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Automated Reporting System Pilot Project

June 1991

LOS ANGELES POLICE DEPARTMENT

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AUTOMATED REPORTING SYSTEM PILOT PROJECT

Los Angeles Police Department
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Information Resources Division
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I. EXECUTIVE SUMMARY

INTRODUCTION

The criminal justice system in this country is being buried under a mountain of paperwork. The purpose of this paperwork is to provide the information needed to prevent crimes and to catch and convict criminals. However, instead of aiding that purpose, this mountain of paperwork is now hindering it. The problem is not in the amount of information generated, but in our ability to analyze and make use of it in a timely manner.

Automation has provided an abundance of systems designed to make sense of crime and arrest data. However, the means to enter this crime and arrest information into these analytical systems has not kept pace. Most agencies are still using pencil and paper. In addition to being very slow, inaccurate, and expensive, the inputting of data from a paper document is a wasteful duplication of effort. It is clear that a system has to be found to automate the initial data collection without negatively impacting the police officers taking the reports.

In 1987, Chief Daryl F. Gates of the Los Angeles Police Department (LAPD) decided to do something about this situation. The LAPD had previously used or investigated several different ways to automate the report-writing processes, including a laptop-based system that was pioneered by the St. Petersburg Police Department, Florida in

1984. Based on that experience and knowledge, Chief Gates directed that a pilot project be conducted to determine if the use of laptop computers in the LAPD reporting system would provide sufficient benefit to warrant department-wide use.

The LAPD is not the only law enforcement agency interested in a laptop-based reporting system. In Southern California alone, there are a number of other agencies that have installed or are installing these systems. Although none of these other agencies have conducted a quantitative analysis, the sheer number of agencies installing them is a dramatic indication of the overall perception that there are significant advantages to be derived from a laptop computer-based reporting system.

The primary objective of the LAPD pilot project was to determine if report data could be collected in laptop computers in such a manner as to allow the direct input of that data into the LAPD crime and arrest database without negatively impacting the personnel taking or using the reports. This was to be accomplished by conducting a comparative analysis of the current system and the Automated Reporting System (ARS). It was anticipated that the personnel time saved from the elimination of redundant tasks, and the increase in overall efficiency from providing direct electronic input of report information, would be substantial.

CURRENT SYSTEM

The system currently being used by the LAPD to capture report information has remained essentially unchanged for many years. Officers manually write their reports on one of several report forms. Once approved, those reports are partially interpreted into computer codes and some of the information is entered by clerical personnel into the LAPD crime and arrest database. The reports are photocopied and distributed throughout the LAPD and the data entered are later audited to ensure accuracy to the original report. The original and multiple copies add to the document storage problem being experienced by the LAPD.

This system results in a significant waste of valuable resources through redundant tasks, poorly written reports, time delays, a high error rate at data entry, and a database that contains only some of the information collected.

THE AUTOMATED REPORTING SYSTEM

The ARS is a laptop computer-based report-writing system utilizing Toshiba T1000SE computers in the field system and IBM PS/2 computer equipment in the station network system. Officers are issued the laptop computers at the beginning of watch and use them to take crime reports in the victim's residence or business. Each officer must log-on, prior to using the computer, by entering personal identification information as well as his/her unique password. This password is used as the officer's electronic signature and allows him/her to quickly log back on if operation of the system was only temporarily suspended.

A program prompts the required information from the officers and a simple text editor is available for the narrative. A variety of methods are utilized, such as pop-up windows, picklists, and scrolling fields, to simplify the data entry process and to allow the direct translation of report data into the codes required by the LAPD crime and arrest database. Two kinds of help systems are provided as is the ability to write a note, external to the report, between an officer and a supervisor. Prior to allowing the electronic signing of a report, the system verifies that all applicable report-writing rules have been followed and provides a simplified process of making required changes. Once completed, the reports can be transferred to the station system through the use of a diskette or telephone modem.

The station system consists of several desktop computers connected together into a local area network (LAN). Passwords, verified against an internal officer file, are required to gain access to the system. The current status of all active reports in the station system are shown on the monitors of all unused station system computers. In addition to accepting reports from the laptop computers, the station system can be used by officers to write reports and by supervisors to review and approve them. If, during the review process, a supervisor disapproves a report, the report can be flagged as a kickback awaiting correction and resubmittal by the originating officer or his/her partner. Once a report is approved it cannot be changed. Approved reports are assigned report numbers, printed final, and saved in memory.

Direct data entry from the station system into the LAPD crime and arrest database was used successfully. However, due to changes needed in the LAPD crime and arrest database, this function was only tested and the manual entry of report information continued to be used during the pilot project.

METHODOLOGY

A task force consisting of both civilian and sworn members was formed to develop the ARS, implement it, analyze the results, and write the final reports. An application requesting funding for the project was submitted to the National Institute of Justice (NIJ) and grants were awarded totaling $297,000.

The task force's first step was to define the scope of the pilot project. The scope was defined as: a) Only one patrol division and one type of report would be automated; b) All existing departmental rules and regulations would remain in place and the ARS could not make any changes to exisiting automated systems; c) The entire time allowed for the project was to be two years, including development, implementation, and the writing of the final reports.

Two very similar patrol divisions, Hollywood and Wilshire, were selected as the test and control groups due to their representative workloads and locations.

A study was completed of the existing reporting system as it applies to the Preliminary Investigation Report (PIR), the form being automated, and specifications were developed for the ARS programs and equipment. While this system was being developed and the equipment was being acquired, the comparative analysis criteria were developed and consultants hired to conduct the analysis.

Following the initial stages of development, but before implementation, the ARS was tested and debugged through actual field use by selected officers in Hollywood Patrol Division. Prior to this, comparative analysis data collection for the existing reporting system was completed at both Hollywood and Wilshire Patrol Divisions. When all concerned parties felt that the ARS was sufficiently developed and debugged, it was phased into Hollywood Patrol Division as an operational system, one watch at a time.

All personnel in Hollywood Patrol Division who were on the watch being implemented were given a concentrated eight-hour training class on the ARS just prior to implementation. Day watch was implemented first, the day after they were trained. PM watch was not phased in for three weeks, and morning watch two weeks after that, so that the task force's limited resources could be concentrated on just one group at a time. ARS Task Force personnel were on-site in the test division for the first 10 days of the implementation, on each watch, to resolve any problems and to provide a comfort level for the users.

Support was provided to the test division throughout the six-month period of the pilot project on a twenty-four hours-per-day, seven days-per-week basis. This support included emergency response, equipment and file maintenance, training, and programming.

Comparative analysis data was collected at various intervals throughout the pilot project by the comparative analysis consultants. At the conclusion of the pilot project, the consultants analyzed the data collected and wrote a report describing the results.

The ARS was left in operation at Hollywood Area after the completion of data collection. This was done at the request of the Hollywood Area Commanding Officer after officers and supervisors showed an overwhelming support for the system.

PROJECT RESULTS

The results of the pilot project show that a laptop computer-based reporting system has the potential to significantly benefit the LAPD crime and arrest reporting and data analysis systems.

The front-line users of the ARS, the police officers and sergeants in the field, indicated overwhelmingly that the ARS was a definite improvement over the manual reporting system. Many stated that they would not want to go back to writing reports by hand. Although the comparative analysis showed that there was no significant difference in the time required to take a report between the two systems, there are two factors that could result in substantial time savings. First, the comparative analysis showed that officers were still within the learning curve and that, within limits, the more computer reports an officer writes, the less time it takes per report. Second, a greater use of the telephonic modem capability to transfer reports from laptop computers in the field to the station computers would save the eight-minutes plus average travel time per report. Given these two factors, the potential exists to reduce officer report-writing time by up to ten percent. A reduction of that level, if recognized department-wide, would result in additional officer time equal to about 53 additional officers.

The pilot project demonstrated the ability to effectively upload report information directly from the ARS to the LAPD crime and arrest database without the need for manual data entry. That manual data entry now requires about one full-time clerical position in each of the LAPD's 18 geographic Areas. With a fully implemented ARS, including the electronic transfer and storage of reports, the potential exists to save the City over five million dollars in clerical salaries, supplies, and equipment.

Detectives and prosecutors also reacted very positively to the ARS, indicating that report quality was much better and the reports were slightly easier to use. The impact this may have on filing and conviction rates is unknown as the number of reports generated by the ARS represented a small percentage of the total number of reports they received during the pilot project.

CONCLUSIONS

Computer technology continues to advance at a rapid pace. The equipment continues to grow smaller, faster, and more powerful, and programming languages have developed to the point where full development and implementation of an ARS is viable for police patrol personnel.

The pilot project has shown that a laptop computer-based automated reporting system can be used successfully in large metropolitan police departments as well as small ones. The project has shown that: a) a police department's available workforce can be increased without adding any new officers; b) dependence on clerical support can be reduced; c) copying and distribution costs can be significantly reduced; d) an ARS has the potential to increase a police department's effectiveness.

