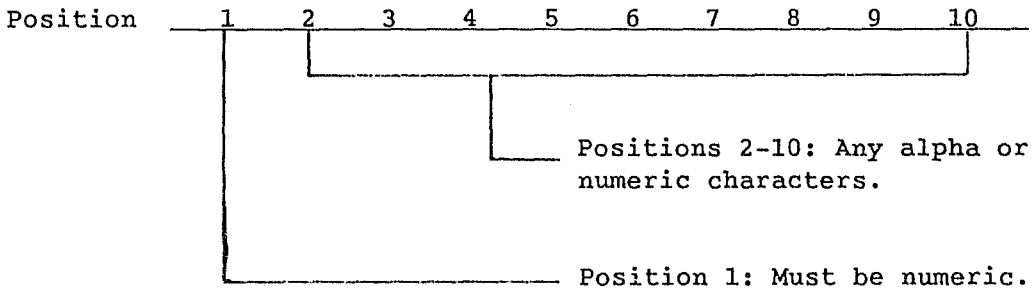


Figure 4

COURT-DEFINED DATA ELEMENT STRUCTURE



The AOC defined 10 types of of Judicial Council statistical data elements. Each category is assigned an alphabetic character which appears in the first position of every code in that category. For example, all codes beginning with an "A" represent the category (type) of case. An example would be code "A05" - Misdemeanor Group C Driving under the Influence. The definitions of the categories are shown in the table below. Judicial Council data elements for municipal and superior courts of similar or the same type appear in the same category. There are separate elements for municipal and superior courts. For example, "B51" is the code for a new filing in superior court, while "B01" is the equivalent code for a new filing in municipal court.

Figure 5

JUDICIAL COUNCIL STATISTICAL DATA ELEMENT CATEGORIES*

Category	Category Definition
A	Case category (case type)
B	Filing/case status change
C	Court appearances/trial info.
E	Proceedings
F	Continuances
H	Dispositions
I	Add case to inventory
J	Arbitration
Q	Other data
Z	Miscellaneous
	Total

* A complete listing of all codes is found in Appendix E.

Grouping data elements according to the first letter has a secondary purpose for three of the categories: "H", "I", and "B." Scanning a code from these groups causes the scanner to execute a subroutine which prompts the operator for additional, required data elements, a type of "fail safe" mechanism to ensure the operator does not forget required data.* For example, all disposition codes ("H") cause the scanner to prompt for a case category to ensure that the case category at time of disposition is recorded.** Grouping codes together that require the same subroutine also simplifies the programming of the scanners.

Dates and financial data, although ammenable to coding, are not practical to scan. It is just as easy to key-enter these data elements through the scanner key pad or the keyboard because each individual digit must be scanned just as it must be individually key-entered. No time savings or increased ease of use can be expected unless the operator is scanning multiple numbers or characters with one stroke of the wand. Originally, STATSCAN menus had bar-coded integers to be scanned for dates and numerical data. Most of the clerks, however, prefer to use the key pad for numerical data, and the integers have disappeared from the customized menus used in many STATSCAN courts.

2. Data Elements to Support Delay Reduction Programs

To meet the statistical reporting requirements of AB3300, many new bar codes were created for STATSCAN. First, the time a case is not considered in a court's control was explicitly defined. A court indicates when a case is

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* All "H" and "I" codes; only some "B" codes.

** Case category at time of disposition may be different from original filing case category (eg., felony reduced to a misdemeanor).

not in its control by scanning the "removed from court's control" code. For example, a case may be removed from the court's control because the parties have entered contractual arbitration. When an action occurs which brings the case back into the court's control, the "restored to the court's control" code is scanned. The time between case removal and restoration is subtracted from case aging for statistical reporting.

Second, the "answer filed" data element was added to the STATSCAN civil menus. This element became more important since the filing of an answer on a case might indicate that a particular case may proceed to trial and require different processing than a case with no answer filed, which may be disposed of in the clerk's office by a clerk's default judgment. The filing of an answer is also important to many of the court delay reduction programs which have been implemented.

Third, two new data elements, "case declared exceptional" and "case assigned to delay reduction program" were added to STATSCAN. The designation of a civil case as exceptional exempts that case from the provisions of the Judicial Council time standards. Only the designated delay reduction courts are required to scan the "case assigned to delay reduction program" code. This element is scanned at the point of filing for any case which the court determines fits the parameters of their delay reduction program and will be processed in accordance with the program rules.

Other data elements were added for the purposes of measuring the length of various trial components (specifically, jury selection length and trial length).

3. Court-defined Data Elements

Several trial courts have taken advantage of the flexibility to define codes for operational purposes, using both the seven digit extensions to

Judicial Council codes and separate codes beginning with an integer. A court should extend the Judicial Council code when the new codes being created are all within the definition of the Judicial Council code. By "piggybacking" on the Judicial Council codes, clerks scan one bar code for two purposes, rather than two separate data elements. In cases where the information the court wishes to record is outside the definition of the Judicial Council data elements, the court must define its own data elements, beginning with a numeric character. These bar codes are scanned in addition to Judicial-Council-required codes and cannot substitute for them.

One court established a set of codes for all documents filed in civil cases. (Judicial Council codes do not cover documents, per se. For example, filing is considered the event which initiates a civil case, not the document submitted.) The document codes are two-digit codes beginning with an "8." The second position is either a letter or a number. Assignments to individual judges are recorded by this court with 4-digit codes beginning with "1", with the judge's initials in the last three positions. Motions, which are not specifically required for Judicial Council statistics, are designated by one court with a 2-digit alphanumeric code beginning with "1." The same court has also decided to take advantage of the seven-digit extension to create a more detailed set of case categories to track cases that have similar characteristics.

Other courts have customized the Judicial Council codes to track rock cocaine cases for a federal grant, to differentiate between types of proof of service, and to add data elements for court proceedings not specifically defined by the Judicial Council.

The extent of data element customization by STATSCAN courts has not been as extensive as we expected. We can only speculate on the reasons for this.

One logical reason is that most courts have not begun to use the reporting software to prepare custom reports, and those which have investigated the software found it to be too cumbersome to use or incapable of producing the type of reports they would like. Other courts may simply have been too busy getting used to STATSCAN. Still others use other automated systems and prefer to use STATSCAN only for the production of Judicial Council statistics. In general, one would logically expect to see courts expand the use of customized data elements as the reporting and retrieval tools of the system are improved and as courts' reasons for using the STATSCAN system expand beyond mandated statistical data collection.

E. Adding Cases to Statscan

The STATSCAN database or inventory is comprised of both adjudicated and unadjudicated cases. The procedure used for entering a case into the STATSCAN system depends on the processing stage. Generally, cases are entered into the system at one of three processing points: new filing, after some events have transpired but prior to disposition, or after disposition.

Cases filed prior to implementation of the STATSCAN system in the local court are added to the STATSCAN inventory by scanning a specific data element. If the case is unadjudicated (no disposition has been recorded for Judicial Council purposes), it is entered into the system using the data element "added to inventory, case previously filed" ("I51" for superior court, "I01" for municipal/justice court). If it has already been disposed for Judicial Council statistical purposes, it is entered into the system using the "disposition previously entered" data element ("H99" for superior court, "H49" for municipal/justice court). When this bar code is scanned, the scanner prompts for the month, day, and year the case was filed. After entry of this information, the scanner prompts for case category.

Cases which were filed after the STATSCAN system was implemented in the local court are scanned as new filings. Cases may also enter the court's inventory through a transfer from a branch of the same court. In this situation the case is not considered a new filing, as it has already been credited to the same superior court. Cases may also be received from other superior courts for processing post-disposition events only. These cases are not new filings, as the dispostion has already occurred, but they do require an expenditure of court processing time and are thus counted as part of the inventory.

Finally, some courts do not enter the case until the point of disposition. These cases will not appear in the database for tracking, monitoring, or inquiry purposes while active. While this method appears to work well in some situations (cases dismissed for lack of prosecution, or cases added solely for the purpose of generating the new statistical reports 1-C, 1-D, and 1-E), entering the case at disposition does not allow courts to gain the full benefits of the STATSCAN system.

Each STATSCAN court was allowed to determine for itself whether it would input data for cases already filed before the implementation of STATSCAN. Ten of the 26 courts contacted for this study bar code and scan old files into the STATSCAN inventory only at the time the cases come onto the calendar. Only one court has completely prepared and scanned the entire backlog of undisposed criminal cases. One other court is scanning its inventory of civil delay reduction program cases into STATSCAN. To date, the remaining courts have only scanned cases filed after implementation of STATSCAN.

The primary reasons given for scanning only new cases were the tremendous workload of preparing and scanning all undisposed cases and the inability of many courts to easily identify all of the eligible, active cases. The one

court that undertook to input all its 8,000 active criminal cases reported that the effort took three people working full days for two months to review, prepare and scan the cases. Another court, which has considered scanning its backlog of civil cases, estimated that it would take 3-4 months for several people to prepare all active civil cases for STATSCAN. A third court scanned 40,000 active cases which were assigned to the delay reduction project using a second shift of clerks in the evening so these cases could be tracked and monitored through Sustain. Most courts have insufficient staff to undertake such time consuming projects, and some point to a lack of incentive. Judicial Council statistical reports deal only with new filings, cases on the calendar and dispositions. Pending-but-inactive cases filed prior to January, 1988 are not reported.

The compromise solution reached by many courts is to scan old cases only as they become active on the court's calendar as well as new cases. This method has the advantage of reducing the extra workload to a manageable level and it enables courts to use STATSCAN for statistical reporting. It meets all statistical requirements, but it prolongs by several years the length of time before a court will be able to have its entire inventory of active cases on the system.

Surprisingly, over half the STATSCAN courts were not scanning old cases at all, even at disposition. Although it is understandable that the additional workload is burdensome to many courts, it renders STATSCAN useless for any statistical reporting except new case filings.

F. Data Collection

1. Organization and Staffing of Data Collection

Scanning bar code data is an efficient mechanism for data collection, but its efficiency is enhanced when scanning is considered in the design of the

workflow. For this reason, the STATSCAN scanning instructions assume that most data collected by the courts is scanned by clerks who process the case at the point the activities occur, or at least on the same day. This requires that every clerk who collects Judicial Council or court data be given a scanner and that scanning is incorporated into the court's existing workflow.

For example, if the clerks assigned to collect calendar information scan cases at the end of the month numerous inefficiencies would be created. First, all of the entries would have to be back-dated instead of automatically date and time stamped by the scanner. Second, the case record would be incomplete until the end of the month. Clerks accessing the case history for inquiry purposes would be relying on incomplete information. Third, if the clerk has to ascertain what happened in the past, as opposed to that day, errors are more likely to be introduced into the data and the amount of time to make the determination will certainly be greater. Fourth, unnecessary errors could result based on the incomplete case history.

In visiting ten STATSCAN courts from May through August, 1988 NCSC project staff found that there are still a variety of ways to organize the data collection. Some courts maintain very tightly centralized data collection: all filings are routed to one desk, all dispositions to another desk, and calendar information is collected by the calendar section. However, even courts which still involve relatively few clerks in the data collection process are performing the scanning on a daily basis, rather than at the end of the month.

Many courts have decentralized the data collection, particularly when they begin to scan not just filings and dispositions, but other interim events such as court appearances, trials, continuances and the like. Courtroom clerks in the majority of STATSCAN installations are involved in collecting data, either

in the courtroom or immediately at their desks after proceedings. Although the original plan was for courtroom clerks to scan in the courtroom (and many agree that this is the logical place to do it), few clerks actually scan regularly in the courtroom. This is due to the fast pace of some proceedings, but also reflects the personal preference of individual clerks.

In many courts, scanners have been stationed with each clerk who accepts new filings. Two courts have designed bar coded face sheets which are submitted with each filing. The attorney is responsible for checking the applicable case category so that it can simply be scanned by a clerk (see sample filing forms in Appendix F).

The organization of the data collection activities, whether it is limited to a few clerks or involves many staff members, does not appear to affect the efficiency of the data collection activities so far as we could determine through site visits and interviews. The data collection organization generally reflects the philosophy and preference of supervisors and managers in the court and the clerk's office.

The amazing accomplishment of STATSCAN courts is that no new staff have been added to support data collection. Some courts have hired systems administrators, but many have used existing staff effectively in this role with additional training. Some clerks were concerned that an additional task would be more than they could manage during the work day, but because most courts spread the work among several clerks, no one person is overwhelmed.

The speed of data entry using scanning is considerably greater than through key entry. One clerk in Los Angeles Superior Court scans about 450 filings in an hour with about three data elements per case. Another clerk in Yolo Municipal Court has gotten her speed up to 12 cases per minute. Many of the clerks we spoke with take considerable pride in their scanning speed and in the accuracy of the data they collect.

2. Project Coordinator/Systems Administrator Roles

In each court, a STATSCAN coordinator/systems administrator has been appointed to oversee the organization of data collection and to operate the microcomputer. The amount of time required for systems administrators/coordinators to perform STATSCAN-related duties was as little as 10% in some courts to as high as 100% in a few courts. To a great degree, the amount of time spent was dependent upon the level of in-house technical experience, the number of cases being scanned, the number of in-house staff requiring support, and the types of other software products used. The municipal court installations with one personal computer and 5-to-10 scanning units reported 10%-to-30% of the systems administrators' time is devoted to the STATSCAN project. Superior courts with a similar configuration scanning all cases estimated 25% to 50%. (Several superior courts are also working with Sustain, a microcomputer-based court case management system used to manage civil cases for the California trial delay reduction program.) Installations with a number of PC's or a local area network required a systems administrator working full time on the project.

Organizing and managing the data collection effort -- determining case flow and the appropriate data collection points in the court, and training staff how to interpret and apply the rules of statistical data collection -- requires an excellent foundation in the operations of the court. The STATSCAN courts also discovered that it is equally important to have a systems administrator who is comfortable operating the computer. This is particularly true for courts operating STATSCAN on a network of computers, a more complex, technically-oriented hardware environment than the single-user PC configuration originally implemented. Depending upon the size and complexity of the court's operations, available staff and other duties, the coordinator's

duties should be split between two people: a technical system administrator and a project coordinator.

Courts with a strong dedication to having (or creating) a technically competent systems administrator with an extensive court operations background have achieved greater results in less time than installations with minimal or no in-house technical expertise. The position of systems administrator can be filled with one of three types of individuals. The AOC recommends an extensive background in court operations as the primary prerequisite. Couple this with a good background in microcomputer technology and a court will have the best of both worlds. The second type of candidate would be an individual with extensive court operations experience and minimal experience with computers (perhaps an end-user of micro-based software such as word processing, spreadsheets, etc.). The third prospect, a person with extensive court operations knowledge, but little or no experience with technology, should have a keen interest in and a strong desire to become proficient with microcomputers. In the second and third examples, it is very important that additional training be available for candidates accepting the positon of systems administrator.