Reliable report data, free from input errors, can be rapidly available in its entirety for a department's existing and future automated systems. The effectiveness of detectives, who now rely on the information in marginally accurate manual systems, would be greatly improved and new systems could be developed to assist them in doing their jobs more effectively. Up-to-date information can be made available to officers as they respond to calls and as they contact citizens in the field. By providing those officers with information, such as a named suspect in a crime report taken minutes earlier, or a location at which a domestic violence report was recently completed, officer effectiveness and safety could be greatly improved.

The entire criminal justice system can also benefit from a system such as the ARS. The criminal justice system is critically dependent on the rapid availability of accurate information from all of its parts; one bottleneck can affect the entire system. There is no question that prosecutors and the courts are dependent on the reports and information produced by law enforcement agencies. A law enforcement agency's effectiveness is dependent, to the same degree, on the sharing of reports and information with other agencies and the court system. With compatible systems, all criminal justice entities within a jurisdiction could efficiently access each other's databases for court and investigative purposes. This is especially important because suspects do not limit their criminal activity to one area. The mutual development of an ARS by the entire criminal justice system would substantially improve an archaic system: a system which can no longer cope with the number of cases and the amount of information it must process.

The results of this pilot project's comparative analysis clearly supports the conclusion that law enforcement agencies can benefit from the automation of its report writing system. Even if an agency cannot generate interest in a larger automated criminal justice information system in its area, it should strongly consider the use of an automated system to gather, transmit, store, retrieve, and analyze crime and arrest report information. It is time that the criminal justice system modernizes its infrastructure. In a few years the 21st century will be upon us and we can ill afford to continue using 19th century systems to manage the life blood of the criminal justice system, **INFORMATION.**

II. PILOT PROJECT DESCRIPTION

INTRODUCTION

Law enforcement agencies are information processing machines. They collect information, analyze it, and use it to prevent crimes, and to catch and convict criminals. Therefore, the effectiveness of any law enforcement agency is largely dependent on its ability to collect and use information. The purpose of this report is to describe the pilot project conducted by the Los Angeles Police Department (LAPD) to study the impact of automation on this information collection process.

The system currently used by the LAPD to collect and distribute information has not changed substantially in many years. It is a slow, cumbersome series of manual tasks which negatively impact the LAPD's effectiveness by wasting valuable officer time; not providing needed information in a timely manner; and not providing a database with the accuracy, speed, and information necessary for the development of advanced investigation systems.

The rise in violent crime, drug abuse, and gang violence in Los Angeles makes it increasingly important to find ways to improve the LAPD's information systems. One such improvement which has been made successfully by a number of smaller departments throughout the country is the use of laptop computers for taking crime reports.

Based on the experience of these departments, the LAPD developed the following basic concepts for the ARS:

Laptop computers would be issued to patrol personnel for use in the taking of police reports. The computers would be carried by patrol personnel into a residence or business and the report entered directly into the computer. A program would prompt the required crime information from the officer. The narrative could be written using a simple text editor. If possible, the computer would then be connected to the victim's telephone line and the completed report transmitted to a personal computer (PC) at the police station. If this was not possible, the report would be saved on the computer until the officer's next trip to the station.

At the police station, a PC would be set up to accept the output from the laptop computers; allow supervisorial review, correction, and approval of the reports; and transfer all the relevant data directly into the LAPD crime and arrest database. Report file numbers would be obtained automatically from the PC.

Agencies using laptop computers have reported (1) a reduction in the time it takes field officers and detectives to complete a report, (2) an increase in the accuracy and completeness of the reports, (3) increased report legibility, and (4) decreased report processing time. It was anticipated that these and other benefits would also be experienced by the LAPD. Other systems were investigated, but none were as promising as the laptop.

Although smaller agencies have reported a positive experience with laptop computers, these reports have not been based on a comprehensive quantitative comparative analysis. Such an analysis is essential before a large metropolitan police agency--with its significantly higher volume of reporting and information processing--can make any substantial change to its reporting and information processing systems. Full implementation of any new system in a large agency such as the LAPD would certainly be out of the question without such an analysis.

The LAPD Automated Reporting System (ARS) Pilot Project was conducted to provide the data required for that analysis. The pilot project and the analysis of the project results are the subject of this report.

HISTORICAL BACKGROUND

In 1984, the St. Petersburg Police Department, Florida, started a revolution in police reporting. They took emerging laptop computer technology, applied it to the process of police reporting, and produced an automated reporting system which has been copied by other law enforcement agencies throughout the country.

In 1988, the City of Los Angeles issued a directive to all of its department and bureau heads requiring them to, "...critically examine the paperwork processes under their control and prepare a specific comprehensive paperwork reduction plan ...." The management of the LAPD had been aware of the potential of laptop computer-based systems for some time. Due to the positive experience of other agencies using laptop computers and the need to improve the LAPD reporting system, the Chief of Police directed that a study be conducted on the feasibility of using a similar system for the LAPD. The ARS Pilot Project has since become the focal point of the LAPD paperwork reduction plan.

This is not the LAPD's first attempt at improving the existing reporting system, and laptop computers are not the first technology applied. The LAPD started out many years ago with a manual data-capturing system similar in many ways to the current system. This system was slow and cumbersome, wasted valuable officer time, and resulted in reports that were frequently illegible. To help alleviate these problems, a manual dictation system was tried for several years; officers sat across from and dictated a report to a record clerk who typed the report. Although this helped the legibility problem, it did nothing to reduce the amount of time spent by an officer writing a report and it was VERY labor intensive, requiring two people to produce each report.

During that period, a recorded dictation system was used in selected divisions. In this system, officers dictated their reports into a dictaphone recording machine for later transcription. The initial time required for the officer to write reports was reduced, but the following major problems resulted in the system's demise:

1. Critical reports were given priority and transcribed immediately, but the backlog of other reports waiting to be transcribed reached as long as 5 weeks on occasion.

2. There was a constant shortage of qualified clerical personnel to transcribe the reports.

3. Equipment breakdowns often resulted in significant delays for officers waiting to use the dictation equipment.

As a result of these experiences, in the early 1960s the LAPD made the decision to revert back to a manual system which is very similar to the one used today. Subsequent attempts by other law enforcement agencies at using dictation systems have shown this to have been a prudent decision.

In July 1988, the Chief of Police directed that the ARS Task Force be formed to determine if a report writing system based on the use of laptop computers would be of sufficient benefit to warrant department-wide use. This was to be a six-month project using computers loaned to the LAPD by several different manufacturers. The search for vendors willing to provide the machines for that length of time was unproductive and a preliminary analysis of the programming required indicated that the project would require an expenditure of funds which the LAPD did not have. As a result, an application was made to the National Institute of Justice (NIJ) for a grant to finance the project. In February 1989, the grant was approved with some changes to the scope of the project as requested by the NIJ.

Due to the interest expressed in this project by several laptop computer vendors and the large potential market a fully developed system like this might have, it was felt that a proposal to develop a system jointly with a private vendor would be well received. This would allow the LAPD to maximize the return on the grant funds obtained from the NIJ by developing a system far beyond that which the grant funds alone would permit. A joint development Request for Proposal (RFP) was distributed that contained all of the features the NIJ wanted, but no proposals were received within our budget. As a result, the task force proceeded to develop the system using only resources available within the City and the funding allocated by the NIJ.

A Request for Bid was then distributed for the computer equipment, a programmer was hired, and a consultant was selected to conduct the comparative analysis. Field testing of the ARS began in April

1990. Data gathering for the comparative analysis began in May 1990 and continued through December 1990. Actual field use was implemented on a watch by watch basis beginning in July 1990.

OBJECTIVE

The objective of the project was to study the use of an automated reporting system in a controlled test environment to determine if the system would provide sufficient benefit to warrant use department-wide. This objective was achieved by comparing and contrasting the present reporting system with an automated reporting system to determine the following:

1. Changes in the sworn and clerical time required for taking, approving, and processing reports;
2. Changes in the costs associated with report taking and processing;
3. Changes in the quality of field-generated reports;
4. Changes in report error rate;
5. Total cost of equipping and maintaining a department-wide automated reporting system;
6. The reliability of the laptop technology currently available;
7. The effect of laptop computers on employee attitudes, morale, and effectiveness; and
8. The effectiveness of the Automated Reporting System in the LAPD's overall paperwork reduction automation plans.

ENVIRONMENT

The LAPD is a large municipal police department serving a community of about 3,485,000 people. The total strength of the LAPD is currently 11,163, of which 8,431 are sworn officers.

The LAPD organizational chart is depicted in Figure 1. As shown by the chart, the LAPD is essentially divided into two functional groups: operations and administration. The operations group is broken down into 18 geographic Areas (see figure 2) plus centralized detective entities. Each Area has its own police station, patrol and detective divisions, and a records unit. Areas are essentially self-sufficient and independent police departments responsible for handling their own workload. These Areas are grouped into four geographic bureaus that additionally handle many administrative functions and contain a variety of specialized units such as gang and traffic enforcement. The centralized detective entities handle crimes that affect more than one Area or are beyond the scope or resources of an Area. The administrative group is responsible for support of operations.

The LAPD is a part of a criminal justice system that ties all law enforcement agencies and courts in the United States together in varying degrees. Police reports and the information they contain are shared extensively within the LAPD and between all levels in the criminal justice system. Other law enforcement agencies, from other municipal police departments to the Federal Bureau of Investigation, use reports and report information from the LAPD.

ORGANIZATION OF THE LOS ANGELES POLICE DEPARTMENT

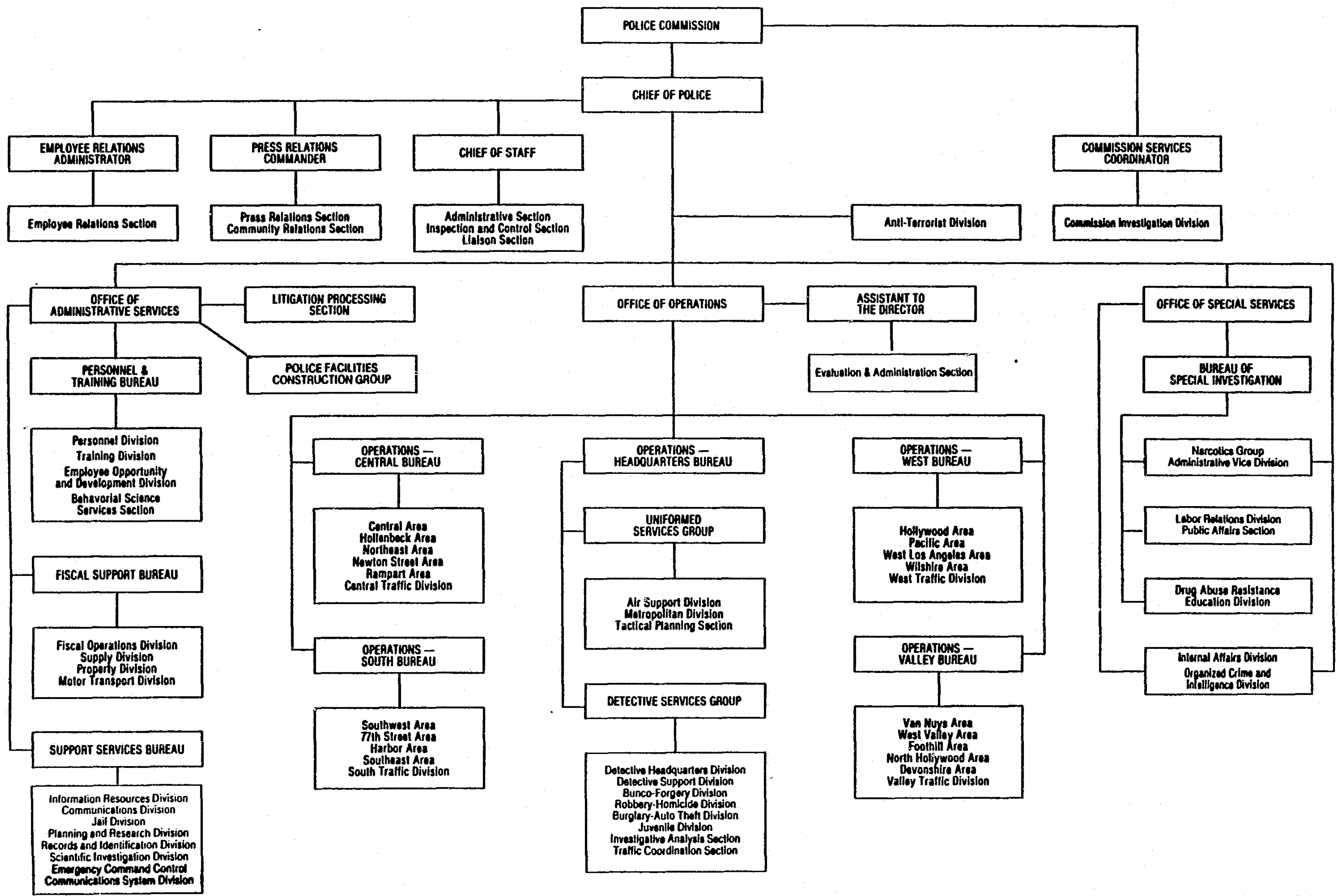
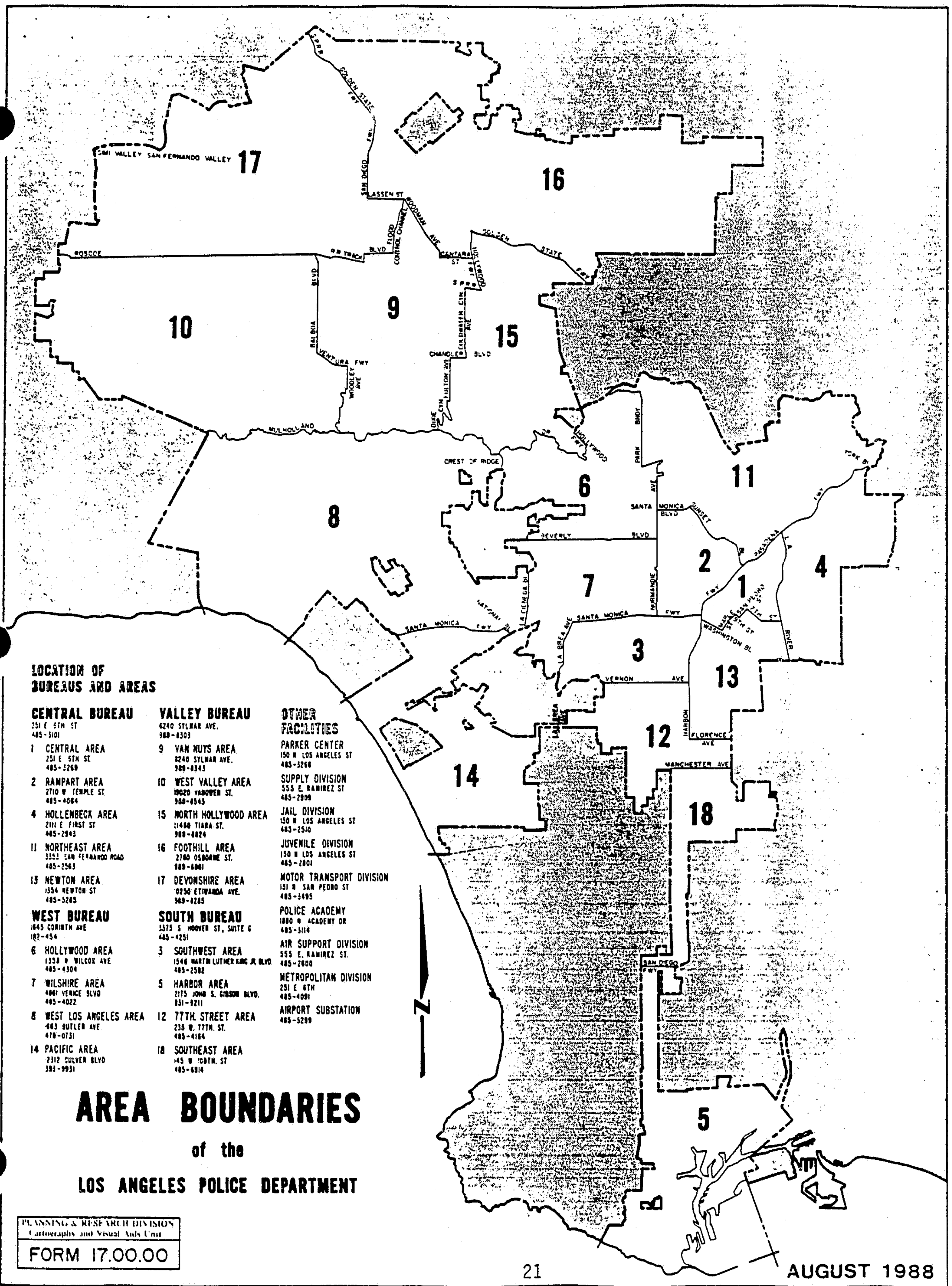