Seven STATSCAN courts currently have technically trained systems administrators. In each of these sites, utilization of other software products was common and, in some cases, extensive. In addition, staff employees appeared to be more informed and better trained. Those courts without a technically trained systems administrator experienced slower progress with the system and minimal (or in most cases, no) usage of other software products.

G. Training

To successfully implement a statistiscal reporting system such as STATSCAN requires an extensive and continuing training program. Training should be specific to the tasks each individual will perform, but all staff involved in data collection or computer operations should have an adequate perspective of the whole system -- from data collection through output.

1. Data Collection Training

Learning the mechanics of operating a hand-held portable data terminal is not difficult. Almost without exception, supervisors in STATSCAN courts found that staff were able to master the mechanics of the process within a few days to a week. Learning to use a scanner effectively is mostly a matter of practice and individual adjustment -- how to hold the wand and at what angle, how fast to move the wand over the bar code, and how to protect bar codes from wear. Training staff to download information to the microcomputer is also relatively easy, although in some courts supervisors perform this task. Training staff to perform scanning and data transfer works very well at the court site. Experienced staff can train new staff without elaborate, formal classroom instruction.

It is more difficult, however, to train staff what to scan. A successful data collection program, whether manual or automated, whether employing bar code scanning or any other data entry method, requires clear and precise procedures and regulations. If staff are unclear as to the proper sequence of bar codes to scan, or if procedures do not accurately reflect the reality of court case processing, data will not be collected properly. Training sessions should emphasize what elements should be scanned, when, and by whom.

Many STATSCAN courts have experienced problems because staff did not understand correctly the definitions of some data elements or the order in

which elements must be scanned. Unlike on-line data entry through terminal screens, bar code scanning is a batch data entry process which gives little feedback to the clerk at the time he or she is collecting the information. The clerk does not have visual access to other data that would be available on a terminal screen. Error checking programs added to STATSCAN in later versions and additional training sessions to clarify data collection regulations have greatly assisted court staff in understanding how to implement proper procedures to collect the right data at the right time.

2. Computer-Related Training

Users of a microcomputer system need a more thorough understanding of the computer than the typical mainframe user. Beyond knowing how to access a particular application program, how to submit batch jobs to an operator, or how to turn a terminal on and off, the mainframe user usually needs to know little else concerning the care and operation of the system. Services such as file backups, booting system software, installing software packages, and connecting peripherals are provided by the operations staff of the computer center. In many cases, however, the microcomputer user performs these functions. Among the things that all microcomputer users need to know are: system startup and shutdown, proper methods of handling and storing diskettes, care of the microcomputer hardware, knowledge of specific application software programs, and system and information security procedures.

Training on STATSCAN began with a one-day orientation and hands-on training in use of the scanners and PC for systems coordinators and two to six clerks at the AOC offices. Smaller courts generally received on-site training, rather than going to the AOC. Later, training sessions were provided on-site when the PCs were installed and at the request of individual courts. Systems coordinators were provided with PC operations manuals and

were asked to become familiar with the computer's operating system, the menu structures and functions, to review the scanning instructions and statistical reporting regulations, and to determine the most appropriate data collection points in their courts.

In courts that implemented both STATSCAN and Sustain, court staff received instruction in operating Sustain from the vendor and the AOC. Training was also provided for the system administrator and another staff person in the operation of the Banyan network and hardware maintenance.

In general, it appears that training improved with the later installations, and the network courts received more comprehensive training than the courts implementing single-user PC's. We would suggest additional consideration be given to the following:

1. Require <u>all</u> system administrators to attend a comprehensive systems administrator training program. Local computer retailers and Local Area Network developers such as Novell, 3Com or Banyan offer classes for their products.

2. Require the system administrator and all users of the system to attend training classes on other software products acquired by the court. Whether word processing, spreadsheets, database management systems, or graphics, software manufacturers offer training on their products.

3. If a database management system is used for development purposes, a commitment should be made to keep the program current with all future releases of the database. Ongoing training programs should be offered for court staff using these products.

The following resources offer computer-oriented training:

<u>Inside the court community</u>:
- Institute for Court Management, Denver, Colorado
- National Judicial College, Reno, Nevada
- Administrative office of the courts in your state

<u>Local offerings</u>:
- State or county data center
- Hardware supplier
- Software supplier
- Computer retailer

<u>Consultants</u>:
- General business consultants
- Computer consultants
- Training organizations

The type of training, quality and cost vary widely according to the source and the individual instructor. The training program for court staff may utilize a variety of sources to provide instruction that is comprehensive and of sufficient duration to allow staff to become proficient in using unfamiliar tools.

3. Support

Any automation project, regardless of the nature or scope of the effort, requires adequate, on-going support to the users and operators of the system. More than any other aspect of automation, support requirements are underestimated, sometimes with disasterous consequences. "Support", in this context, should be broadly construed as all planning and implementation activities that, together, assist a court to prepare and carry out an automation project that achieves the desired goals.

The California courts' experience with STATSCAN strongly indicates that support services must be visible, sufficiently available, and easily accessible. It is not sufficient to provide the software and hardware tools and assume that the local court will know how to implement them correctly. Confusion may result, even with respect to instructions which project staff believe to be clear and unambiguous. Sufficient resources to provide on-site and telephone assistance are crucial.

It is also crucial that courts, with the assistance of AOC staff, develop a clear plan for how to reach one of the courts' ultimate goals -- to discontinue manual statistical reporting. Many courts, after two years of working with STATSCAN, are not clear where they are heading because they have not been permitted to discontinue manual reporting of monthly Judicial Council data and until recently, no step-by-step guidelines for this process were available. Municipal courts, which were the "casualties" of the redirection

of resources to support AB3300 courts, generally failed to achieve a thorough implementation of the system without adequate support. Although it was not in any way the intention of the California AOC to withdraw support, the small AOC STATSCAN staff could not support the number of installations and, at the same time, enhance the system to meet AB3300 reporting and operational requirements. Those AB3300 courts that implemented STATSCAN have benefited greatly from using STATSCAN because they have not had to set up manual data collection procedures to produce the new monthly AB3300 reports.

Court staff need on-going training, "hot line" telephone support, and regular contact with a support person who understands both the individual local court implementation and the overall system. Court managers, in turn, must commit the resources at the local level to thoroughly implement the system. Without a strong and well-directed local commitment, the effort is less than useless. In fact, it may well be a waste of time.

The STATSCAN system has undergone continual modification. Some courts have kept up and others have not. In some courts, the implementation of STATSCAN has not progressed beyond what appears to be a pilot project to determine if scanning and bar coding would actually work, conclusions which were proven true some time ago. In other courts, STATSCAN has become a regular part of the workflow to collect all required data. Why have some courts progressed steadily while others have not? There appear to be a number of reasons, but chief among them are presence or absence of support, planning, and commitment by both the trial courts and the AOC.

Post-implementation support problems can be greatly alleviated by following a few steps that help to prepare a court for a new system:

1. Fully test the system in no more than four sites, making sure it is bug free and fully operational before it is installed in any other sites. All capabilities identified in the design phase must be completed and fully documented before beta testing. Beta testing is the period of time used to find "bugs," not redesign systems.

2. Have complete and detailed user and system administrator documentation readily available for all sites prior to installation and identify the training curriculum.

3. Have the system administrator and users complete the proper training prior to implementation. The system administrator should receive detailed instruction from the vendors providing the equipment. If the site is to install a local area network, the system administrator should be given the opportunity to receive the formal training on that network prior to installation.

4. Once the system is installed, parallel systems should not be run for more than three months. Staff acceptance is contingent upon progress. If staff continue duplicate efforts for many months, or years, the chances of success soon become minimal or nonexistent. Lengthy operation of parallel systems is costly and may be the result of improper implementation procedures.

If an AOC office has received adequate long-term funding and has sufficient technical expertise and staffing to support a state-wide implementation, the possibility of success can be greatly enhanced by acting as coordinator, not as a vendor. One only needs to discuss the substantial amount of support requested from the 40 sites in which STATSCAN has been implemented to realize the tremendous effort required to adequately address support requirements.

In the private sector, annual maintenance fees are charged by software vendors in order to maintain support staff -- a benefit governmental agencies do not have. Stable funding is necessary to develop an adequately trained and sufficiently staffed support team.

In the private sector, providing 8 AM to 5 PM telephone support, 4-hour response time to on-site support needs and future software upgrades and enhancements typically requires at least one full-time person to support six-to-eight installations. This is assuming each installation has a properly trained system administrator. (Of course, the complexity of the environment will dictate the number of installations any one person can support.) In some cases, the lack of proper support will lead to a decision to de-install the

system. The vertical market of court automation is new to most vendors, but many are anxious to get involved. By working directly with a vendor, many of the support issues can be transferred from the AOC to the vendor very successfully. The California AOC has successfuly used vendors to provide programming services for both the hand-held portable data terminals and the microcomputer and some training. Private firms could also provide systems installation and integration services.

H. Achieving Results: Data Accuracy, Timeliness, and Reporting

1. Accuracy

How does a data collection method that employs scanning and bar codes affect the accuracy of the data collected? What steps must be taken to ensure data quality?

The California AOC and trial court executives have long recognized the weakness of manual data collection. The STATSCAN system was designed with both accuracy and timeliness of reporting in mind. Data accuracy is enhanced by the following features of STATSCAN:

- The error rate for data "reads" for the scanners in use with STATSCAN is one in 3 million. Key entry errors can vary tremendously among operators, but it is highly unlikely that even the most accomplished key entry operator will achieve this low an error rate.

- The scanners are used successfully by staff with varying abilities. The process of scanning is extremely easy to learn and scanning has been readily accepted by court staff.

- The bar code menus can be customized for individual staff to include just the bar codes they need to use, providing some control over erroneous entry of codes.

- Most clerks use only a one-page menu, which makes it faster and easier to locate the correct bar code.

- The STATSCAN codes have been grouped into categories with similar elements together (all status codes begin with a "B"). This makes the codes easier to learn and remember.

- The scanners are portable and can be used at any location. Files need not be shuffled to a specific data collection desk.

- In many courts, data collection is the responsibility of the clerk handling the activity being recorded. Filings are scanned by all filing clerks, in-court events are recorded by courtroom clerks, dismissals and other dispositions are scanned by those processing the papers on the same day. This is one of the keys to timeliness as well as accuracy.

- STATSCAN collects case-by-case data that can be validated through auditing.

- Error checking mechanisms built into the programs are also a form of "audit" since the court must correct any data exceptions before STATSCAN will transmit data to the AOC.

- The exception reports are good training tools, if staff are required to correct their own errors.

- Those courts using Sustain for case management have an additional incentive to maintain accurate data because it will be used for case tracking and operational purposes (calendaring, notice generation, etc.). Inaccuracies in statistical data may go unnoticed, but incorrect operational data may have a profound effect.

- The scanner programs prompt for required data elements when a new case is scanned, when a disposition is entered, and when an event is scheduled.

One indication of the greater accuracy of scanning compared to key entry has surfaced in at least one STATSCAN court. In-court clerks who used the scanner's key pad to enter case numbers miskeyed a substantial number of case numbers that later appeared on error reports. The case number is the only information that uniquely identifies a case in the STATSCAN system. (No case title or party names are entered into STATSCAN.) An incorrect entry can result in data which cannot be attributed to the correct case or data linked to the wrong case. In either situation, the errors may take longer to correct, creating unnecessary work. The problem with miskeyed case numbers in this court was resolved procedurally: clerks now scan all case numbers.

Despite the many features that encourage data accuracy, it is impossible for STATSCAN or any automated system to eliminate all mistakes. Knowledgeable and well-trained clerks who can apply the decision rules to even the most

complex or unusual cases are the most crucial element in accuracy. One supervisor, who had trained many clerks to collect statistics manually as well as to use STATSCAN, summed up her experience: "Put your best and brightest clerks on statistics. Anyone can scan, but not everyone has the judgment to decide what to scan."

Despite the many features of the system that promote accuracy, there are also some drawbacks as well. Updating the database is a batch-oriented process. Few checks for logical data errors can be performed by the scanners because many logical error checks require comparison with other data collected about the case -- data which are stored in the host computer, not the hand-held scanner.* Clerks must wait until the data are downloaded to the microcomputer before error checking routines can verify the data. In any application that employs scanning with hand-held devices, clerks must be able to determine what data elements to scan from the case file, hard-copy listings of the case record, documents in-hand or the actual proceedings without reference to on-line data.

When STATSCAN was first pilot tested in 1986, the programs did not include extensive error checking. Some courts accumulated large databases with errors that were undiscoverable until a new version of STATSCAN with error checking was released. One court reported over 5,000 errors that were the result of widespread misunderstandings among clerks about the proper codes to scan. This court determined that it could not go back and correct such a large

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* Newer scanner models with larger memory and increasingly sophisticated file and data handling capabilities could eliminate these restrictions by storing relevant portions of the database in memory, making this data available for comparison with newly scanned data.

number of errors with existing staff and elected to dump some data. Although this unfortunate experience was not typical of other courts to the same degree, it points to the overriding importance of error checking routines to promote accuracy.

Since data verification cannot be performed at the time of data collection, office procedures must ensure that scanners are downloaded each day and that staff correct errors in a timely manner. Courts that initially downloaded less frequently found that staff resented correcting large numbers of cases with the same type of error. Many errors and misunderstandings in procedures or data definitions can be prevented if staff are given immediate feedback.

Many STATSCAN courts have found the exception reports to be good training and diagnostic tools. As staff become more experienced with statistical data collection, many have no errors on exception reports. In some courts, there is a friendly competition among clerks to attain the lowest error rate. Some court supervisors and managers use the workload reports to determine if all needed data are being scanned.

A thorough review of STATSCAN data and operations in each court will be conducted by AOC and court staff during 1989. In each court, AOC staff will pull a selection of STATSCAN cases and paper case files to verify the information on STATSCAN and the data collection points will be reviewed to ensure that all data can be collected. Preliminary visits to some courts have shown that data accuracy improves as staff gain experience (some staff have

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* The manual statistical data collection system in California has not been audited in the past ten years.

never collected statistics before) and the number of errors on exception reports declines with time, particularly in those courts that require each clerk to correct his or her own errors. AOC diagnostic reports have shown that some courts are now producing high quality data, while others are not capturing all required data elements. The AOC is working with courts to pinpoint data elements that are not captured reliably to increase the comprehensiveness of STATSCAN implementation.

The "Hawthorne effect" may also play a part in encouraging accuracy of data. Statistical data and the processes used to collect it are being scrutinized and fine tuned in a way never before attempted in California. This scrutiny has led to a better understanding of how the statistical reporting regulations need to be revised to better reflect the operational reality of courts. Logical errors that can be trapped before the data are reported are helping courts to focus increased attention on training staff to make accurate judgments about the proper data to record.

Court executives and supervisors interviewed for this project are unanimous in their perception that the data collected through STATSCAN is more accurate than manually collected data. However, a final assessment of data quality must await detailed audits which were beyond the scope of this project.