Figure 1

Figure 2


17
16
10
9
15
8
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1
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18
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SIMI VALLEY SAN FERNANDO VALLEY
GOLDEN STATE FWY
SAN DIEGO FWY
LASSEN ST
WOODMAN AVE
FLOOD CONTROL CHANNEL
ROSCOE
RR TRACK BLVD
BALBOA BLVD
VENTURA FWY
WOODLEY AVE
CHANDLER BLVD
MULHOLLAND
HOLLYWOOD FWY
PARK AVE
CREST OF RIDGE
SANTA MONICA BLVD
SUNSET
BEVERLY BLVD
NORMANDIE
LA CIENEGA BL
SANTA MONICA FWY
LA BREA AVE
VERNON AVE
HARBOR
FLORENCE AVE
MANCHESTER AVE
WASHINGTON BL
RIVER
YORK BL
SAN DIEGO
N
LOCATION OF
BUREAUS AND AREAS
CENTRAL BUREAU
251 E 6TH ST
485-3101
1 CENTRAL AREA
251 E 6TH ST
485-3260
2 RAMPART AREA
2710 W TEMPLE ST
485-4064
4 HOLLENBECK AREA
2111 E FIRST ST
485-2943
11 NORTHEAST AREA
3353 SAN FERNANDO ROAD
485-2563
13 NEWTON AREA
1354 NEWTON ST
485-5265
WEST BUREAU
1645 CORINTH AVE
WILSHIRE
6 HOLLYWOOD AREA
1358 N WILCOX AVE
485-4304
7 WILSHIRE AREA
4861 VENICE BLVD
485-4022
8 WEST LOS ANGELES AREA
1663 BUTLER AVE
478-0731
14 PACIFIC AREA
12312 CULVER BLVD
383-9931
VALLEY BUREAU
6240 SYLMAR AVE.
989-8303
9 VAN NUYS AREA
6240 SYLMAR AVE.
989-8345
10 WEST VALLEY AREA
19020 VANOWEN ST.
988-6543
15 NORTH HOLLYWOOD AREA
11480 TIARA ST.
989-8824
16 FOOTHILL AREA
12760 OSBORNE ST.
989-6081
17 DEVONSHIRE AREA
10250 ETIWANDA AVE.
989-8285
SOUTH BUREAU
3375 S HOOVER ST, SUITE G
485-4251
3 SOUTHWEST AREA
1546 MARTIN LUTHER KING JR BLVD.
485-2582
5 HARBOR AREA
2175 JOHN S. GIBSON BLVD.
831-9211
12 77TH STREET AREA
235 W. 77TH. ST.
485-4164
18 SOUTHEAST AREA
145 W 108TH. ST
485-6914
OTHER FACILITIES
PARKER CENTER
150 N LOS ANGELES ST
485-3266
SUPPLY DIVISION
555 E. RAMIREZ ST
485-2909
JAIL DIVISION
150 N LOS ANGELES ST
485-2510
JUVENILE DIVISION
150 N LOS ANGELES ST
485-2801
MOTOR TRANSPORT DIVISION
151 N SAN PEDRO ST
485-3495
POLICE ACADEMY
1880 N ACADEMY DR
485-3114
AIR SUPPORT DIVISION
555 E. RAMIREZ ST.
485-2600
METROPOLITAN DIVISION
251 E 6TH
485-4091
AIRPORT SUBSTATION
485-5299
AREA BOUNDARIES
of the
LOS ANGELES POLICE DEPARTMENT
PLANNING & RESEARCH DIVISION
Cartography and Visual Aids Unit
FORM 17.00.00
AUGUST 1988

The court system, from the City Attorney to the Supreme Court, are in varying degrees dependent on the reports and report information produced by the LAPD. Conversely, the LAPD's effectiveness is partially dependent on the sharing of reports and information by other agencies and the court system. Taken as a whole, it becomes obvious that the effectiveness of one entity within the criminal justice system can impact the entire system, both vertically and horizontally.

EXISTING REPORTING SYSTEM

Description

Crime information comes from two primary sources: field officers and detectives. Information from field officers normally begins with a radio call. If required, the appropriate report is handwritten by the officer. The report consists of a fill-in-the-blank section and a narrative section. Reports are begun at the scene and may be completed at that time or later, as time permits, before end-of-watch. Once written, the reports are submitted to a supervisor who reviews them for completeness and correctness. If a report is disapproved, the originating officer corrects the errors and resubmits the report for approval. If approved, the report is given to a record clerk. As time permits, the record clerk reviews it for obvious errors and inputs selected report information into the LAPD crime and arrest database. Once input, the original report and a computer printout of the data are forwarded en masse to the senior record clerk, who checks the computer printout against the original report for accuracy.

Record clerks then photocopy the reports and distribute them according to a complex set of rules and specific instructions which are handwritten on the report. Several LAPD entities receiving these reports may input report information into their own stand-alone systems. Reports are then sent in bulk to a central data entry unit for auditing.

Information from detectives is normally in the form of follow-up reports on specific cases. These are also handwritten, approved by a supervisor, then photocopied and distributed by the divisional clerical staff. Copies of the reports are sent to the central data entry unit, where data entry clerks input the report data into the LAPD crime and arrest database system.

Photocopies of original reports are used in all phases of the LAPD investigative and record-keeping systems. The information in the LAPD crime and arrest database is used for statistical analysis and on-line investigative inquiries.

Deficiencies

The system used by the LAPD to take and distribute police reports has not changed substantially in many years. This system is a slow, cumbersome series of manual tasks. It is inefficient and negatively impacts the overall effectiveness of the LAPD by wasting valuable officer time; not providing needed information in a timely manner; and not providing a database with the accurate information necessary for the development of advanced investigative systems.

1. Time. Based on past LAPD studies, it is conservatively estimated that 15 to 20 percent of an officer's time is spent taking reports, time not available for other law enforcement activities.

2. Poorly Written Reports. Virtually all reports completed by the LAPD are handwritten. As a result, reports are often difficult to read, incomplete, or not presented in a logical or sequential manner. Officers are difficult to contact in a timely manner to answer questions about or rewrite the reports. Because of this, detectives and prosecutors often cannot conduct thorough investigations or file charges in incidents where a clear and complete report would have allowed them to do so.

3. Error Rates. After a report is written by an officer or detective, the report information is converted into code and entered into the LAPD crime and arrest database system. Errors occur at all stages of the reporting process. Officers err when writing reports and data entry clerks err in keying information into the database. Errors also occur because data entry clerks are required to make decisions regarding applicable codes based on report field content. The misinterpretation of this information often leads to incorrect data entry and results in a database of questionable usefulness for any inquiries or analysis.

4. Input Delay. Delays are more the rule than the exception in the current reporting system. Officers wait until the press of other business allows them to complete or bring reports to the police station. After approval, reports then sit in piles until a record clerk enters the report information into the LAPD crime and arrest database, until a senior record clerk then verifies the entered data, until a record clerk copies the reports and sorts them into the appropriate mail slot, and until the stacks of reports are sent to their destinations. Even if the time spent on each task is minimized, the total time required to process and distribute report information is substantial. As a result, this information is not available to field officers, detectives, or management on a timely basis. Field officers are not aware of recent crimes or activities. Detectives often receive arrest reports so late that there is insufficient time to complete a thorough investigation before a suspect is due to be released, and detectives are sometimes unaware of other crimes the suspect may have committed.

In addition, systems used to search for or correlate crime information use a database which may not be complete for many hours or even days. To be effective, these analytical systems must rely on a database which contains accurate up-to-date information.

EVALUATION CRITERIA

The ARS Pilot Project was to be judged a success if data gathered indicated that a fully implemented ARS would provide a cost-effective level of increased productivity. A cost-effective level of increased productivity is defined as a series of short-term and long-term benefits that provide sufficient cost savings and increased productivity to offset the cost of implementing and maintaining the ARS. The following is a detailed list of the criteria used in the evaluation of the ARS to determine if the ARS should be recommended for department-wide implementation.