2. Timely Reporting of Data

The lack of timeliness in reporting statistical information has been problematic in California for many years. AOC Statistics Unit staff and trial court executives in many courts agree that statistics have not always been produced in a timely manner. Court supervisors and executives point to the burden of tallying and compiling reports manually, especially in the detailed form required in California. The Judicial Council's summary statistics compiled at the end of the month are of secondary importance to trial court

executives and judges, who often are more concerned with information to support daily management of the court.

STATSCAN addresses the timely reporting of data by creating a system where information is collected on the day it occurred. Because the scanners time- and date-stamp the scanned data automatically, there is an incentive for court staff to scan activities on the day they occur. Otherwise, the entries must be backdated in the scanner, which is a more cumbersome process than same-day scanning.

As of October, 1988 four of the larger courts were transmitting daily to the AOC office, ten courts transmitted on a weekly schedule, and three had transferred data only occasionally. The remaining nine STATSCAN courts had not yet transmitted data for various reasons.

To date, all courts are still required to prepare and send hard-copy Judicial Council reports monthly. For most courts this means manually collecting the data as well as scanning data into STATSCAN. This dual reporting requirement has not been lifted yet, primarily because not all data elements required for the 1-A, 1-B, 2-A and 2-B reports are being collected reliably. Some courts will not be able to rely on STATSCAN reporting for some time because these courts scan only new filings. Until all "old" cases pass through the system, the statistics will not be complete. Those courts that add old cases to the STATSCAN inventory will convert to electronic reporting much more quickly.

3. STATSCAN Reports

Courts can produce a variety of operational reports, statistical analyses, and "workload" reports using pre-programmed STATSCAN functions. (Examples of reports are found in Appendix H.) The "report generator" software -- R/Report -- enables court staff to print custom reports or

listings of cases according to user-specified criteria. For example, a listing can be produced of all civil cases that were disposed in a particular month. The latest release of STATSCAN programs in October of 1988 included a new statistical report that provides an overview of a court's disposed and pending caseload and the report programs necessary to produce Judicial Council monthly statistical reports.

Court administrators and staff have had mixed reactions to the reporting capabilities of STATSCAN. Many courts have found the "missing case number" report to be helpful in identifying newly filed cases that were not scanned, and some court managers found the workload reports to be useful as diagnostic tools. Many court staff have not had adequate training to make use of the reporting capabilities; others have not taken the time to use the system fully. For many court managers, the lack of statistical reports (until the October, 1988 release) has been discouraging. However, we expect that these new case tracking reports will be of great interest to court managers and will answer many of the earlier complaints about the lack of outputs from STATSCAN.

R/Report has been criticized by some courts as difficult for non-technical staff to learn, "unintuitive," and incapable of producing reports courts might wish to generate for their own purposes. Running reports from a single-user system configuration requires advance planning because the PC is occupied for a considerable time and unavailable for any other use. During a visit to one superior court, the Assistant County Clerk ran a workload report on approximately 15,000 records. It took 45 minutes for the report to be completed. Another court runs the 11 reports needed on a regular basis over the weekend because, with the current size of the database (60,000 cases), the programs run for 27 hours. All courts with sizeable databases considered it a problem to run reports in a timely manner. The AOC plans to address these issues in future versions of STATSCAN.

I. Case Management System Interface

Originally designed as a statistical data collection system, STATSCAN has never had a strong case processing component. Although trial courts can collect data in addition to that required by the Judicial Council, the STATSCAN software lacks many features generally present in full-fledged case management and tracking systems -- operational features such as calendar and notice production.

As a result of the Trial Delay Reduction Act of 1986, which mandated the adoption of time standards and pilot delay reduction programs in nine superior courts, the AOC decided to add case processing capabilities. This was accomplished by building an interface between STATSCAN and a commercially available case processing system, Sustain, which also operates in a PC environment and is written in Revelation, the same database management system used by STATSCAN.

Data are exchanged in a controlled, two-way interface between STATSCAN and the Sustain case management system. The data interchange occurs between the two systems in an overnight batch process. Three "dictionaries" control the flow of data between STATSCAN and Sustain and maintain control over data and codes. This interchange of data is a complex process because changes in data can originate from either system.

Because Sustain was introduced primarily to manage a delay reduction program that did not embrace all cases in a court, a mechanism was needed to distinguish between those cases that would be transferred from STATSCAN to Sustain and those cases that would remain in the STATSCAN database only. A data element (B90 - "case in Sustain database") was added and is now scanned for each case for which data should be transmitted from STATSCAN to Sustain. Delay reduction program cases are flagged by scanning a "B68" code.

Another example of an interface between STATSCAN and a case management system has been developed by the AOC and a private vendor of the CMS system installed in several California superior courts. The CMS system is a full-featured case processing system. Two Judicial Council monthly statistical reports, 1-A (Condition of Calendar) and 1-B (Summary), have been produced in hard copy for over a year. These courts and the AOC wished to tap the courts' automated system to provide case-by-case statistical information in electronic form for transmission to the AOC. Rather than switch from a case management system already functioning well in the courts, the AOC and the private vendor built an interface between CMS and STATSCAN to meet both the courts' and the AOC's needs.

Several issues had to be addressed to build a successful interface. Unlike the interface with Sustain, in which the STATSCAN system and the Sustain programs interchange data, the CMS-STATSCAN interface is one-way. CMS, which does not use bar codes for data entry, is the only source of input data; transmission of data occurs only from CMS to STATSCAN. This decision simplified the interface considerably.

Data from the CMS database are "picked off" by a batch program which runs overnight on the court's computer. After the data are transmitted, STATSCAN programs edit the data and a hard-copy report of any incompatible data and errors is printed as an exception report. The exception report is used by clerks to correct the information in the CMS system, and the corrected data are retransmitted to STATSCAN. When all data have passed the edit checks, STATSCAN transmits the data to the AOC.

One of the most important issues was the definition of data elements to be transmitted from the courts' system to STATSCAN. Several new elements had to be added to CMS and, in a few cases, definitions of data elements had to be changed to reflect Judicial Council requirements.

The one-way interface design not only simplified the programming and operation, it also allowed both CMS and STATSCAN to maintain their own structural integrity. Core STATSCAN programs remain the same, a boon to the AOC, which must maintain STATSCAN programs for all participating courts. The design and format of the CMS database does not have to be compatible with STATSCAN, although the data elements and their definitions must match for all required Judicial Council elements.

No direct comparison can be made of these two interfaces because each was designed to meet a somewhat different set of needs and circumstances. The STATSCAN-Sustain interface was set up to preserve STATSCAN as a data collection system with all the advantages of scanning while allowing courts to utilize their data better through a full-featured case processing system. In this case, STATSCAN was implemented first; the advent of the Delay Reduction Act made it crucial that courts have additional capabilities. This "marriage" helped courts to avoid dual data collection through two entirely independent systems. Data from each is used by the other, for separate purposes, without redundant data collection. The addition of Sustain encouraged courts that needed an immediate solution for tracking cases to adopt STATSCAN.

The CMS-STATSCAN interface, on the other hand, was designed to preserve the CMS system without adding an independent statistical data collection system on top of existing operations. The interface allows the court to maintain its operations while collecting and transmitting case-by-case Judicial Council statistics. In addition, these two superior courts can take advantage of STATSCAN's error checking, electronic mail and reporting programs produced and distributed by the AOC.

J. Costs

1. Equipment and Software

There are two configurations of hardware currently used to support STATSCAN: a single microcomputer or a network of PC workstations connected to one or more file servers through a LAN.

The first and most common configuration in the current installations consists of a single-user 80286-based MS/PC DOS IBM-compatible microcomputer with 640KB random access memory, 40 MB of hard disk storage, a cartridge tape back-up unit, modem, wedge scanner, laser printer and hand-held scanners.

Two commercial software packages, in addition to the STATSCAN programs, are required to operate the STATSCAN system in a single-user configuration. Revelation (the database management system) and Carbon Copy (a remote diagnostics tool allowing systems support personnel at the AOC to dial into a court's computer to operate it as a remote terminal) are installed on each single-user system. A graphics software package, Chartmaster, has been provided by the AOC for each installation.

The total cost of a single-user installation is approximately $1,200 for purchased software and $7,000 for hardware (exclusive of hand-held scanners) under AOC pricing agreements. Each hand-held scanner adds $595 to the base hardware/software cost of $8,200.* (Single-user systems costs are detailed in Figure 6 below.)

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* Based on competitive procurement of 600 units or more.

Figure 6

HARDWARE COST INFORMATION

STAND ALONE SYSTEM

TELXON PORTABLE HANDHELD SCANNERS	$ 595.00
32KB RAM 32KB Eprom Acoustic Coupler Single Code Wand Full Alpha-Numeric Keyboard Two Line Display	
HEWLITT-PACKARD LASERJET II	$ 2,000.00
W/ 1.5 MB RAM	
WEDGE SCANNER (INTERMEC OR WELCH-ALLYN)	$ 550.00
TELEBIT TRAILBLAZER (19.2 - 300 Baud) MODEM	$ 975.00
286 BASED AT COMPATIBLE MICROCOMPUTER (Unisys, Compaq, Datapoint, AST, Telxon, etc)	$ 3,500.00
640KB RAM 40 MB Harddisk (<40 ms disk access) 2 serial / 2 parallel ports Hercules compatible graphics card Monochrome monitor AT style keyboard 1.2 Floppy Disk QIC - 60 (Tecmar) Streaming Tape Backup	

Figure 6

SOFTWARE COST INFORMATION

STAND ALONE SYSTEM

REVELATION	$	0.00

(The Judicial Council purchased a site license for distribution of Revelation to all trial and appellate courts, unlimited copies, for use on any court maintained equipment. The license was $50,000.00.) Single user copies of Revelation retail at approximately $700.00.

CARBON COPY	$	100.00

Carbon Copy is used as a remote diagnostics tool allowing systems support personnel in San Francisco to dial into a court's pc and operate it as a remote terminal. This is a single user version running on a stand alone pc.

CHARTMASTER	$	350.00

Used for graphics support. This is a single user version running on one pc.

The network version of STATSCAN was installed in several California courts, primarily to meet the additional requirements of Sustain. A network installation to support STATSCAN is needed if the court wishes to make the system available to more than one user at a time. This would be necessary if other applications or package software such as word processing, graphics, spreadsheets, etc. were to be widely used by the court. STATSCAN, itself, does not require a network, but the software will support this type of multi-user installation.

A network installation requires the following hardware at a minimum: 80386-based PC workstation for systems administration, a file server, network hardware, 80286-based PC user workstations, modem, wedge scanner, laser printer, and hand-held scanners. This minimal configuration costs approximately $39,000 (exclusive of hand-held scanners and cabling) under AOC pricing agreements. Each scanner adds $595 to the cost of the system. Cabling to connect the workstations to the file server will depend on the number of work stations, the location of the workstations, and local labor costs to install the cabling.

The required software, in addition to Revelation, Chartmaster and Carbon Copy, is the Vines Operating System to support the network. If a network is to be used, a network license of Revelation could be purchased. It was not initially anticipated that networks would be installed to support STATSCAN; therefore, California purchased a "site license" for $50,000 which entitles the AOC to distribute an unlimited number of copies of Revelation for use on any court-maintained computer. To make the Revelation software accessible to more than one user at a time, system "bump disks" must be purchased for multiples of 4 users in addition to the site license. (Network system costs are detailed in Figure 7 below.)

Figure 7

HARDWARE COST INFORMATION

NETWORK SYSTEM

SYSTEM ADMINISTRATOR UNIT
386 BASED AT COMPATIBLE MICROCOMPUTER $ 6,000.00
(Compaq, Zenith)
This unit can be converted to a server running
VINES software if needed.

1 -2 mb RAM
100 MB Harddisk (<40 ms disk access)
1 serial / 1 parallel ports
Hercules compatible graphics card
Monochrome monitor
AT style keyboard
1.2 Floppy Disk
QIC - 60 (Tecmar) Streaming Tape Backup
SMC Arcnet Card (Other network cards
may change price. The AOC is experimenting
with other network cards that allow this
administrator pc to run faster for some
applications.)

Sometimes this is the Compaq Portable 386 to
allow portability and remote connections to
the system.

NETWORK HUBS OR OTHER HARDWARE $ 500.00

FILE SERVER (Banyan - CNS 386 Based Server) $ 26,500.00

8 MB RAM (Configurable up to 14 MB)
147 MB Hard Drive (Maximum allowable: 4 disks.
Disks may be either 147 ot 300 MB)
150 MB Streaming Tape Backup - Internal
ICA Communications Card
Server Console

Figure 7

HARDWARE COST INFORMATION

NETWORK SYSTEM

TELXON PORTABLE HANDHELD SCANNERS	$ 595.00
32KB RAM 32KB Eprom Acoustic Coupler Single Code Wand Full Alpha-Numeric Keyboard Two Line Display	
HEWLITT-PACKARD LASERJET II	$ 2,000.00
W/ 1.5 MB RAM	
WEDGE SCANNER (INTERMEC OR WELCH-ALLYN)	$ 550.00
TELEBIT TRAILBLAZER (19.2 - 300 Baud) MODEM (Generally two are desirable: one for server to server communications and one for pc to pc communications to allow remote dial-up diagnostics if server communications is down)	$ 975.00
WORKSTATION: 286 BASED AT COMPATIBLE MICROCOMPUTER (Unisys, Compaq, Datapoint, AST, Telxon, etc)	$ 2,500.00
640KB RAM 20 MB Harddisk (<40 ms disk access) 1 serial / 1 parallel ports Hercules compatible graphics card Monochrome monitor AT style keyboard 1.2 Floppy Disk SMC Arcnet Card (Other network cards may change)	

Figure 7

SOFTWARE COST INFORMATION

NETWORK SYSTEM

REVELATION $ 0.00

(The Judicial Council purchased a site license for distribution of Revelation to all trial and appellate courts, unlimited copies, for use on any court maintained equipment. The license was $50,000.00.) Single user copies of Revelation retail at approximately $700.00.

To make the system multiuser, system "bump" disks must be bought. The bump disks allow multiple users to use Revelation files. Users are "bumped" in 4 unit increments. Each bump disk costs approximately $300.00. A network license could have been purchased but it was not anticipated that the courts would be using networks.

Formula:

$$\frac{\text{Number of Users}}{4} \times \$300.00 = \text{Revelation Software costs for multiuser.}$$

CARBON COPY $ 100.00

Carbon Copy is used as a remote diagnostics tool allowing systems support personnel in San Francisco to dial into a court's pc and operate it as a remote terminal. This is a single user version running on a stand alone pc.

CHARTMASTER $ 350.00

Used for graphics support. This is single user version running on one pc.

Figure 7

SOFTWARE COST INFORMATION

NETWORK SYSTEM

VINES OPERATING SYSTEM $ 5,724.00

VINES is the network operating software. The system price includes the following items which are considered standard for all AOC installations.

VINES (Comes with Server)
PC Dial-In
Netman (Network Management Component)
Network PC Printing to allow remote printing at any workstation
LAN Server to Server
WAN Server to Server
Network Software (Arcnet, Proteon, Ethernet....)
Network Mail

2. Training and Support

Staff training to support STATSCAN falls into two main categories: (1) training provided by the AOC in the use of the STATSCAN software and statistical data collection requirements and (2) training in the use of specific vendor products provided by third parties. AOC-provided training consists of on-site visits to courts and conferences for administrative staff from each STATSCAN court one-to-two times per year. Conferences are usually held for 2-3 days twice a year. The cost per attendee averages about $500 for each conference for transportation and per diem. No registration fee is charged for these conferences.

On-site training visits generally require one week for a new installation and several visits during the first year to ensure that the court is operating the system properly, with less frequent visits after the first year. Costs of these visits vary depending upon the location and the length of the site visit.

With a small core staff of 3-4 people, the AOC has had difficulty providing the optimum level of support to each installation. Several steps have been taken to minimize the need for on-site work. The first releases of STATSCAN programs were installed by AOC staff, which required that they travel to each court; new releases are now installed by systems administrators. Enhanced training of systems administrators has led to the need for fewer in-person visits. A new telephone support center is being established this fiscal year to handle questions and problems over the phone. The electronic mail network, through which courts can leave messages for STATSCAN support staff, has been successful in maintaining contact with courts when in-person visits could not be provided.

A systems administrator training session now is also provided for one week for all new administrators. The AOC staff have provided this training free of charge to courts. The cost of travel and per diem averages about $1,000.

Training provided by outside vendors has been limited to training the systems administrator to operate the network configuration (in addition to the AOC's systems administration class). This training program is provided at a cost of $2,700 for two persons plus approximately $2,000 travel and per diem for the week-long session.

In order for a court to make the best use of other commercially available software purchased "off the shelf" (word processing, graphics, spreadsheet and other packages), it is often desirable to have a formal training program. The Administrative Office of the Courts has not provided any classes for these types of peripheral support products because they are outside the main STATSCAN application. Courts wanting to use such software can obtain training from local adult schools, personal computer stores and private consultants/trainers. Costs will vary widely.

3. Equipment Maintenance

Equipment maintenance contracts have been purchased by the AOC to cover some hardware components -- the network servers, hand-held scanners and some communications equipment. Experience has shown that the PC workstations and stand-alone systems are reliable enough that maintenance contracts are unnecessary. The hand-held scanners are also extremely reliable with few failures in the past several years.

On-site hardware maintenance for the Banyan servers has been provided in the past by the manufacturer. The AOC has purchased "Priority-2" coverage, which is intended for customers who can tolerate 1-2 days of downtime should the server malfunction. Response time varies according to the distance from the site to the vendor's servicing depot. On-site service maintenance covers all parts, labor, and travel. "Priority- 1" service, which provides 4-8 hour response time, also is available. The costs of these programs vary according

to the equipment covered, the location, the supplier's current prices and any discounts which may apply. Other states intending to implement PC network configurations should investigate service companies operating locally.

4. STATSCAN Programming

The design of the STATSCAN software has been the responsibility of AOC staff. Working from design materials, all microcomputer programming for STATSCAN has been performed under contract with a local systems firm. During the first two years of development, one half-time programmer was under contract. The AOC increased the contract to a full-time programmer for FY 1987-88 and 1988-89.*

Programming of the software for the hand-held scanners was performed by the equipment vendor at a cost of approximately $15,000.

5. Equipment Configurations for Different Sized Courts

For a single-user system, the equipment-cost variable is entirely in the number of scanners purchased. There is no exact formula for figuring the number of scanners that has worked "across-the-board" for courts of all sizes. For budget estimation purposes at the state level, California has used a ratio of 1.5 scanners per judge, but experience has shown that the organization of data collection and the types of cases scanned will affect the number actually needed.

In smaller courts, a higher percentage of staff are usually involved with scanning because there is one staff member processing civil cases, one processing criminal, etc. To implement STATSCAN for all case types requires scanning equipment for each clerk, as well as courtroom clerks. A formula in

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* Almost half the programmer's work in 1987-88 included building the interface between STATSCAN and Sustain.

the range of 2-3 hand-held terminals per judicial position produces a closer estimate for small courts with 10 or fewer staff.

By adjusting the number of scanners, the single-user system configuration will adequately support the collection, storage and transmission of STATSCAN data for small-to-medium-sized courts (up to 10 judicial positions). For approximately $10,000, a small court can acquire the required software, hardware, and four scanners. A medium-sized court with 20 scanners and a single-user PC would require approximately $21,000.

Even a large court may use this single-user configuration, but if this option is selected, it is preferable to provide one single-user set-up for each department (criminal, civil, juvenile, etc.) because of convenience and accessibility. Courts with more than one PC may also more easily justify the need for a network configuration.

There is a limitation on the number of scanners that can be downloaded conveniently to a single machine at the end of each day. It takes about a minute to download a full scanner, but running the exception reports takes considerably longer. Generally, a court with more than 20-30 scanners would find the need for either a network (where scanners can be downloaded simultaneously to different workstations) or would need to implement a multi-scanner download process through the use of a multiplexed "cradle." (A cradle is a device that provides unattended downloading for up to 64 scanners. The scanners are plugged into the device, which automatically "polls" each scanner and transfers the information to the host computer without an operator present.) The cradle has not yet been used in STATSCAN courts in California because networks (which permit downloading from each workstation) have been implemented in all courts where the number of scanners might have presented a problem for a single-user system.

IV. NON STATISTICAL BAR CODE APPLICATION FOR COURTS

A. Case Processing: The Maryland District Court System

An ambitious project is underway in Maryland to expand the centralized statewide district court computer system using bar code technology. The new system will be used in the courtroom by clerks and commissioners as well as in the clerk's office to produce many operational documents such as release or commitment forms for criminal cases, trial calendars, registers of actions, and warrants. This system will use bar code scanning as the principal data entry method, but some terminal data entry will be necessary for textual information. Case folders and traffic tickets will be preprinted with bar codes.

The current system supporting the district courts runs on a mainframe computer located in Annapolis with terminals in district court offices throughout the state. The new system will utilize both the mainframe computer in Annapolis and networks of personal computers with scanning devices attached to keyboards. The Maryland system, as an operationally-oriented case processing system, requires realtime data capture. Some documents, such as commitments or releases will be printed immediately in the courtroom using a combination of standard text and scanned information. It is not possible for such a system to operate with batch data entry through hand-held scanners downloaded each night, if the purpose of the system is to be achieved.

The design of the Maryland District Court system relies almost entirely on bar coding most of the data elements necessary to operate the system. Instead of preparing documents for the data entry section, court and clerk's staff, as well as commissioners (who hear preliminary hearings in felony cases) will use scanning devices to capture the information directly at the time the event

occurs or the document is filed. Scanning of bar-coded information, an easy and reliable method of data capture, makes it possible to expect courtroom clerks and commissioners to be able to learn to use the equipment and to handle these duties without having to become expert typists.

Statewide, Maryland courts employ about 200 contractual employees to staff the data entry operations. Some data entry operations have simply become bottlenecks. Too much time is also spent by court staff in preparing documents for data entry when the data could simply be captured at the source. It is also hoped that the decreased circulation of files through data entry operations will help to cut down on the problem of missing files, which is endemic to high-volume courts. Maryland's district courts are cautiously optimistic that changes in the location and timing of data capture will make for more timely information and in some cases reduce the dependence on large data-entry staffs.

Maryland's experience has shown that separate data entry operations consume tremendous resources -- (approximately 20% of the clerical employees are contractual data entry operators). While the state does not expect commissioners and courtroom clerks to absorb all the data capture, the plan is to reduce the number of contractual employees through attrition and redefinition of duties.

The Maryland District Court system is currently under development. Piloting will begin in a large urban county in June, 1989. Depending upon the results of the pilot test, other counties will implement the system later in the year. Because of the early stage of the project, there are few conclusions to be drawn from this system. The project director believes that the most dramatic impacts will be in criminal and traffic data collection, which will rely heavily on in-court scanning. The civil system may not have

as great an impact because of the greater need for noncoded information on civil cases such as names, addresses and biographical information on associated parties to the case.

Although the system is not yet operational, the adoption of bar coding and scanning in the design clearly indicates the importance of this technology for court applications in addition to statistical data collection. This is partly due to the fact that much of the data for case processing systems can be bar coded and scanned effectively, just as data used for statistical purposes can be. The designers of the Maryland system estimate that approximately 70-80% of the district court system's data will be scannable.

B. File Tracking Systems

One of the most troublesome and pervasive problems in both limited and general jurisdiction trial courts nationwide is misplaced files. It is hardly surprising that files become misplaced, given the need to circulate them through the court and clerk's office. Many courts have made efforts to reduce the incidence of lost or misplaced files by setting up file tracking systems and procedures to restrict the circulation of files, use of files by noncourt personnel, and to track the location of a file as it moves from one place to another.

Manually operated file tracking systems have limited success when they rely on a central, pencil-and-paper sign-out book. Human nature being what it is, people often do not take the time to sign out the file. Automated file check-out systems work better when input devices are conveniently available to sign out files on the system. Another factor that greatly influences the reliability of the system is who is held accountable for signing out the file. One file tracking system, in use by an attorney document service firm in San Francisco, became successful when responsibility for recording the

file's location was given to the person releasing the file. In a recent audit of the file tracking system, 95% of the files were found to be in the location recorded on the system. Most courts would be delighted with a 95% accuracy rate, and there is no reason why even this percentage cannot be improved upon over time.

Scanning devices were installed in this firm at several stations along the perimeter of the large, open-plan office space. These scanning devices are stationary; staff must go to the work area to use them, but this poses no problem because of the open floor plan and location of the stations. The scanners are "daisy chained" together in serial fashion with a connection to each scanner through the standard RS232 interface on each unit. The "daisy chain" is connected to the firm's Prime minicomputer through only one port. The scanners are on-line data entry devices, that is, the scanned data are immediately stored in the computer without the necessity of downloading the data at regular intervals. The fact that only one port is needed to connect the 64 scanners to the computer means a tremendous savings in equipment and money. And the data are immediately available so that anyone looking for a file has the most current information on its location.

The system in use by the attorney document service firm started with bar coding all of the existing files; new files are bar coded when they are created. On the wall above the scanning station are several bar code menus. Each location (department, division, section) within the file processing area has an assigned bar code that appears on the menu. Each employee has a badge with a bar coded personal identification number. When a file moves from one location to another, the person responsible for releasing the file goes to the scanning station, scans the file number, his or her identification number from the badge, and the new location of the file. The scanner date- and

time-stamps the record, and the data are sent to the computer. To retrieve the location of a file or to look up the history of the movement of the file, terminals must be used because the scanners have no display screens.

File tracking is a logical application for bar coding because all information needed can be bar coded, inexpensive nondisplay scanners can be used, and, unlike terminals, scanners can be daisy-chained together to use fewer ports on the computer. The downside of a file tracking system dependent upon bar codes is that all files (old and new) must be labeled. Bar coding and labeling all files can be an enormous job for large and medium-sized courts. Even with the benefits a good file tracking system can bring, the labor to get the system functioning is not trivial. Fortunately, scanners also have key pads which can be used to input case numbers in the event not all files are bar coded. However, many California STATSCAN courts report that the entry of long case numbers with the key pad is often not reliable enough. Coupled with the fact that non-display scanners cannot report error messages to operators, it seems advisable to plan on the labeling of all files for assurance that the system will work at its best. Check digits at the end of case numbers might also eliminate most keying errors.

To implement a stand-alone file tracking system that is not integrated with other applications requires a computer, cabling, scanners and appropriate software for both the scanners and the microcomputer. The microcomputer should be located in the file room or at a desk that will be attended during working hours. With this arrangement staff would have to call the operator to have the file they need looked up on the computer. If a court has an existing system, scanners can be added with appropriate software; terminals used on the system for other purposes can also be used for file look-up.

C. File Archiving

File archiving is another natural application for bar coding. Because of the labor involved in labeling case files, a court might wish to implement this only if files will be bar coded for other purposes as well.

One system in use in an attorney document service firm in San Francisco is an extremely simple yet effective system for recording the storage location of inactive files. All files have been previously bar-code labeled. When they become inactive, the records clerk uses a terminal on the firm's minicomputer to access the archiving function. The screen prompts for the box number in which the file will be stored. The operator then scans the case numbers of each of the files that will be stored in that box. The information is stored in the computer by case, so that if a case file must be retrieved, its box or other location (rack, shelf, floor, etc.) can be found.

This application differs from the file tracking system mentioned above in that it uses both scanners and terminals for data entry, but it need not. Box locations could also be bar coded and scanned. The integration of the terminal and the scanner works well in this application because the data entry is arranged such that the terminal is used for entry of one data element first, then the operator can pick up the scanning wand and rapidly scan several case numbers without alternating back and forth between the scanner and the terminal. This is a key factor in the design of software that makes effective use of scanning. Staff use the scanners rather than keyboard because it is faster and more accurate for less-than-expert typists to scan. However, if the application required the clerk to alternate between the keyboard and scanner, the movement between two devices would make for a cumbersome process and scanning might well be avoided.

D. Other Applications

Several other court applications might be considered for bar coding. During our research we learned of a correspondence production system that uses bar coded data elements to fill in variables and standard text in a form letter, several jury management systems, a calendaring system, and an exhibits tracking system. These systems were implemented on microcomputers or minicomputers, using either hand-held or on-line scanning devices.

It was beyond the scope of this project to thoroughly review all these applications, but we hope that further research will be pursued to investigate these and other potential uses of bar code technology in courts.

V. CONCLUSIONS

A. Applicability of Bar Coding and Scanning to Statewide Statistical Data Collection Systems

How applicable, then, is scanning as a method for collecting statistical information for state courts? Considerable variation is found across the states with respect to the level of data aggregation (case-by-case or highly summarized data), the reporting formats, and the specific kinds of information required at the state level. As part of this study, project staff analyzed the type of data collected by nine states for criminal and civil cases. We looked at five statistical systems that collect case-by-case data and six that collect aggregate data.* The information from these states falls generally into six categories: court identifiers, case filing information, case activities or proceedings, trial information, dispositions and sentences, and miscellaneous information. About 80% of the data elements needed for both aggregate and case-by-case reporting for these states have already been bar coded for the STATSCAN system. Of the remaining data, only names of defendants or attorneys could not be bar coded. (See Appendix H)

Even though we can conclude that the type of data and level of data aggregation required by other states are not a barrier to using bar coding and scanning, the feasibility of developing or transferring a system does not rest with the applicability of the technique alone. The unfortunate experience of many courts as they have transferred systems in the past is the assumption that it is actually a short cut and cheaper than the acquisition or internal development of a customized system. Unfortunately, it often becomes the

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* Case-by-case reporting: Kansas, Idaho, Wisconsin, Missouri, New Jersey (civil only).
Aggregate caseload reporting: New Jersey, Virginia, Pennsylvania, Washington, Oregon, New York (civil only).

opposite. The only way to ensure a successful system is to methodically follow the steps associated with the normal process of acquiring or developing a system.* Shortcutting inevitably leads to disaster.