Evaluation Criteria Data Collected by the Consultant

A. Patrol officers

1. Attitudes and morale
2. Time required to:
    a. Take reports
    b. Transmit reports to the police station
    c. Get reports approved
    d. Edit disapproved reports
3. Report Quality
    a. Legibility
    b. Grammar and spelling
    c. Error Rate

B. Supervisors

1. Attitudes and morale
2. Time required to approve/disapprove reports

C. Record Clerks

1. Attitudes and morale
2. Time required to:
    a. Enter report information into the LAPD crime and arrest database
    b. Audit report information for missing information
    c. Distribute reports
    d. File reports
3. Report error rate found by record clerks

D. Detectives and prosecutors

1. Attitudes and morale
2. Impact of ARS output

E. Equipment

1. Functionality
2. Reliability

Evaluation Criteria Data Collected by the LAPD

A. Cost savings as a result of changes in:

1. Crime report photocopying procedures
    a. Equipment leasing and maintenance
    b. Paper
2. Crime report distribution procedures
    a. Messenger service

3. Crime report storage requirements

    a. Duplicate files

    b. Warehouse space

    c. Personnel costs to maintain records

4. Forms maintenance and printing

5. LAPD crime and arrest database (PACMIS) updating

    a. Audits

    b. Correction of data entry errors

    c. Rekeying of follow-up reports

B. Reduced implementation and operating costs of the LAPD's long-range automation plans

C. Increased productivity levels of LAPD personnel as a result of systems made possible by the ARS

1. Crime analysis by patrol officers in the field

2. Crime analysis by supervisors enabling improved deployment of resources

    a. Increased patrols targeting current crime problems

    b. Special task forces to combat emerging crime trends

The following is a prioritized list of the above criteria, sorted in order of relative importance:

1. Equipment functionality & reliability

2. Time required to create, transport, review, and process crime reports by:
   A. Patrol officers
   B. Patrol supervisors
   C. Clerical personnel

3. Anticipated increase in productivity levels of LAPD personnel as a result of systems made possible by the ARS

4. Report quality

5. Impact of ARS output on detectives and prosecutors

6. Attitudes and morale of:
   A. Patrol officers
   B. Patrol supervisors
   C. Clerical personnel
   D. Detectives and prosecutors

7. Anticipated cost savings as a result of changes in:
   A. Crime report photocopying procedures
   B. Crime report distribution procedures
   C. Crime report storage requirements
   D. Forms maintenance and printing
   E. LAPD crime and arrest database updating

WORKPLAN

The following items summarize the work program which was developed to guide the task force through the pilot project. See Figure 3 for the project timeline showing the major tasks and the relative time required for each.

This project was divided into two phases. Phase one consisted of developing all the systems necessary to complete a limited field test using only the Preliminary Investigation Report (PIR) and a select group of officers. During the field test of the laptop computers, development began on enhancements and additions to the base programs. Phase one also included the documentation and study of the current reporting system. Phase two involved equipping one full patrol division with laptop computers. During the overall evaluation of both phases of the pilot program, external factors (e.g., legal and human resource issues) were examined and taken into consideration.

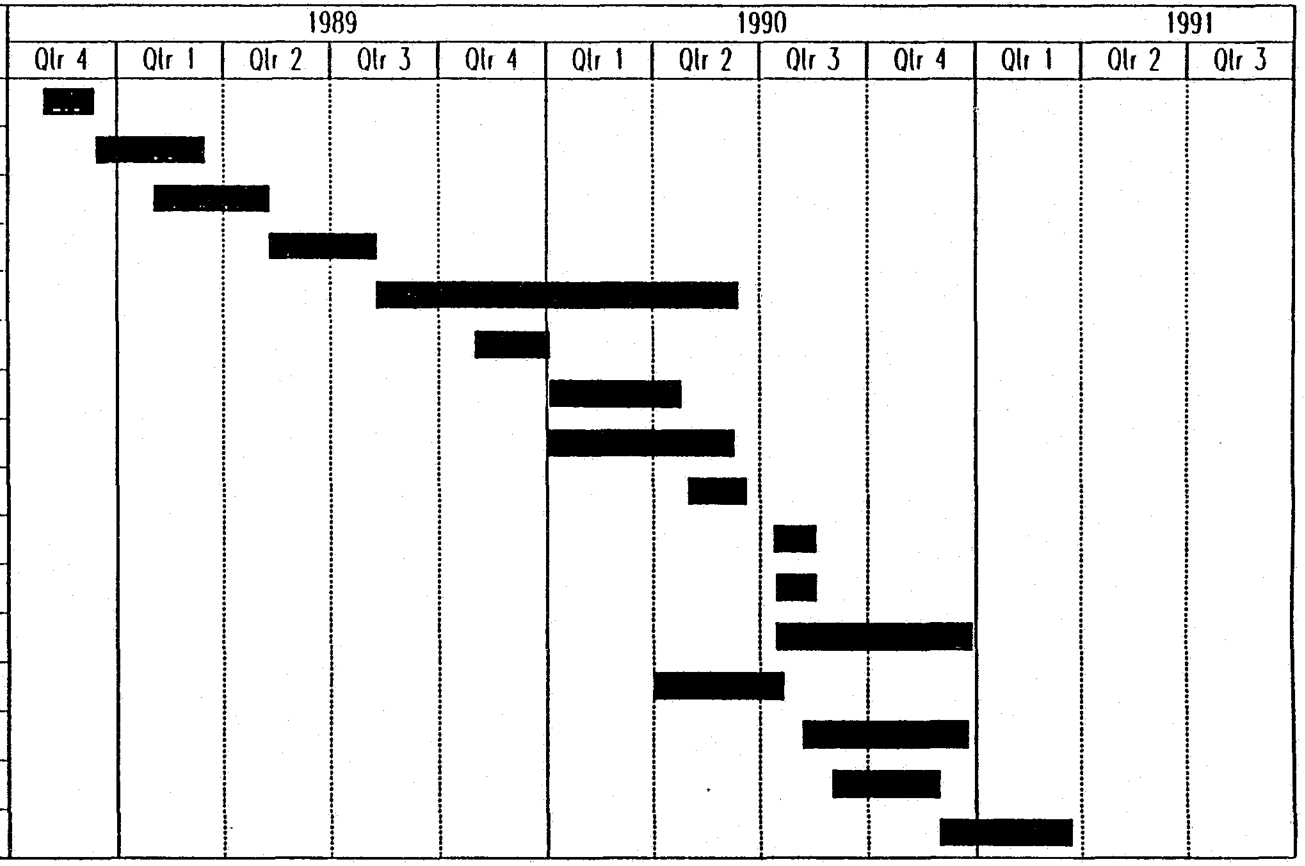
1. Form a task force.
    A. Determine the scope and objectives of the pilot project.
    B. Implement the work program.

Phase one consists of the following primary tasks:

2. Acquire funding.
    A. Investigate a joint development agreement with the private sector.
    B. Apply for federal grant programs.

AUTOMATED REPORTING SYSTEM PILOT PROJECT
Final Project Plan – Summary of Major Tasks

ID	Name	Duration
1	Form Task Force	4w
2	Acquire NIJ Grant	13w
3	Research User Requirements	14w
4	Write Requirements Document	13w
5	Develop ARS Software	44w
6	Develop Hardware Specs	9w
7	Procure Hardware	16w
8	Develop Training Program	23w
9	Beta Test System	7w
10	Conduct Training	5w
11	Implement ARS System	5w
12	Conduct Field Evaluation	24w
13	Est. Comp. Analysis Contract	16w
14	Conduct Comparative Analysis	20w
15	Develop PACMIS Interface	13w
16	Produce Final Reports	16w



Project: ARS Pilot Project
Date: 3/12/91

Critical
Noncritical
Progress
Milestone
Summary

Figure 3

3. Research user requirements.

   A. Include all entities, both within and outside the LAPD.

   B. Determine user needs for inputs and outputs.

4. Write User Requirements Document.

5. Develop ARS software.

   A. Develop system requirements and documentation for the programming of the field and station systems.

   B. The laptop computers shall allow the officers to generate reports in a format which can be translated for input into the LAPD crime and arrest database.

   C. Desktop computers shall accept reports from laptop computers, process and print the reports, and input the report data into the LAPD crime and arrest database.

6. Develop hardware specifications.

   A. Evaluate the automated equipment required for the reporting system based on user and program requirements.

   B. User requirement considerations shall include officer safety and weight/bulk issues.

   C. Program considerations should include the operating system and memory size.

7. Procure hardware.

   A. Develop evaluation criteria.

B. Write the Request for Proposal.

C. Evaluate bids based on the above criteria.

8. Develop system implementation plan.

A. Develop a procedure for maintenance or repair of equipment.

B. Develop a backup procedure in case of an unusual occurrence or system failure.

C. Determine who will be responsible at the participating division to control, charge, and change the laptop computer batteries, and to liaise with the task force.

D. Determine how the equipment should be issued. Develop a system to ensure proper inventory control of all equipment procured for the ARS.

9. Develop training program.

A. Develop and implement a training program for participating officers and supervisors.

B. Develop a manual to train participating employees and to provide a field reference.

10. Beta test and debug system.

A. Test all programs and equipment in-house prior to the start of beta-testing.

B. Test all programs and equipment using test division personnel. Parallel reports should be taken until the system is sufficiently reliable to ensure no reports will be lost.

C. Revise the desktop computer and laptop programs as necessary.

11. Conduct training of training-cadre personnel.

A. Cadre personnel should be selected from the test division.

12. Establish comparative analysis contract.

A. Contract with subject matter experts for the development and implementation of the comparative analysis data collection for both the existing system and the ARS.

Phase one continued until all the systems were sufficiently developed to allow the implementation of phase two.