The STATSCAN system can be transferred to other states in a variety of ways. With customization of the software, the entire system can be transferred. Sustain could also be transferred with software customization, or simply the concept could be transferred. It is doubtful that the systems could be ported without modifications because of the special requirements in each state. Many of the bar code vendors have contract programmers on staff who will customize the hand-held terminal software. If sufficient programming staff is not available on staff, many software suppliers who specialize in court case management systems are already investigating the use of bar code devices as input mechanisms for their products. A thorough study and analysis of software development/acquisition should be performed as a part of the feasibility study prior to implementation.

Any statewide data reporting system must first take into account the state of automation or lack of it in the courts and what other local purposes are satisfied by current statewide systems. Some states have instituted uniform manual case processing systems that employ forms used for both statistical reporting and case processing activities. Any new statistical data collection system will have to replace all functions of the current system, as well as extending the benefits of a new data collection method.

Most states have both automated and unautomated trial courts, and a uniform statistical system must accommodate both. For unautomated courts, one important factor to consider is whether statistical information should be the

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* For a discussion of implementation steps for automated systems, see State Judicial Information Systems Project, Automated Information Systems: Planning and Implementation Guidelines, (NCSC, 1983).

only output of an automated system. Does the trial court also need a case processing system that supports operational activities? Judging by the demand for automated case processing systems throughout the country, many trial courts need or already have automated systems to assist with local case processing and management activities. A system that produces statistical data alone is not enough for most courts.

A related issue is the need for noncoded data. Bar coding, a data collection technique that handles only coded data, cannot be the sole means of data input to a system that supports case processing. Some may want to consider retrofitting existing automated systems or designing any new systems to incorporate bar code scanning as one method of data collection.

A third issue is whether statistical data should be produced as a by-product of an operational trial court system. With the diversity of courts in California and the fact that the courts are not entirely state funded, the AOC decided not to try to develop a uniform system to handle case processing. Other states have approached this issue differently and have developed operational court systems that also produce statistics. Some states have been successful, others have had limited success. In the end, systems that are designed to meet both purposes may provide the optimum solution. The two STATSCAN interfaces discussed earlier provide models that are applicable in many situations.

B. STATSCAN

Many court administrators accepted STATSCAN because of the opportunity to automate some functions in their courts, to improve the quality of their statistical information, and to build a database of case information they had no other way of amassing. Most hoped to gain operational information on the activities of their courts and to relieve staff of the difficulties of compiling Judicial Council statistics manually.

When staff and managers were asked how well their expectations had been met, there was a wide range of answers. However, most agreed on at least two points: scanning is a simple, effective, and easily learned data collection method but the unfinished state of the STATSCAN programs has delayed any useful output until recently. Some courts had also experienced difficulty in determining how STATSCAN would fit into future automation plans that included local criminal justice information systems or other applications.

Staff of the municipal courts generally were the most critical of STATSCAN because of the support problems, but some superior court managers felt they could not have met the requirements for AB3300 without STATSCAN and Sustain. Many municipal court staff expressed scepticism that STATSCAN was worth the effort. While almost all staff and managers interviewed for this project understood the reason why support was not meeting their needs and expectations, many felt they would not achieve their goals without considerable assistance.

Hindsight, providing a perspective on what has actually happened in contrast to what was planned or expected to happen, can provide some valuable lessons to other states or individual courts. Although bar coding and scanning ease the data collection work and microcomputers are a relatively simple hardware environment, it is important to realize that the systems through which these methods are implemented must be just as carefully planned, managed and supported as any other automation project. To underscore this important point, the following items summarize some of the most valuable experiences of the STATSCAN project which may be useful to other states.

1. Start with a clear idea and definite plans as to the desired outputs from the system.

One of the major difficulties faced by the STATSCAN developers, and later by users of the system, was the question of exactly what statistics would be

outputs of the system. For several years prior to and during STATSCAN development and implementation, trial court administrators and the AOC debated the type of statistical information to be collected. As a result of continual refinements to the statistical requirements and new requirements of AB3300, data elements were added to STATSCAN as late as August, 1988. Some data elements were also changed in mid-stream, necessitating a "conversion" of data already scanned to reflect new case category codes. The conversion project required a great deal of staff time in participating courts because one case category had to be separated into two new categories. Each case in the old category had to be researched to determine its new category. Obviously, if the case reporting categories had been firmly established at the start, the conversion activities would not have been necessary. The planning stage for a new statistical data collection system is the appropriate time to consider the utility of the old system and to make any required changes.

The internal debate as to the statistical requirements also brought up questions about the reporting regulations and the report formats. Because these issues were not completely settled, new data elements were added during the course of the project when it became clear that the existing reports could not be generated from the STATSCAN data elements. Courts were notified periodically of new data elements, but not all courts complied with scanning these new elements. In some cases, new data collection points within the courts had to be set up. Staff also had to be retrained.

The "build as you go" approach didn't work well for some courts, confusing staff and necessitating reevaluation of scanning procedures by court managers. Some courts took the attitude that it was better to wait until the system was stabilized and electronic statistical data could be substituted for regular reporting before fully implementing scanning in their courts. As a result, the data collected to date are not always complete for all cases.

However, it should also be noted that despite the difficulties experienced by some courts in adapting to new data elements and procedures, the data collection method - scanning bar codes - can be modified to include new data. This is one of the most positive aspects of using bar codes.

2. Clarify statistical reporting regulations before widespread implementation.

Confusion also surfaced over some of the statewide statistical regulations. Although these regulations had been in force for many years, the attention paid to the details of collecting the data brought many questions out into the open, particularly with respect to unusual or exceptional circumstances. Through the electronic mail system that connects all STATSCAN courts with the AOC, yearly conferences, and on-site visits, the AOC staff attempted to deal with the issues to respond to the lack of detail and clarity of the regulations. Considerable headway has been made in the past year in clarifying issues and explaining to court staff the proper data collection procedures.

3. Thoroughly pilot test the system in a small number of courts. Refine procedures and operations in a thorough implementation before broad-based implementation.

Data collection using bar codes and hand-held scanning devices was tested in four courts initially. As a result of this pilot effort, the question: "Will scanning work in a court environment?" seemed to be "yes," and the AOC determined to go ahead with wider implementation. However, STATSCAN, as a whole reporting system, was not nearly complete, and later installations experienced problems with insufficient support, lack of an "end product" to inspire further efforts, and overly long delays between new releases of the software to improve the system. When new error checks were implemented, some courts found that they had been making repetitive errors that had to be corrected by researching previously scanned cases. The unavoidable

interruption of the project to meet AB3300 requirements has had a short-term negative effect on some courts. In the long-term, however, the STATSCAN system will be greatly enhanced by the additional statistical capabilities and the addition of the case processing software interface.

4. Provide a strong training and support program to assist courts with implementation. The court must have a strong commitment to the system.

STATSCAN training was based in large part on the concept of "train the trainers". Key staff in each installed court were given initial training in the use of the hand-held scanners and PC operations and were brought together periodically for conferences to discuss implementation problems and new developments. These key staff were responsible for implementation in their courts, including any training of court staff.

This concept has worked well with respect to the use of the hand-held scanning devices. Court staff, with very few exceptions, have mastered the scanning techniques, downloading data, and correcting errors. In some courts, the key staff had a good grasp of statistical reporting requirements and were able to adequately train data collection staff. Other courts needed more help than the limited number of AOC staff could provide. Some courts also did not make it a priority to move ahead quickly with implementation.

In general, we conclude that considerable assistance, guidance and evaluation is required for a court to properly implement this system, or any system. In addition, the court must show a strong commitment to the effort by auditing their own data and procedures and providing a person to act as systems administrator who is (or can rapidly become) competent in the operation of the personal computer and who is thoroughly knowledgeable about the operations of the court. The importance of data audits and the systems administrator role in achieving a successful system cannot be over emphasized.

5. Installation of the system should result in a definite and desirable "payback" to the court within a reasonable timeframe.

There is no doubt that implementation of an automated system to collect statistical data is a major undertaking for a local trial court, as well as the AOC. Although no additional data collection staff were hired in any court, existing staff had to undertake additional duties. To be worth the effort, the system must do something for the court and its staff that they recognize to be valuable in their work.

The biggest complaint reported from STATSCAN courts during site visits in the summer of 1988 was that, after two years, the system produced few outputs and those that were available did not relieve the court of its manual reporting burden -- one of the expected results of so much effort. Many courts doubted the value of scanning case information for two years without reaching this important goal. For various reasons, detailed elsewhere in this report, STATSCAN is just now reaching a point where it will provide this promised payback. The October, 1988 release of STATSCAN provides all programs necessary to produce all required statistical reports and all needed data elements are supported. In addition, the written scanning instructions have been overhauled to reflect the latest changes. The new STATSCAN release also includes details of the logic used to compute the statistics from the scanned data. For the first time, a court can determine whether its procedures and data collection are meeting all requirements.

To alleviate the frustration of a prolonged implementation, a project of this nature should have defined implementation steps, definite goals, and a reasonable time frame. Each court should know what it must do to reach the goal so that it can determine how long it will take to put each step in place.

* *

The STATSCAN system has undergone major changes and has grown in ways initially unanticipated. Although still in process, the project has proven the viability of utilizing scanning devices to collect statistical data. By learning from the experiences of the STATSCAN project, courts across the country will be able to benefit from this tremendous effort. The staff at the California Administrative Office of the Courts, court managers, and the many court staff who participate in data collection are to be congratulated for their vision and tenacity in piloting bar code technology in the courts.

APPENDIX A

Project Methodology

PROJECT METHODOLOGY

This study was conducted from November 1987 through December 1988. A project advisory committee composed of two trial court executives, one state supreme court clerk, three state court administrators, a senior systems analyst, and the NCSC Director of Research was appointed. Mr. Stanley R. Collis and Mr. Jerry Short from the California Administrative Office of the Courts served as technical advisors to the project. The advisory committee met early in the project to assist staff in developing the focus of the project. The outcome of this meeting was summarized in a concept and methodology paper used througout the project.

The courts selected for site visits were chosen to reflect variations in caseload geographical location, urban/rural populations, single-user PC and LAN environments, participation in the delay reduction program, and case types being scanned. Ten courts were visited for one-to-three days each.* Project staff interviewed court managers, chief deputies, judges, courtroom clerks, case processing staff, systems coordinators/administrators, data processing programmers and analysts and others involved in the operation and management of STATSCAN. A short report about each site was submitted to BJS. We also visited an attorney document service firm to see two other bar code applications. The Maryland District Court Coordinator and several bar code industry representatives were interviewed by telephone.

Project staff reviewed voluminous written documentation on STATSCAN provided by individual courts and the AOC, publications on bar code technology and other material.

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* Superior Courts: San Diego, Napa, Orange, Los Angeles, Sacramento, Marin. Municipal Courts: Yolo, Sacramento, San Bernardino, Orange.

A questionnaire was developed and used in telephone interviews conducted during July and August with systems coordinators and trial court managers from 26 additional STATSCAN courts. The results of the survey were presented in to short report and incorporated into this final report. Project staff also attended state-wide training sessions held in August 1988 for superior and municipal court STATSCAN coordinators. This final report was prepared from October, 1988 through January 1989.

APPENDIX B

Bar Code Standards Organizations

Reference Sources

1. UPC/EAN
   UPC Symbol Specification/Film Master Specification
   Uniform Product Code Council, Inc.
   7051 Corporate Way, Suite 201
   Dayton, OH 45459-4294
   (513) 435-3870

2. EAN
   International Article Numbering Association E.A.N.
   Rue Des Colonies, 54,
   Kolonienstraat
   Bruxelles 1000 Brussel
   Tel. (02) 217 4524

3. Recommended Practices for Uniform Container Symbol/UCS
   Transport Case Symbol/TCS
   Uniform Symbol Descriptions
   USD-1 (Interleaved Two of Five),
   USD-2 (Subset of Code 39), USD-3 (Code 39), USD-4 (Codabar),
   USD-5 (Presence Sensing), USD-6 (Code 128), USD-7 (Code 93),
   USD-8 (Code 11), and the Glossary of Automatic Identification Terms.
   Automatic Identification Manufacturers
   Material Handling Institute
   1326 Freeport Road
   Pittsburgh, PA 15238
   (412) 782-1624

4. Military Standard 1189 (Code 3 of 9)
   Standard Symbology for Marking Unit Packs, Outer Containers, and Selected Documents

   Comments/Questions:
   Director
   DARCOM Packaging, Storage and Containerization Center
   Attn: SDSTO-T (Crouse)
   Tobyhanna Army Depot
   Tobyhanna, PA 18466
   (717) 894-7146

   Specifications:
   Naval Publications and Forms Center
   5801 Tabor Avenue
   Philadelphia, PA 19120
   (215) 697-3321

5. Code 2 of 5
   Code 128
   Computer Identics Corp.
   31 Dartmouth Street
   Westwood, MA 02090

6. Plessey Code
   Sophers Lane
   Poole Dorset BH17 7 ER
   England
   Tel. (020) 135161

7. MSI Code (Modified Plessey)
   MSI Data Corporation
   340 Fischer Avenue
   Costa Mesa, CA 92626
   (714) 549-6000

8. Code 3 of 9
   Code 93
   Code 11
   Intermec
   4405 Russell Road
   P.O. Box N
   Lynnwood, WA 98036
   (206) 743-7036

APPENDIX C

Statscan Reporting Forms

Judicial Council - CCS (All Courts)
Reporting period : 01/01/88 through 01/31/88

PART I. CRIMINAL PROCEEDINGS

	FELONIES	MISDEMEANORS	
		17b(5) PC	Other
A. Number of defendants accused.....			
B. Number of defendants disposed of			
1. Before trial			
a. Bail forfeitures.....			
b. Dismissals			
(1) Without appearance.....			
(2) After court appearance.....			
c. Transferred to another court.....			
d. Pleas of Guilty.....			
2. After trial			
a. BEFORE evidence by both sides			
(1) By the court			
(a) Acquitted or dismissed.....			
(b) Convicted or bound over.....			
(c) Juvenile order.....			
(2) By jury			
(a) Acquitted or dismissed.....			
(b) Convicted.....			
b. AFTER evidence by both sides			
(1) By the court			
(a) Acquitted or dismissed.....			
(b) Convicted or bound over.....			
(2) By jury			
(a) Acquitted or dismissed.....			
(b) Convicted.....			
3. Disposition Totals.....			
C. Other Data			
1. Probation hearings.....			
2. Defendants diverted (Pen. C. 1000.2).....			
3. Section 1538.5 PC motions.....			
4. Juries sworn.....			
5. Settlement of statements and/or transcripts on appeal.....			
6. Pretrial settlement conferences.....			
7. Hearings on failure to appear.....			

Judicial Council - CCS (All Courts)
Reporting period : 01/01/88 through 01/31/88

PART I. CRIMINAL PROCEEDINGS (Continued)

	NON-TRAFFIC		
	Misdemeanors		Infrac-
	Group A	Group B	tions
A. Number of defendants accused.....			
B. Number of defendants disposed of			
1. Before trial			
a. Bail forfeitures.....			
b. Dismissals			
(1) Without appearance.....			
(2) After court appearance.....			
c. Transferred to another court.....			
d. Pleas of Guilty.....			
2. After trial			
a. BEFORE evidence by both sides			
(1) By the court			
(a) Acquitted or dismissed.....			
(b) Convicted or bound over.....			
(c) Juvenile order.....			
(2) By jury			
(a) Acquitted or dismissed.....			
(b) Convicted.....			
b. AFTER evidence by both sides			
(1) By the court			
(a) Acquitted or dismissed.....			
(b) Convicted or bound over.....			
(2) By jury			
(a) Acquitted or dismissed.....			
(b) Convicted.....			
3. Disposition Totals.....			
C. Other Data			
1. Probation hearings.....			
2. Defendants diverted (Pen. C. 1000.2).....			
3. Section 1538.5 PC motions.....			
4. Juries sworn.....			
5. Settlement of statements and/or transcripts on appeal.....			
6. Pretrial settlement conferences.....			
7. Hearings on failure to appear.....			

Judicial Council - CCS (All Courts)
Reporting period : 01/01/88 through 01/31/88

PART I. CRIMINAL PROCEEDINGS (Continued)

	TRAFFIC			
	Misdemeanors		Infrac-	Illegal
	Group C	Group D	tions	Parking
A. Number of defendants accused.....				
B. Number of defendants disposed of				
1. Before trial				
a. Bail forfeitures.....				
b. Dismissals				
(1) Without appearance.....				
(2) After court appearance...				
c. Transferred to another court.				
d. Pleas of Guilty.....				
2. After trial.				
a. BEFORE evidence by both sides				
(1) By the court				
(a) Acquitted/dismissed..				
(b) Convicted/bound over.				
(c) Juvenile order.....				
(2) By jury				
(a) Acquitted/dismissed..				
(b) Convicted.....				
b. AFTER evidence by both sides				
(1) By the court				
(a) Acquitted/dismissed..				
(b) Convicted/bound over.				
(2) By jury				
(a) Acquitted/dismissed..				
(b) Convicted.....				
3. Disposition Totals.....				
C. Other Data				
1. Probation hearings.....				
2. Defendants diverted (PC 1000.2).				
3. Section 1538.5 PC motions.....				
4. Juries sworn.....				
5. Settlement of statements and/or transcripts on appeal.....				
6. Pretrial settlement conferences.				
7. Hearings on failure to appear...				

Judicial Council - CCS (All Courts)
Reporting period : 01/01/88 through 01/31/88

PART II. CIVIL PROCEEDINGS

	Sm Claims	Civil
A. Number of cases filed		
B. Number of cases disposed of		
1. Before Trial		
a. Dismissed for lack of prosecution		
b. Other dismissals and transfers		
c. Summary judgments		
d. All other judgments		
2. After Trial		
a. BEFORE evidence by both sides		
(1) By the court		
(2) By the jury		
b. AFTER evidence by both sides		
(1) By the court		
(2) By the jury		
3. Disposition Totals		
C. Other Data		
1. Hearings before trial		
2. Hearings after trial		
3. Pretrial settlement conferences		
4. Juries sworn		

Sacramento Superior Court (All Courts)
Reporting Period: 2/1/88 through 2/29/88

PART I. CIVIL PROCEEDINGS

	PROBATE/ GUARDIAN-SHIP	FAMILY LAW	PI/PD/WRNGFUL DEATH MOTOR VEHICLE	PI/PD/WRNGFUL DEATH OTHER
A. Number of cases filed.....	( )	( )	( )	( )
B. Number of cases disposed of				
1. Before trial				
a. Dismissed for lack of prosecution.....	( )	( )	( )	( )
b. Other dismissals and transfers	( )	( )	( )	( )
c. Summary judgments.....	( )	( )	( )	( )
d. All other judgments before trial.....	( )	( )	( )	( )
2. After trial				
a. BEFORE evidence by both sides				
(1) By the court.....	( )	( )	( )	( )
(2) By jury.....	( )	( )	( )	( )
b. AFTER evidence by both sides				
(1) By the court.....	( )	( )	( )	( )
(2) By jury.....	( )	( )	( )	( )
3. Disposition Total.....	( )	( )	( )	( )
C. Other Data				
1. Juries sworn.....	( )	( )	( )	( )
2. Supervisory orders, OSC's.....			( )	( )
3. Retrials.....	( )	( )	( )	( )
4. Pretrial settlement conferences.	( )	( )	( )	( )

Sacramento Superior Court (All Courts)
Reporting Period: 2/1/88 through 2/29/88

PART I. CIVIL PROCEEDINGS (Continued)

	EMINENT DOMAIN (PARCELS)	OTHER CIVIL COMPLNTS	PETITIONS
A. Number of cases filed	( )	( )	( )
B. Number of cases disposed of			
1. Before trial			
a. Dismissed for lack of prosecution	( )	( )	( )
b. Other dismissals and transfers	( )	( )	( )
c. Summary judgements	( )	( )	( )
d. All other judgements before trial	( )	( )	( )
2. After trial			
a. BEFORE evidence by both sides			
(1) By the court	( )	( )	( )
(2) By jury	( )	( )	( )
b. AFTER evidence by both sides			
(1) By the court	( )	( )	( )
(2) By jury	( )	( )	( )
3. Disposition Total	( )	( )	( )
C. Other Data			
1. Juries sworn	( )	( )	( )
2. Supervisory orders, OSC's	( )	( )	( )
3. Retrials	( )	( )	( )
4. Pretrial settlement conferences	( )	( )	( )

Sacramento Superior Court (All Courts)
Reporting Period: 2/1/88 through 2/29/88

PART II. MENTAL HEALTH

A. Number of petitions or affidavits filed.....( )

B. Number of petitions or affidavits disposed of

1. Before hearing.....( )

2. After hearing

a. Uncontested.....( )

b. Contested.....( )

3. Disposition Total.....( )

C. Other Data

1. Juries sworn.....( )

2. Number of subjects committed.....( )

Sacramento Superior Court (All Courts)
Reporting Period: 2/1/88 through 2/29/88

PART III. JUVENILE

Delinquency Petitions	601 W&I Orig.	601 W&I Subseq.	602 W&I Orig.	602 W&I Subseq.
A. Number of juveniles subject of.....	( )	( )	( )	( )
B. Juveniles disposed of.....	( )	( )	( )	( )
1. Before hearing.....	( )	( )	( )	( )
2. After hearing				
a. Uncontested.....	( )	( )	( )	( )
b. Contested.....	( )	( )	( )	( )
3. Disposition total.....	( )	( )	( )	( )
C. Other data				
1. Supp. Pet. hearings (777 W&I)...	( )	( )	( )	( )
2. Detention hearings.....	( )	( )	( )	( )
3. Rehearings by Judge.....	( )	( )	( )	( )

Dependency Petitions	300 W&I Orig.	300 W&I Subseq.
A. Number of juveniles subject of.....	( )	( )
B. Juveniles disposed of.....	( )	( )
1. Before hearing.....	( )	( )
2. After hearing		
a. Uncontested.....	( )	( )
b. Contested.....	( )	( )
3. Disposition total.....	( )	( )
C. Other data		
1. Supp. Pet. hearings (777 W&I).....	( )	( )
2. Detention hearings.....	( )	( )
3. Annual Reviews.....	( )	( )
4. Rehearings by Judge.....	( )	( )

Sacramento Superior Court (All Courts)
Reporting Period: 2/1/88 through 2/29/88

PART IV. CRIMINAL

A. Number of defendants accused.....( )

B. Number of defendants disposed of

	ACQUIT. OR DISMISSED	CONVICTED		
		FELONY	MISDEMEANOR 17b	MISDEMEANOR OTHER
1. Before trial				
a. Dismissed.....	( )			
b. Transferred to another court.....	( )			
c. Convicted after plea of guilty.....		( )	( )	( )
2. After trial.....	( )	( )	( )	( )
a. BEFORE evidence by both sides				
(1) By the court				
(a) On trans. of prelim. hearings.....	( )	( )	( )	( )
(b) Other.....	( )	( )	( )	( )
(2) By jury.....	( )	( )	( )	( )
b. AFTER evidence by both sides				
(1) By the court.....	( )	( )	( )	( )
(2) By jury.....	( )	( )	( )	( )
3. Disposition total.....	( )	( )	( )	( )

C. Other Data

1. Juries sworn.....( )
2. Sec. 995 P.C. hearings.....( )
3. Sec. 1538.5 P.C. hearings.....( )
4. Probation hearings.....( )
5. Defendants diverted.....( )
6. Retrials.....( )
7. Pretrial Settlement conferences..( )

Sacramento Superior Court (All Courts)
Reporting Period: 2/1/88 through 2/29/88

PART V. APPEALS FROM LOWER COURTS

	MUNICIPAL		JUSTICE	
	Civil	Criminal	Civil	Criminal
A. Number of filings				
1. Appellate Dept.....	( )	( )	( )	( )
2. Trial Dept.....	( )	( )	( )	( )
3. Total Filings.....	( )	( )	( )	( )
B. Number of dispositions				
1. Before hearing.....	( )	( )	( )	( )
2. After hearing				
a. Question of law				
(1) Without opinion.....	( )	( )	( )	( )
(2) Memo opinion.....	( )	( )	( )	( )
(3) Written opinion				
(a) Published.....	( )	( )	( )	( )
(b) Unpublished.....	( )	( )	( )	( )
b. Trial de novo.....	( )	( )	( )	( )
3. Disposition total.....	( )	( )	( )	( )

PART VI. HABEAS CORPUS

	Criminal	Other
A. Petitions		
A. Filings.....	( )	( )
B. Dispositions		
1. Before hearing.....	( )	( )
2. After hearing.....	( )	( )
3. Disposition Total.....	( )	( )

Judicial Council - CCS (All Courts)
Reporting period : 01/01/88 through 01/31/88

1. Elapsed time to start of trial for civil cases other than short causes that commenced trial during the month:	Number of civil cases with intervals (in months) of: 0 - 2	3 - 5	6 - 11	12 - 17	18 & UP	Median in Months
a) For jury cases:						
1) From complaint to trial.....						
2) From at-issue memo to trial.....						
3) From certificate of readiness to trial..						
b) For non-jury cases:						
1) From complaint to trial.....						
2) From at-issue memo to trial.....						
3) From certificate of readines to trial...						
c) Were any certificates of readiness filed after court's notification of eligibility to file?						
1) For jury cases.....						
2) For non-jury cases..						

Judicial Council - CCS (All Courts)
Reporting period : 01/01/88 through 01/31/88

2. Civil cases at issue and civil and criminal cases calendared at the end of the month:	Personal Injury Death and Property Damage		All Other Civil		Criminal	
	Jury	Non-jury	Jury	Non-jury	Jury	Non-jury
a) Total civil cases at issue.....						
1) Number which are short causes.....						
2) Number in which certificates of readiness were filed.....						
3) Number in which at-issue memoranda were filed over a year ago.....						
b) Total cases set for future contested trial..						
1) Number set within next 30 days.....						
2) Total estimated days of trial for cases set within next 30 days.....						

3. Number of the following documents filed during the month:	Personal Injury Death and Property Damage	All Other Civil
a) At-issue memoranda.....		
b) Certificates of readiness.....		
4. Number of cases in which conferences of the following type were held this month		
a) Settlement conferences held under Rule 207.5.....		
1) Cases deemed settled.....		
b) Pretrial conferences.....		
c) Trial setting conferences.....		

Judicial Council - CCS (All Courts)
Reporting period : 01/01/88 through 01/31/88

5. Total civil cases set to commence jury trial this month.....	
a) Number continued beyond the end of the month.....	
b) Number trailing at the end of the month.....	
6. Number of criminal cases tried during the month in which trial commenced more than 60 days after finding of indictment or filing of information:	
a) Jury cases.....	
b) Non-jury cases.....	
7. Number of cases submitted for the following number of days and undecided at the end of the month:	
a) 31 through 90 days.....	
b) Over 90 days.....	

Judicial Council - CCS (All Courts)
Reporting Period: 01/01/88 through 01/31/88

SECTION I: NUMBER OF CASES DISPOSED DURING THE MONTH
(Regardless of filing date)

CASE AGE CATEGORY IN MONTHS	CASES SUBJECT TO TIME STANDARDS		EXCEPTIONAL CASES	
	AGE OF CASES FROM FILING: COMPLAINT	AT-ISSUE MEMO	AGE OF CASES FROM FILING: COMPLAINT	AT-ISSUE MEMO
4. 0 TO 12.....				
5. 12+ TO 18...				
6. 18+ TO 24...				
7. 24+ TO 36...				
8. 36+ TO 48...				
9. 48+.....				
TOTAL CASES				

SECTION II: NUMBER OF CASES PENDING AT THE END OF THE MONTH
(For Cases Filed On Or After January 1, 1988)

CASE AGE CATEGORY IN MONTHS	CASES SUBJECT TO TIME STANDARDS		EXCEPTIONAL CASES	
	AGE OF CASES FROM FILING: COMPLAINT	AT-ISSUE MEMO	AGE OF CASES FROM FILING: COMPLAINT	AT-ISSUE MEMO
10. 0 TO 12.....				
11. 12+ TO 18...				
12. 18+ TO 24...				
13. 24+ TO 36...				
14. 36+ TO 48...				
15. 48+.....				
TOTAL CASES				

SECTION III: NUMBER OF CASES DECLARED EXCEPTIONAL, STAYED AND PENDING

16. EXCEPTIONAL CASES DECLARED EXEMPT FROM THE TIME STANDARDS BY COURT ORDER DURING THIS REPORT MONTH.....

17. TOTAL INVENTORY OF CASES PENDING AT END OF MONTH STAYED BY HIGHER COURT OR FEDERAL COURT ORDER, STAYED FOR CONTRACTUAL ARBITRATION UNDER CCP SECTION 1281.4, OR SUSPENDED BY FILED STRUCTURED SETTLEMENT AGREEMENT (For Cases Filed After January 1, 1988).....