<u>Phase Two</u>

In phase two of the pilot project, <u>all</u> personnel in the patrol division participating in phase one will write PIRs on laptop computers. This required the following additional tasks:

13. Implement the ARS.

A. Implementation should be phased in; one watch at a time.

B. Enhancements can be added to the implemented system as they become available.

14. Conduct comparative analysis.

A. Use two divisions; one as the control and the other as the test division.

15. Continue field use.

   A. Provide continuing support to participants and the ARS.

   B. Liaise with participating divisional management.

   C. Conduct follow-up meetings with participants as needed to ensure that:

      1. Employee morale is maintained, and

      2. Employees continue to correctly and accurately collect the data.

   D. Conduct an orientation when the study begins and follow-up discussions at subsequent roll calls. (This will familiarize personnel with their tasks and will help solve any problems at the outset).

16. Train all patrol division personnel in the use of the laptop and desktop computers.

17. Develop systems and add equipment as necessary to prevent officers from having to wait to transfer reports from the laptop computers to the station desktop computer.

18. Develop and implement project enhancements as time and funding allow.

19. Develop LAPD crime and arrest database system interface.

A. Develop system requirements and documentation for the upload of data from the desktop computer to the LAPD crime and arrest database. This process will be performed on all reports that have been approved and have met the edit criteria. The major task to be addressed in this process is the assigning of permanent report numbers to the incoming reports. This process is currently performed in an on-line interactive mode on the LAPD crime and arrest database system.

20. Produce final reports.

<u>Changes</u>: The original ARS Pilot Project was to be a six-month study using twenty laptop computers, five each from four different manufacturers. The computers were to have been used by one geographic patrol division in each of the LAPD's four bureaus. Programming was to have been along the line of the St. Petersburg, Florida, PISTOL program, and one existing desktop computer was to serve as the station system. It became quickly apparent, however, that sufficient funding was not available even for this limited project. As a result, the LAPD applied to and received a grant from the NIJ to finance the project.

The agreement with the NIJ resulted in the scope of the project being broadened to include (1) fully equipping one patrol division with laptop computers; (2) installing a local area network for the station system; (3) development and implementation of a detective case management and reporting system; (4) the exploration, development, and implementation of system enhancements such as an automated pinmapping system and the use of cellular phones for report transmission; (5) the addition of other types of reports to the system; and (6) hiring experts to conduct the comparative analysis. As development of the base system progressed, costs that were higher than expected slowly reduced the scope of the project back to that described.

III. PILOT PROJECT DESIGN REQUIREMENTS AND PROCEDURES

COMPARATIVE ANALYSIS

Need and Objective

The ARS comparative analysis was designed to provide an unbiased, objective study of the impact of the ARS on the existing LAPD reporting system. This was done by measuring a variety of indicators in both the test and control divisions before, during, and after full implementation of the ARS in the test division. The test division was to use the ARS exclusively to write only crime reports without attachments and the control division was to continue writing their reports using the existing manual system. This data was then used to draw conclusions regarding the differences between the two systems.

Outside Consultant

To ensure the validity of this study, an outside consultant was contracted to complete the comparative analysis. A Request for Proposal (RFP), Appendix A, was released to recognized expert consultants from the academic community to design, implement, and evaluate a comparative analysis of the LAPD's hand-written and automated systems. The RFP was written to ensure that the consultant chosen had the ability to accurately collect, quantify, analyze, compare, and document relevant statistical data.

In addition to the normal City channels of release, measures were taken to ensure the broadest publication and best possible response to the RFP. Advertisements were placed in the "Chronicle of Higher Education," a nationwide publication in academia, and the "Daily Journal," a Southern California publication focusing on legal news. Copies of the RFP were mailed to thirteen universities in the Southern California area and provided to the Mayor's Office of Small Business Assistance.

The proposal from California State University, Fullerton (CSUF) Foundation was chosen. That proposal possessed a demonstrated background in the area of management analysis, operations research, information systems, and similar related fields as verified by references.

<u>Preparation for Data Collection</u>

The CSUF consultant required test and control groups to conduct this analysis. Two Areas, representative of the LAPD, were needed that were similar in geographic size and location, types and volume of crimes encountered, number of personnel assigned, and demographics. The test and control Areas were to have an active, but not an overwhelming, workload. Based on these criteria, Hollywood and Wilshire Areas were selected.

The consultant conducted on-site interviews to determine the best use of LAPD's operations personnel time while accomplishing the goals set forth. Those interviewed included managers, supervisors, uniform police officers, and records personnel in Hollywood Area (test group), Wilshire Area (control group), and the ARS Task Force. The consultant also suggested what sample size and test period were needed for a valid study.

Prior to data collection, the consultant and representatives from the ARS Task Force provided the command staffs at both Hollywood and Wilshire Areas with copies of data collection instruments, instructions, and timetables. They also attended staff meetings, supervisors' meetings, and roll call sessions at both Areas to assure all personnel of the confidentiality of the data collected; explain the data collection instruments, procedures, and timetables; and emphasize the importance of their roles and input into potential future systems development. The importance of this preparation cannot be stressed enough. To gain the confidence and trust of the large number of normally skeptical police officers participating in this study was no easy task.

Data Collection

The consultant developed a total of seven data collection instruments and sets of instructions on: attitudes, morale, and perceptions; officer and first line supervisor job performance; officer, supervisor, and clerical time/errors; officer and supervisor evaluations of reporting systems; a patrol evaluation of the ARS; a detective evaluation of the ARS; and a prosecutor PIR quality evaluation. Copies of the instruments and instructions are included in the consultant's final report (Appendix A). The data collection instruments were administered between April and December 1990. The criteria being measured by each data collection instrument and the methodology used are as follows:

Attitudes, Morale, and Perceptions

Data to be Collected:

1. Attitudes, morale, and perceptions of patrol officers and supervisors regarding job satisfaction, role conflict, role ambiguity, quantity of workload, skill underutilization, experienced control, depression, anxiety, self-esteem, computer anxiety, supervisor production emphasis, supervisor consideration, participation in decisions, supervisor role clarification, and supervisor goal setting and commitment to the organization.

This was accomplished by the use of a 146 item questionnaire entitled "General Information Questionnaire." The questionnaire was administered during two different periods by a member of the CSUF research team at roll call sessions at both Hollywood and Wilshire Patrol Divisions. Roll calls were chosen on the basis of maximum deployment. The first administration took place prior to implementation of the ARS, between April 6 and 12, and involved 24 roll calls (12 at Hollywood and 12 at Wilshire). A total of 78% of the officers assigned to these divisions during that time completed the questionnaire. The second administration took place at the conclusion of the ARS test period, between December 6 and 13, and involved 30 roll calls (15 at Hollywood and 15 at Wilshire). A total of 73% of the officers assigned to these divisions during this time completed the questionnaire.

A representative of the CSUF evaluation team attended all roll calls for the administration of the General Information Questionnaire. The representative explained the rationale for the questionnaire, answered any questions, and collected the completed questionnaires from the officers. A member of the ARS Task Force was present at the beginning of each roll call to introduce the CSUF representative and to assure the officers of the complete confidentiality of their answers. No ARS Task Force personnel were present during the completion and collection of the instruments. It took an average of 25 minutes to complete the questionnaire.

Officer and First Line Supervisor Job Performance

Data to be Collected:

1. Officer and first line supervisor job performance regarding initiative, effort exerted, job knowledge, work quality, oral communication skills, written communications skills, capacity to learn, effectiveness of time use, ability to work independently, and overall performance.

This was accomplished by use of a questionnaire entitled "Job Performance Rating." In April and December, the supervisors (lieutenants and sergeants) at Hollywood and Wilshire Patrol Divisions completed an eleven question performance evaluation of each subordinate under their control.

Data were collected prior to ARS implementation, between April 6-12, and at the conclusion of the pilot project, between December 6-13. Both Area adjutants were provided packets of questionnaires which were subsequently distributed to Patrol Watch Commanders. The Watch Commanders (Lieutenants) ensured that the sergeants completed the evaluations of their subordinates. Once the job performance instrument was completed by the supervisor, that supervisor sealed and mailed it in a self addressed stamped envelope to the CSUF Director.

Officer, Supervisor, and Clerical Time/Errors

Data to be Collected:

1. Field officer time required to investigate, write and edit, travel, obtain approval, and make corrections; supervisor time to review and approve; clerical time required for data input, correction, photocopying and distribution, and filing.

2. Report errors discovered at time of supervisory review and approval, including the number of errors; missing, inaccurate, incomplete, and unreadable/illegible entries; spelling errors; and corrections made by supervisors.

3. Errors discovered by records unit personnel, including the number of PIR report errors; errors in data during reverification of the LAPD crime and arrest database; the number and type of missing entries, incorrect codes, and

incomplete or other errors; and the number of copies made for distribution and storage.

These three items were accomplished by the use of a data collection instrument titled "Time Study Sheet of the Existing (or Automated) Reporting System."

The data collection instrument and instructions for officers, supervisors, and clerical personnel were distributed to both Area adjutants and subsequently to all patrol Watch Commanders, who monitored their distribution and ensured proper completion. Audits were conducted to ensure proper completion.

This time-study data collection instrument asked personnel to record the amount of time they spent on the various PIR tasks outlined. The instruments were administered to both Patrol Divisions during a two-week period in June 1990, before computer training began at Hollywood Patrol Division, and during a two-week period in December 1990. Officers attached a data collection form to each PIR written during this period. The data collection form was organized into three sections: one to be completed by the officer writing the report, one by the supervisor reviewing the report, and one by the record clerk processing the report.

Personnel from both divisions completed this time-study instrument. Collection of data took place prior to implementation, between June 6 and 16, and at the conclusion of the pilot project, between December 3 and 13. Completed time-study instruments were collected by record clerks and then retrieved by a representative of the evaluation team. In order to assess the reliability of the completion of this instrument, a sample of 45 police personnel was observed by members of the evaluation team. As this sample of police personnel completed and recorded over 200 PIR tasks, the evaluation team member recorded the amount of time spent on the PIR tasks. The results of these observations confirmed that police personnel self-reporting of time spent on PIR tasks was accurate.

The officer's section required identifying data such as serial number, watch, date, and unit assignment for the period during which the PIR was written. Then officers recorded the start and stop times for the various PIR tasks performed.

Supervisors provided serial number, watch, and the date of PIR review, the start and stop times for review and approval, and the number and type of errors discovered.

PIRs with attached data collection instruments were then routed to the records unit where clerks provided identifying information (serial number, watch, and date) and recorded the various tasks they performed. The clerks then attached the PIR data collection sheet, completed jointly by the reporting officer, supervisor, and record clerk, to a copy of the PIR and held these for pick-up by a member of the ARS Task Force, who ensured delivery to the CSUF research team.

PIR data were then summed by reporting officer's serial number to generate average investigation, writing, approval/correction, and supervisory review times for the PIRs. Other data fields on the PIR were similarly summed to yield one average number for each type of effort, average clerical function times, and average number of copies made. The summed data were then used in analyses of experimental effects.

Officer and Supervisor Evaluations of Reporting Systems

Data to be Collected:

1. An evaluation of the handwritten and automated reporting systems by patrol officers and supervisors, including ease of use, frustration/irritation, productive time lost, system error proneness, ease of correction, effect on overall job performance, satisfaction with each reporting system, and effect on report quality.

This was accomplished by the use of a questionnaire titled "Evaluation of the Existing (or Automated) PIR System." At the conclusion of each two-week PIR collection period, all patrol personnel at both divisions completed this ten item evaluation of the reporting system. For Wilshire Patrol Division, these evaluations focused on the handwritten reports in both June and December. The Hollywood Patrol Division evaluations focused on the hand-written system in June and the Automated Reporting System in December. The same questionnaire items were used at both times to evaluate both systems.

Officers estimated the amount of time in minutes spent each day writing PIRs and comments about the reporting system were solicited for anonymous feedback to the ARS Task Force. The questionnaires were distributed for a two-week period prior to implementation of the ARS and for a two-week period at the conclusion of the pilot project. Officers returned their completed questionnaires to CSUF via a stamped, self-addressed envelope included with the questionnaire.

Patrol Evaluation of Automated Reporting System

Data to be Collected:

1. At Hollywood Patrol Division, an evaluation of the Automated Reporting System (ARS) regarding laptop transport, computer report format, typing skills, ease of use of both handwritten and automated reports, concerns of equipment damage or theft, perceptions of time spent writing automated and handwritten reports, transferring reports via disk, loss of information on reports, correction ease, screen readability, training, convenience of use, prior computer use, reliability, individual attitudes regarding computer use, support provided by the ARS Task Force, and support for a department-wide ARS.

This was accomplished by the use of a 55-item questionnaire entitled "Automated Reporting System Use Questionnaire." Only 52 of the questions were to be completed by officers and all 55 were to be completed by supervisors. The three items completed only by the supervisors asked about the errors in and approval of the reports generated by the laptop computers. Since all 55 items focused on laptop computers, only Hollywood Patrol Division completed the questionnaire.

This questionnaire was administered at 15 roll calls between December 17 and 21, after all other data collection was completed. A representative of the CSUF research team explained the rationale for the questionnaire, answered any questions, and distributed and collected the completed questionnaires from the officers. No members of the ARS Task Force were present during the completion and collection of the instrument. It took an average of 15 minutes to complete the questionnaire.

Detective Evaluation of Automated Reporting System

Data to be Collected:

1. At Hollywood Detective Division, an evaluation of the automated PIR, including format, print size, spelling, impact on crime clearance and filing rates, potential total automation effects on crime clearance and filing rates, improvement of automated reports over handwritten PIRs, use in court, completeness, ease of use, support by ARS Task Force, and support for a department-wide ARS.

This was accomplished by the use of a 13-item questionnaire entitled "Hollywood Detective Division Automated Reporting System Use Questionnaire" which was developed from the longer 55-item patrol version. This questionnaire was administered only to Hollywood Detective Division personnel.

The questionnaire, with an attached self-addressed stamped envelope, was distributed to detective personnel at a detective squad meeting, and completed between December 12 and 14. Once the questionnaires were completed, they were mailed directly to the Director of the CSUF evaluation team.

<u>Prosecutor/Detective Quality Evaluation</u>

Data to be Collected:

1. An evaluation by prosecutors of PIR report quality, including: what the officer saw; content; organization; writing style; physical evidence; completeness of general investigation; statements of witnesses, victims, and suspects; and the corpus.

This was accomplished by the use of an instrument developed for this study by the Director of the CSUF research team in concert with two LAPD detectives and two prosecuting attorneys (one Los Angeles City Attorney and one Los Angeles County District Attorney). The attorneys frequently use reports generated by officers in the LAPD divisions participating in this research. Through a structured process, the detectives, attorneys, and the Director of the research team developed a set of criteria to determine the quality of PIR content. These criteria reflected the utility of a PIR for prosecuting a case or for conducting a follow-up investigation.

Based on this meeting, the PIR Content Evaluation instrument was constructed and mailed to the participating prosecutors and detectives for review and correction. The final version of the instrument was used to assess PIR quality.

A random sample of 166 PIRs was taken from those submitted by officers who participated in both waves of data collection from both divisions. They were randomly ordered in two packets and sent for content evaluation to the detectives and prosecutors who participated in the design of the instrument. One detective and one attorney evaluated each PIR packet. The packets were returned to the Director of the CSUF research team and a count was made of the number of words in each PIR narrative as a control for rater bias due to the amount of narrative in a report. Disagreements in ratings were resolved by the rating pairs in all cases. After rating the PIRs, each rater provided a subjective assessment of the overall quality and ease of use of the automated PIRs compared to the handwritten ones.

Analysis and Results

The consultant reviewed and analyzed the aforementioned data collection and functioned as the ARS Pilot Project subject matter expert in the field of comparative analysis. Upon completion of data collection, the consultant submitted a detailed report thoroughly documenting the comparative analysis. Results of the comparative analysis are discussed in Section V. of this report, RESULTS OF THE COMPARATIVE ANALYSIS.

INFRASTRUCTURE

This pilot project was developed, implemented, and analyzed by a six-person ad hoc task force under the direction of Information Resources Division, the LAPD's entity responsible for computer systems development. This task force was made up of the following personnel:

1. Lieutenant II to provide field management experience and input and to act as officer-in-charge of the task force;
2. Detective III to provide investigative experience and insight;
3. Police Sergeant to provide field experience and input;
4. Senior Systems Analyst I and Systems Analyst I to provide technical support; and
5. Clerk Typist to provide clerical support.

Systems design was done in coordination with the City of Los Angeles Department of Information Services (ISD), the City's entity responsible for Citywide computer systems. Programming was done by an independent programmer under contract to ISD.

SCOPE

The scope of this project was defined according to the following parameters:

1. This project will evaluate the concept of using laptop computers in taking and processing police reports. Although this will include an evaluation of existing technology, it will not include any judgements regarding specific computer manufacturers or machines;

2. This project should be designed to minimize the number of variables affected by forces other than the Automated Reporting System; and
3. This project will employ the minimum personnel and other resources necessary for a thorough evaluation of the concept.

Pursuant to these parameters, the scope of this project was defined as follows:

1. The most frequently used report - the Preliminary Investigation Report (PIR; see Appendix B for example) - would be automated during phase one. The PIR is used for all but a few types of crimes and accounts for 46 percent of all reports written by the LAPD. Use of the PIR minimizes the amount of programming required.
2. An entire patrol division would be equipped with laptop computers. Initially, five to ten laptops will be implemented in a test group from the selected patrol division for system testing and debugging. A total of 30 to 40 laptop computers will be used when fully implemented.
3. The entire field reporting procedure will be included, from initial completion of the report through entry of the report information into the LAPD crime and arrest database.