Judicial Council - CCS (All Courts)
Reporting Period: 01/01/88 through 01/31/88

SECTION I: NUMBER OF CRIMINAL DEFENDANTS WHOSE CASE WAS DISPOSED DURING THE MONTH
(For Cases Filed in Lower Court After January 1, 1988)

CASE AGE CATEGORY IN DAYS	AGE OF CASES FROM:			AGE OF EXCEPTIONAL CASES FROM:		
	ARREST	FIRST APPEARANCE IN: MUNICIPAL/ JUSTICE CT	FIRST APPEARANCE IN: SUPERIOR COURT	ARREST	FIRST APPEARANCE IN: MUNICIPAL/ JUSTICE CT	FIRST APPEARANCE IN: SUPERIOR COURT
4. 0 TO 30.....						
5. 30+ TO 60...						
6. 60+ TO 120..						
7. 120+ TO 180.						
8. 180+ TO 365.						
9. 365+.....						
TOTAL CASES						

SECTION II: NUMBER OF CRIMINAL DEFENDANTS WHOSE CASE WAS PENDING AT THE END OF THE MONTH
(For Cases Filed in Lower Court After January 1, 1988)

CASE AGE CATEGORY IN DAYS	AGE OF CASES FROM:			AGE OF EXCEPTIONAL CASES FROM:		
	ARREST	FIRST APPEARANCE IN: MUNICIPAL/ JUSTICE CT	FIRST APPEARANCE IN: SUPERIOR COURT	ARREST	FIRST APPEARANCE IN: MUNICIPAL/ JUSTICE CT	FIRST APPEARANCE IN: SUPERIOR COURT
10. 0 TO 30.....						
11. 30+ TO 60...						
12. 60+ TO 120..						
13. 120+ TO 180.						
14. 180+ TO 365.						
15. 365+.....						
TOTAL CASES						

SECTION III: NUMBER OF CRIMINAL DEFENDANTS WHOSE CASE WAS ABATED

16. TOTAL INVENTORY OF DEFENDANTS WHOSE CASE PENDING AT END OF MONTH IS STAYED BY HIGHER COURT ORDER, FEDERAL COURT ORDER OR STAYED PENDING PROCEEDINGS IN ANOTHER JURISDICTION; SUSPENDED PENDING DIVERSION, MENTAL INCOMPETENCE, OR OUTSTANDING WARRANT (For Cases Filed in Lower Court After January 1, 1988).....

Judicial Council - CCS (All Courts)
Reporting Period: 01/01/88 through 01/31/88

SECTION I: NUMBER OF CASES DISPOSED DURING THE MONTH
(Regardless of filing date)

CASE AGE CATEGORY IN MONTHS	CASES SUBJECT TO TIME STANDARDS		EXCEPTIONAL CASES	
	AGE OF CASES FROM FILING: COMPLAINT	AT-ISSUE MEMO	AGE OF CASES FROM FILING: COMPLAINT	AT-ISSUE MEMO
4. 0 TO 12.....				
5. 12+ TO 18...				
6. 18+ TO 24...				
7. 24+ TO 36...				
8. 36+ TO 48...				
9. 48+.....				
TOTAL CASES				

SECTION II: NUMBER OF CASES PENDING AT THE END OF THE MONTH
(For Cases Filed On Or After January 1, 1988)

CASE AGE CATEGORY IN MONTHS	CASES SUBJECT TO TIME STANDARDS		EXCEPTIONAL CASES	
	AGE OF CASES FROM FILING: COMPLAINT	AT-ISSUE MEMO	AGE OF CASES FROM FILING: COMPLAINT	AT-ISSUE MEMO
10. 0 TO 12.....				
11. 12+ TO 18...				
12. 18+ TO 24...				
13. 24+ TO 36...				
14. 36+ TO 48...				
15. 48+.....				
TOTAL CASES				

SECTION III: NUMBER OF CASES DECLARED EXCEPTIONAL, STAYED AND PENDING

16. EXCEPTIONAL CASES DECLARED EXEMPT FROM THE TIME STANDARDS BY COURT ORDER DURING THIS REPORT MONTH.....

17. TOTAL INVENTORY OF CASES PENDING AT END OF MONTH STAYED BY HIGHER COURT OR FEDERAL COURT ORDER, STAYED FOR CONTRACTUAL ARBITRATION UNDER CCP SECTION 1281.4, OR SUSPENDED BY FILED STRUCTURED SETTLEMENT AGREEMENT (For Cases Filed After January 1, 1988).....

18. TOTAL INVENTORY OF CASES PENDING AT END OF MONTH ASSIGNED TO DELAY REDUCTION PROGRAM (Regardless of filing date).....

APPENDIX D

Statscan Bar Code Menus

CASE INITIATION

DEFENDANT IDENTIFICATION
ZZ

NEW FILING
B51

CRIMINAL CASE RECEIVED FROM MUNICIPAL COURT
B64

ARREST DATE
I60

DATE OF FIRST APPEARANCE IN MUNICIPAL/JUSTICE COURT
I61

REMOVED FROM THE MUNICIPAL/JUSTICE COURT'S CONTROL
I62

RESTORED TO THE MUNICIPAL/JUSTICE COURT'S CONTROL
I63

ADDED TO INVENTORY, CASE PREVIOUSLY FILED
I51

TRIAL PREVIOUSLY STARTED
C99

DISPOSITION PREVIOUSLY ENTERED
H99

CATEGORIES

CRIMINAL - CAPITAL
A51

CRIMINAL - OTHER
A52

MISDEMEANOR
A79

COURT HEARING CODES

COURT APPEARANCE
C53

START OF TRIAL
C54

JURY TRIAL
E56

COURT TRIAL - SHORT CAUSE
E57

COURT TRIAL - LONG CAUSE
E58

END OF TRIAL
C60

JURY SWORN
Q61

SECTION 995 PC HEARING
Q62

SECTION 1538.5 HEARING
Q63

PROBATION HEARING
Q64

PRETRIAL SETTLEMENT CONFERENCE
Q66

DISPOSITIONS

TRANSFER TO ANOTHER COURT
H52

GUILTY PLEA
H53

ACQUITTAL
H55

CONVICTION
H57

DISMISSED - OTHER
H63

CONTESTED
C56

UNCONTESTED
C57

SCHEDULING
ZD

E N D
ZA

CASE STATUS CODES

TRANSFER TO A BRANCH OF THE SAME COURT

B61

TRANSFER FROM A BRANCH OF THE SAME COURT

B62

TRANSFER FROM ANOTHER SUPERIOR COURT FOR POST-DISPOSITION PROCEEDINGS ONLY

B66

REMOVED FROM THE COURT'S CONTROL - OTHER

B52

REMOVED FROM THE COURT'S CONTROL - DIVERSION

B70

RESTORED TO THE COURT'S CONTROL

B53

17b REDUCTION

B59

OTHER REDUCTION TO MISDEMEANOR

B69

REJECT CASE PREVIOUSLY FILED

B65

PREVIOUS DISPOSITION VACATED

B55

CHANGE CASE CATEGORY

B63

CASE STATUS

CASE DECLARED EXCEPTIONAL

B67

SCHEDULING CODES

SCHEDULING

ZD

TRIAL DATE VACATED

C59

STATUS EVENTS

MISTRIAL

B57

RETRIAL

B58

E N D

ZA

CASE INITIATION

PARCEL NUMBER

ZZ

NEW FILING

B51

CASE IN SUSTAIN DATABASE

B90

CASE ASSIGNED TO DELAY REDUCTION PROGRAM

B68

ADDED TO INVENTORY, CASE PREVIOUSLY FILED

I51

ADDED TO AT-ISSUE INVENTORY, AT-ISSUE MEMO PREVIOUSLY FILED

I52

TRIAL PREVIOUSLY STARTED

C99

DISPOSITION PREVIOUSLY ENTERED

H99

CATEGORIES

CIVIL COMPLAINT

A60

PERSONAL INJURY, PROPERTY DAMAGE, WRONGFUL DEATH - MOTOR VEHICLE

A71

PERSONAL INJURY, PROPERTY DAMAGE, WRONGFUL DEATH - OTHER

A72

EMINENT DOMAIN

A73

COURT HEARING CODES

COURT APPEARANCE

C53

START OF TRIAL

C54

TRIAL SETTING CONFERENCE

E55

JURY TRIAL

E56

COURT TRIAL - SHORT CAUSE

E57

COURT TRIAL - LONG CAUSE

E58

JURY SWORN

Q61

PRETRIAL SETTLEMENT CONFERENCE

Q66

END OF TRIAL

C60

TRIAL LENGTH

C61

JURY SELECTION LENGTH

C62

ESTIMATED LENGTH OF TRIAL

C63

DISPOSITIONS

DISMISSED FOR LACK OF PROSECUTION

H51

TRANSFER TO ANOTHER COURT

H52

OTHER JUDGMENT

H59

JUDGMENT BY COURT

H60

VERDICT

H61

DISMISSED - OTHER

H63

SUMMARY JUDGMENT

H64

CONTESTED

C56

UNCONTESTED

C57

SCHEDULING

ZD

E N D

ZA

CASE STATUS CODES

TRANSFER TO A BRANCH OF THE SAME COURT

B61

TRANSFER FROM A BRANCH OF THE SAME COURT

B62

TRANSFER FROM ANOTHER SUPERIOR COURT FOR POST-DISPOSITION PROCEEDINGS ONLY

B66

REMOVED FROM THE COURT'S CONTROL - OTHER

B52

REMOVED FROM THE COURT'S CONTROL - STRUCTURED SETTLEMENT

B80

RESTORED TO THE COURT'S CONTROL

B53

AT-ISSUE MEMORANDUM FILED

B54

AT-ISSUE MEMORANDUM VACATED

B56

REJECT CASE PREVIOUSLY FILED

B65

PREVIOUS DISPOSITION VACATED

B55

CHANGE CASE CATEGORY

B63

CASE STATUS

CASE DECLARED EXCEPTIONAL

B67

ANSWER FILED

B60

ARBITRATION

ASSIGNED TO ARBITRATION

J50

ARBITRATION AWARD FILED

J51

ARBITRATION AWARD REJECTED, TRIAL DE NOVO REQUESTED

J52

OTHER REMOVALS FROM ARBITRATION

J53

SCHEDULING CODES

SCHEDULING

ZD

TRIAL DATE VACATED

C59

TRAILING

C64

CONTINUED BY PLAINTIFF

F51

CONTINUED BY DEFENDANT

F52

CONTINUED BY COURT

F53

CONTINUED BY STIPULATION

F54

STATUS EVENTS

MISTRIAL

B57

RETRIAL

B58

CASE DEEMED SETTLED AT SETTLEMENT CONFERENCE

Q68

CASE TAKEN UNDER SUBMISSION

Q69

CASE DECIDED

Q70

E N D

ZA

APPENDIX E

Statscan Data Elements

CIVIL PETITION DATA ELEMENTS
ALPHABETICAL INDEX BY TITLE

SUPERIOR COURT

CIVIL DATA ELEMENTS

ALPHABETICAL INDEX BY TITLE

SUPERIOR COURT
CIVIL DATA ELEMENTS
ALPHABETICAL INDEX BY TITLE

MUNICIPAL COURT

CIVIL DATA ELEMENTS
ALPHABETICAL INDEX BY TITLE

MUNICIPAL COURT

CIVIL DATA ELEMENTS
ALPHABETICAL INDEX BY TITLE

SUPERIOR COURT

CRIMINAL DATA ELEMENTS
ALPHABETICAL INDEX BY TITLE

CRIMINAL DATA ELEMENTS
ALPHABETICAL INDEX BY TITLE

FELONY DATA ELEMENTS
ALPHABETICAL INDEX BY TITLE

MUNICIPAL COURT

MISDEMEANOR DATA ELEMENTS
ALPHABETICAL INDEX BY TITLE

MISDEMEANOR DATA ELEMENTS
ALPHABETICAL INDEX BY TITLE

SMALL CLAIMS DATA ELEMENTS
ALPHABETICAL INDEX BY TITLE

APPENDIX F

Bar Coded Filing Form

LOS ANGELES SUPERIOR COURT

PLAINTIFF'S INITIAL FILING FORM – CIVIL PROCEEDINGS

ATTORNEY OF RECORD:

NAME: _____

FIRM: _____

ADDRESS: _____

CITY: _____ STATE _____ ZIP _____

PHONE: ( ) _____ – _____

CASE NUMBER

NEW FILING

B51

FEE: $_____. ☐ FORMA PAUPERIS ☐ NO FEE

☐ NATNL. GOVT. ☐ WAIVED: 6103 G.C., 6103.9 G.C.

CLASS ACTION? ☐ Yes ☐ No

WRONGFUL DEATH ☐ Yes ☐ No

PERSONAL INJURY

- ☐ PI-AUTOMOBILE A7100
- ☐ MED MALPRACTICE A7210
- ☐ PRODUCT LIAB A7220
- ☐ ASBEST/TOXIC SUBST A7221
- ☐ PI OTHER A7200

CIVIL COMPLAINT

- ☐ CONTRACT A6011
- ☐ INJUNCTION A6040
- ☐ COLLECTIONS/PROM NOTE A6012
- ☐ DECL RELIEF A6030
- ☐ LANDLORD/TENANT A6020
- ☐ OTHER CIV COMPL A6000

WRITS

- ☐ MANDAMUS WRIT A6151
- ☐ SUPERCEDEAS A6153
- ☐ PROHIBITION A6152
- ☐ OTHER WRIT A6150

DOMESTIC ACTION

- ☐ PATERNITY A6132
- ☐ DOMESTIC VIOLENCE A6122
- ☐ HARRASSMENT A6121
- ☐ FAMILY LAW COMPL A6130
- ☐ EMINENT DOMAIN A7300

CIVIL PETITION

- ☐ SISTER STATE A6141
- ☐ ABSTRACT A6160
- ☐ CH OF NAME A6110
- ☐ CIVIL PETN-OTHER A6100
- ☐ E N D ZA

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S44/12-87

LOS ANGELES SUPERIOR COURT
111 North Hill Street, Los Angeles, California 90012

LAW AND MOTION INFORMATION FORM - CIVIL PROCEEDINGS
SUBSEQUENT FILING FORM I

Attorney Filing Document

Name _____

Firm _____

Address _____
City State Zip

Phone ( ) _____

CASE NUMBER

TITLE OF DOCUMENT

On Behalf Of _____

FEE $ _____ FORMA PAUPERIS ☐ NO FEE ☐ NAT'L GOVT ☐ WAIVED ☐
6103GC ☐
6103.9GC ☐

Date Requested: _____ Time: _____ Dept. _____
Month Day Year

Filed by.

☐ ORDER TO SHOW CAUSE 86 ZD 16
☐ MOTION TO COMPEL 80 ZD 10
☐ MOTION TO CONSOLIDATE 81 ZD 11
☐ MOTION TO DISMISS 82 ZD 12
☐ MOTION FOR LEAVE 83 ZD 13
☐ MOTION FOR NEW TRIAL 84 ZD 14
☐ MOTION FOR AN ORDER 85 ZD 15
☐ MOTION FOR SUMMARY JUDGMENT 8C ZD 1C

☐ MOTION TO QUASH 87 ZD 17
☐ MOTION TO BE RELIEVED AS COUNSEL 88 ZD 18
☐ MOTIONS FOR SANCTIONS 89 ZD 19
☐ MOTION TO STRIKE 8A ZD 1A
☐ MOTION FOR SUMMARY ADJUDICATION 8B ZD 1B
☐ MOTION TO TRANSFER 8E ZD 1E
☐ MOTION TO TAX COSTS 8D ZD 1D
☐ DEMURRER 8F ZD 1HD

☐ PLAINTIFF 38
☐ DEFENDANT 2C
☐ CROSS-COMPLAINANT 29
☐ CROSS-DEFENDANT 2A
☐ OTHER

☐ E N D ZA

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S45/7-88

APPENDIX G

Statscan General Civil Case Status Report

(STAT.RPT.0032C) CASES ASSIGNED TO DELAY REDUCTION PROGRAM
Los Angeles Superior
STATUS OF CASES AS OF 11/18/88
FOR CASES ASSIGNED TO PROGRAM FROM 01/01/88 TO 10/31/88

TOTAL INVENTORY SUMMARY

Beginning inventory					0
New filings	+	12,048	44.7%		
Cases added to the program, filed before 01/01/88	+	14,875	55.3%		
Total cases added to the program		26,923	100.0%	+	26,923
Cases disposed, filed after 01/01/88		938	10.4%		
Cases disposed, filed before 01/01/88	+	8,046	89.6%		
Total cases removed from the program		8,984	100.0%	-	8,984
Total pending cases					17,939

	Cases less than 12 months		Cases older than 12 months	
Cases without a first answer filed	10,012	55.8%	3,706	20.7%
Cases awaiting a scheduled trial date	1,493	8.3%	1,756	9.8%
Cases with a scheduled trial date	191	1.1%	781	4.4%
Total cases	11,696	65.2%	6,243	34.8%

(STAT.RPT.0032C) CASES ASSIGNED TO DELAY REDUCTION PROGRAM
Los Angeles Superior
STATUS OF CASES AS OF 11/18/88
FOR CASES ASSIGNED TO PROGRAM FROM 01/01/88 TO 10/31/88

PENDING INVENTORY SUMMARY

Age of cases pending	No answer filed	No trial scheduled	Trial scheduled	Total
0 to 60 days	1,764 9.8%	0	2	1,766 9.8%
61 to 180 days	4,702 26.2%	37 .2%	27 .2%	4,766 26.6%
181 to 365 days	3,546 19.8%	1,456 8.1%	162 .9%	5,164 28.8%
12+ to 18 months	280 1.6%	90 .5%	29 .2%	399 2.2%
18+ to 24 months	896 5.0%	376 2.1%	144 .8%	1,416 7.9%
24 months or more	2,530 14.1%	1,290 7.2%	608 3.4%	4,428 24.7%
Total	13,718 76.5%	3,249 18.1%	972 5.4%	17,939 100.0%

Beginning arbitration inventory	6	
Cases assigned to arbitration	+ 1,194	
Cases removed from arbitration	- 93	
Total cases in arbitration	1,107	
Pct of pending cases	6.2%	
Number and percent of cases over 90 days old since assigned to arbitration	528	47.7%

(STAT.RPT.0032C) CASES ASSIGNED TO DELAY REDUCTION PROGRAM
Los Angeles Superior
STATUS OF CASES AS OF 11/18/88
FOR CASES ASSIGNED TO PROGRAM FROM 01/01/88 TO 10/31/88

DISPOSITION SUMMARY

Age and type of cases disposed	Without answer	No Trial sched.	Trial sched.	Trial started	Total
0 to 60 days	274 3.0%	17 .2%	0	25 .3%	316 3.5%
61 to 180 days	638 7.1%	90 1.0%	1	25 .3%	754 8.4%
181 to 365 days	593 6.6%	117 1.3%	0	18 .2%	728 8.1%
12+ to 18 months	190 2.1%	35 .4%	0	5 .1%	230 2.6%
18+ to 24 months	519 5.8%	150 1.7%	1	18 .2%	688 7.7%
24+ months or more	5,549 61.8%	502 5.6%	3	214 2.4%	6,268 69.8%
Total	7,763 86.4%	911 10.1%	5 .1%	305 3.4%	8,984 100.0%
Transfer	175 1.9%	103 1.1%	0	5 .1%	283 3.2%
Dismissed based on arbitration award	4	3	0	0	7 .1%
Dismissed other	7,183 80.0%	710 7.9%	5 .1%	42 .5%	7,940 88.4%
Other judgment	378 4.2%	63 .7%	0	13 .1%	454 5.1%
Court judgment	N/A	N/A	N/A	194 2.2%	194 2.2%
Jury verdict	N/A	N/A	N/A	50 .6%	50 .6%
Other disposition	23 .3%	32 .4%	0	1	56 .6%
Total	7,763 86.4%	911 10.1%	5 .1%	305 3.4%	8,984 100.0%

Los Angeles Superior
STATUS OF CASES AS OF 11/18/88
FOR CASES ASSIGNED TO PROGRAM FROM 01/01/88 TO 10/31/88

DISPOSITION SUMMARY (continued)

Percentile	25%	50%	75%	90%	98%	Most Frqnt	# of cases
Transfer	298	805	1,104	1,296	2,067	(1)	283
Dismissed based on arbitration award	262	1,098	1,430	1,705	1,705	None	7
Dismissed other	653	995	1,114	1,329	1,834	1,081	7,940
Other Judgment	155	401	1,062	1,820	2,204	70	454
Court Judgment	246	1,116	1,521	1,853	2,345	(2)	194
Jury Verdict	1,364	1,767	1,851	1,992	2,542	None	50
Other disposition	315	652	890	1,121	2,401	295	56
All disposition types	552	983	1,116	1,347	1,913	1,081	8,984

(1) The most frequent values for this disposition type are: 8, 13, and 14.

(2) The most frequent values for this disposition type are: 39, 42, 47, 54, 75, 224, 1090, 1332, 1358, 1391, 1407, and 1574.

(STAT.RPT.0032C) CASES ASSIGNED TO DELAY REDUCTION PROGRAM

Los Angeles Superior

STATUS OF CASES AS OF 11/18/88

FOR CASES ASSIGNED TO PROGRAM FROM 01/01/88 TO 10/31/88

CASE TRACKING SUMMARY

TOTAL ELEMENT	PREVIOUS MOS.	MAY 1988	JUN 1988	JUL 1988	AUG 1988	SEP 1988	OCT 1988
New filings	4,521	1,135	1,224	1,300	1,431	1,232	1,205
Added to program filed before 01/01/88	9,224	995	1,196	686	1,225	544	1,005
Total cases added to program	13,745	2,130	2,420	1,986	2,656	1,776	2,210
Cases disposed, filed after 01/01/88	710	80	45	59	37	5	2
Cases disposed, filed before 01/01/88	5,042	557	932	404	561	169	381
Total cases removed from program	5,752 41.8%	637 29.9%	977 40.4%	463 23.3%	598 22.5%	174 9.8%	383 17.3%
Total pending	7,993 58.2%	1,493 70.1%	1,443 59.6%	1,523 76.7%	2,058 77.5%	1,602 90.2%	1,827 82.7%
Cases with no answer	4,669 58.4%	1,283 85.9%	1,333 92.4%	1,420 93.2%	1,883 91.5%	1,494 93.3%	1,636 89.5%
Cases awaiting a scheduled trial date	2,599 32.5%	150 10.0%	68 4.7%	61 4.0%	138 6.7%	68 4.2%	165 9.0%
Cases with a scheduled trial date	725 9.1%	60 4.0%	42 2.9%	42 2.8%	37 1.8%	40 2.5%	26 1.4%

(STAT.RPT.0032C) CASES ASSIGNED TO DELAY REDUCTION PROGRAM
Los Angeles Superior
STATUS OF CASES AS OF 11/18/88
FOR CASES ASSIGNED TO PROGRAM FROM 01/01/88 TO 10/31/88

TRIAL STATUS

Number of future trials scheduled	Court		Jury	
0 - 30 days	26	17.4%	110	18.5%
31 - 60 days	17	11.4%	62	10.4%
61 - 90 days	25	16.8%	69	11.6%
91+ days	81	54.4%	355	59.6%
Total	149	100.0%	596	100.0%
Cases in which trials started on				
1st scheduled trial date	19	100.0%	33	97.1%
2nd scheduled trial date	0		1	2.9%
3rd or later scheduled trial date	0		0	
Total	19	100.0%	34	100.0%
Length of trials				
1 day or less	19	100.0%	34	100.0%
1+ to 2 days	0		0	
2+ to 3 days	0		0	
3+ to 5 days	0		0	
5+ to 7 days	0		0	
7+ to 10 days	0		0	
10+ to 12 days	0		0	
12+ days	0		0	

APPENDIX H

Comparison of State-level Statistical Data Requirements

Table 1

CRIMINAL CASE-BY-CASE DATA

Element	State KA	ID	WI	MO	Statscan	Type*
Court ID						
Judicial dist/circuit	x	x		x	N	C
County/court	x	x	x	x	Y	C
Clerk ID		x		x	N	C
Filing Info.						
Case number	x	x	x	x	Y	C
Case filing date	x	x	x	x	Y	D
Defendent ID		x		x	Y	C
Statute violated			x	x	N	C
Charge type			x		N	C
Case type	x	x	x	x	Y	C
Charge #			x	x	N	C
Def. Name, Sex, DOB			x	x	N	T, C, D
Filing type	x		x	x	N	C
Atty. type + attorney #				x	N	C
Judge assigned	x	x	x	x	N	C
Case Description	x				N	T
# of defendents	x				Y	I
# of charges	x				N	I
Prosecutor				x	N	C
Activities						
First appearance	x		x		Y	C/D
Prelim. hearing	x	x	x		Y	C/D
Arraignment	x	x		x	Y	C/D
Plea	x	x		x	Y	C/D
Interim Hearing		x	x	x	Y	C/D
Ready for trial		x			N	C/D
Warrant pending	x	x	x			C/D
Consolidation/Severence				x	N	C/D

* C = Code
D = Date
T = Text
I = Integer
N = Not a Statscan data element
Y = Yes, included in Statscan

Table 1 (Cont.)

CRIMINAL CASE-BY-CASE DATA

Element	State KA	ID	WI	MO	Statscan	Type*
Trial						
Trial type	x	x	x	x	Y	C
Date trial start	x	x	x	x	Y	D
Date trial end	x		x		Y	D
# trial days			x	x	Y	I
Judge	x		x	x	N	C
Court reporter				x	N	C
Under advisement		x		x	Y	C
Dispo/Verdict						
Guilty	x	x	x	x	Y	C
Acquitted	x	x	x	x	Y	C
Mistrial	x			x	Y	C
By stage of case		x	x		N	C
Date of disposition	x	x	x	x	Y	D
Other		x		x	Y	C
Sentence						
Probation status				x	N	C
Date of probation	x	x	x	x	Y	D
Conditions			x	x	N	C
Presentence activities				x	N	C/D
Appeal				x	N	C/D
Miscellaneous						
Bond	x				N	C
Incarceration status				x	N	C
Bond amount				x	N	$
Type bond				x	N	C
Bond disposition				x	N	C

* $ = Dollar amount

Table 2

AGGREGATE CRIMINAL DATA

Type of Information	State NJ	VA	PA	WA	OR	Statscan
Filings						
# cases	x	x	x		x	Y
# def.	x	x		x		Y
By case type		x		x		Y
By how started		x				N
Reinstated/new	x		x			N
Proceedings						
Arraignment					x	Y
Pre-dispo. hearing					x	Y
Jury trial					x	Y
Non-jury trial					x	Y
Dispo. hearing					x	Y
Post-disposition					x	Y
Pending Caseload						
Beg. pend.	x		x		x	Y
End pend.	x		x		x	Y
Age of cases	x		x		x	Y
By case type			x		x	Y
By def.	x				x	Y
By active/inactive status					x	Y
Sentence type				x		Y
# juries sworn		x				Y
# trial days		x				Y
Dispositions						
# cases	x	x	x		x	Y
# def.	x			x		Y
# clients						N
By type case		x				Y
By age		x			x	Y
By stage	x	x		x		Y
By trial type	x	x	x	x	x	Y
By other type	x		x	x		Y

Table 3

CIVIL CASE-BY-CASE DATA

Data Elements	State KA	ID	WI	MO	NJ	Statscan	Type*
Court Identification							
Judicial district	x					N	C
County/Court	x	x	x	x	x	Y	C
Clerk code		x				N	C
Filing Information							
Case #	x	x	x	x	x	Y	C
Filing date	x	x	x	x	x	Y	D
Nature of action	x	x	x	x	x	Y	D
Source of case	x			x		N	C
Case description	x					N	C
Judge assigned	x	x	x	x		N	C
Pl. name			x	x	x	N	T
Def. name			x	x	x	N	T
Atty. name and #		x		x		N	T/C
Defendent type					x	N	C
Pre-disposition Activities							
Various case events	x	x	x	x	x	Y	C/D
Date pretrial conf.	x				x	Y	C/D
Date ready for trial		x				Y	C/D
Date 1st answer filed		x			x	Y	C/D
Date last ct. app.					x	Y	C/D
Judge			x			N	C
Trial Info.							
Disposition type	x	x	x	x		Y	C
Date case disposed	x	x	x	x		Y	D
Date judgment filed		x			x	N	D
Date judgment rendered			x			Y	D
$ judgment to pl.				x	x	N	$
Partial judgment		x				N	D
Finding for				x		N	C
Judgment type				x		N	C
Miscellaneous							
Transfer case in		x				Y	C/D
Transfer case out		x				Y	C/D
New trial motion				x		N	C/D
Notice of appeal				x		N	C/D
Re-open case		x				Y	C/D

* C = Code T = Text
D = Date $ = Dollar amount

Table 4

AGGREGATE CIVIL DATA

Type of Information	State NY	OR	WA	PA	VA	NJ	Statscan*
Filings							
# of cases by case category	x	x	x	x	x	x	Y
# of cases (only)							Y
Transfer in	x					x	Y
Remand					x		Y
Reopen						x	Y
Pending							
By case type					x	x	Y
Inactive vs. active status		x					N
After A-I-M	x			x			Y
Out from arbitration				x			Y
Beyond standards	x						Y
Age categories		x		x		x	Y
Dispositions							
By case type	x	x	x	x	x	x	Y
By type dispo.	x		x	x	x	x	Y
By arbitration				x		x	Y
By age					x		Y
Juries sworn					x		Y
Hearings							
# by type hearing	x		x				Y
# by case type	x		x				Y
# jury trials	x	x	x	x	x	x	Y
# bench trials	x	x	x	x	x	x	Y
# days trials	x				x		Y
# days hearings	x				x		N
Age of cases tried		x					Y
Mean age cases tried		x					Y
Short/longest cases tried		x					Y
Appeals							
Decided	x						Y

* Codes Y = Yes, available through Statscan
N = Not available through Statscan