SYSTEM DEVELOPMENT

Compatibility

The ARS Pilot Project was designed as a short-term study of the impact of the ARS on several very narrowly defined functions. Because of the potential impact on the systems and end-users who may be touched by the ARS, the scope of the pilot project, and the continued generation of paper reports, the ARS Task Force was directed to ensure that all rules and procedures used by the LAPD and by the criminal justice system would remain in place and that the ARS and its output must be compatible with them. Except for the below items and those criteria specifically being evaluated by the pilot project (see Section II-Pilot Project Description: Evaluation Criterea), research indicated that there should be no significant impacts.

Records Unit

The records unit of any LAPD patrol division is responsible for collecting approved reports from the watch commander's office, obtaining permanent report numbers, entering the report information into the LAPD crime and arrest database system, copying and distributing those reports according to a set of complex guidelines, and filing the reports in divisional files. Except for not having to obtain DR numbers or enter report information into the LAPD crime and arrest database, there should be no significant change in the records unit functions.

Automated Systems

Because the ARS will continue to generate paper output, it will have no impact on any other automated systems (LAPD or others), with the exception of the LAPD crime and arrest database system and the Detective Case Management System. The LAPD's existing mainframe access system may require modification to allow input of

ARS crime report information directly into the LAPD crime and arrest database without human intervention. The Detective Case Management System would require modification to allow direct input of ARS report information to replace the current downloading from the LAPD crime and arrest database system.

Impact on Patrol Operations

One of the primary directives in the development of the ARS is that the existing report-writing rules and regulations would remain in place. The only impact on existing systems will be the method of data collection and report approval.

Development of Equipment Specifications

Field System

In order to develop the specifications of the laptop computers to be used in the pilot project, 11 laptops from 6 vendors were evaluated by the task force in March 1989. The overriding issue addressed by these evaluations was officer safety. Task force members took each laptop out in a patrol vehicle during the day and night to evaluate machine performance in as many different environments as possible. The primary officer safety concerns were: 1) the degree of illumination of the vehicle's interior at night; and 2) the degree of interference with an officer's ability to react quickly to an emergency when using the laptop in a vehicle.

In addition to the officer safety issues, the laptops were evaluated in the following areas:

* System features (Microprocessor, Memory)
* Physical characteristics (Size, Weight)
* Display features (Backlighting, Characters x Lines)

From the time of the initial evaluations until the release of the Request for Proposal for the laptop computers, the portable computer market changed dramatically. A new category of "notebook" computers had been released or announced which offered increased performance at substantially reduced size and weight. The task force worked with most major manufacturers to ensure the final specifications addressed current state-of-the-art equipment.

The final input to specifications development came from the contract programmer's estimated processing and memory requirements. These estimates came from his evaluation of the initial design documents.

Equipment Parameters:

Based on task force evaluations, the following specifications and evaluation criteria were established. The field system consisted entirely of laptop computers and accessories. Below are listed the minimum specifications, followed by the list of criteria used to evaluate equipment bids.

Microprocessor	:	80C88 or NECV20
Clock speed	:	8 mhz
Memory	:	RAM - 640K
		Non-volatile storage - 1MB
Operating Sys	:	PC-DOS 3.3 compatible
Weight	:	Maximum 11 lbs (w/battery)
Dimensions	:	(HWD) Maximum 3" x 13" x 12"
Keyboard	:	QWERTY type / 10 Function keys
Display	:	80 characters x 25 lines
		640 x 200 pixels
		8" x 3" screen dimension
		CGA supported
Power	:	AC adapter
		Battery (rechargeable and removable)
Modem	:	Minimum 1200 baud internal
I/O Ports	:	Parallel or Serial (or adapter)
FCC Rating	:	Must be FCC rated
Accessories	:	External battery charger
		Carrying case
		12 Volt adapter
		Additional batteries

Evaluation Criteria:

1. Maintenance cost and warranty period
2. Reliability
3. Service/support

4. Availability
5. External Batteries
6. Operational Configuration
7. Laptop size and weight
8. Keyboard
9. Display
10. Modem
11. I/O Ports
12. Microprocessor
13. PC-DOS compatibility
14. Non-volatile memory
15. Expandability

The final specifications were integrated into a formal RFP which was released through the City's Department of General Services, Purchasing Division. The task force provided a suggested vendor list of 11 companies which was combined with the City vendor list for computer related products. This distribution resulted in a total of 12 submitted bids. In order to evaluate these bids, the task force created a proposal evaluation form. This form facilitated the evaluation of bids based on both cost and non-monetary issues. The non-monetary issues were weighted based on their significance as stated in the original specifications.

The task force evaluation determined that the Toshiba T1000SE best met the monetary and non-monetary criteria of the evaluation and a contract was awarded for the purchase of 30 units. In addition, Toshiba America Information Systems, Inc., loaned 10 laptop computers to the LAPD for the duration of the pilot project.

Other Hardware

The design and configuration of the remaining parts of the ARS were based on the functional requirements of the ARS program. Through meetings with City data processing personnel having expertise in system configuration, it was determined that the functional requirements and system parameters outlined in the User Requirements Document could best be handled by a local area network. The actual desktop computers, network operating system, and topology used were based on current City standards. The City standards for desktop computers dictates that only IBM computers could be purchased and specifies most accessories.

In determining the hardcopy output device to be used, a preliminary design of the automated output was created. In order to allow as much flexibility as possible in the output, it was determined that a laser quality printer was required. Again, the actual device used was based on current City standards.

In order to address the issue of the equipment required to transfer reports from the field, the advice of the Emerging Technologies Section of the City's Department of Information Services was sought. As per their recommendation, a PC based bulletin board system was purchased. When used in conjunction with an 8-port multi-channel communications card and 6 modems, this configuration allowed for multiple concurrent report transfers as outlined in the system specifications.

The second phase of the project, which included the interface with the LAPD crime and arrest database system, required a link between the local area network and the City's mainframe. This was accomplished with the acquisition of a City standard 3270 emulation board and software. The mainframe emulation software provided all the tools required to complete the interface.

<u>System Development Procedures</u>

The development of the ARS software primarily followed standard system development life cycle procedures. However, time constraints and the uniqueness of the application mandated a constant exchange of information between the ARS Task Force and the contract programmer. This led to the use of a "prototyping" method of software development. Using a core system developed by the contract programmer following the ARS Task Force specifications, the design was reviewed and modified on a continuous basis until all the essential functions had been addressed. This was accomplished through both in-house and field testing. The system development procedural steps followed are outlined below.

User Requirements

The first task accomplished by the ARS Task Force in the area of system design was the completion of the User Requirements Document. The User Requirements Document included the following information:

1. Project background/justification
2. Application description
3. Preliminary system design
4. Preliminary data set definitions
5. Implementation plan

The information contained in the User Requirements Document was gathered through user interviews, study of the existing reporting system, and review of the original concept documents. This document was used to determine the level of support required from the City's Department of Information Services and was the basis for the detailed design work.

Based on task force research, the following parameters were incorporated in the final system design.

General:

1. Because this is a limited term pilot project, the LAPD mandated that the ARS must not change the systems, rules, and procedures currently in place, except as defined in these

parameters. This included patrol, detectives, records, courts/prosecutors, other end users, and any automated systems.

2. Except for those Areas being studied as part of the comparative analysis, the ARS must be designed to minimize the impact on any entity or system which uses or is affected by the ARS.
3. The system must be designed to be as user-friendly as possible to reduce personnel training time and increase user acceptance. Computer sophistication and program knowledge should not be necessary to use the system.
4. A full help system must be available: one using the industry standard F1 key to gain access to the help system that contains information on the computer, the program, and on report-writing rules; the other a line at the bottom of the screen describing the field the cursor is on.
5. Program, data entry, and data transfer response times must be as low as possible to minimize user frustration.
6. For the purpose of the pilot project, once a report is approved and printed, it will be subject to existing LAPD archival policies.
7. The system should allow the return to the previous menu with just one key stroke.
8. The system must be designed to require the same information input and provide the same information output as the manual system, with changes only as necessary to meet project goals.
9. The system should automate as many processes as possible to reduce officer input.

Report Management:

1. The system must provide the ability to delete reports and to retrieve them again.
2. All records must be retained at the laptop level at least until the end-of-watch. Specific laptop storage medium and time frame will be determined during the pilot project.
3. All records transferred to the desktop computer will be backed-up to diskette on a daily basis.
4. Security must be maintained at four levels; during the generation of a report, during the transfer of reports from the laptop to the desktop computer (especially via modem), during the supervisors review and approval cycle, and after the archiving of approved reports.
5. Access to all report generation and processing functions must be controlled via user password.
6. The system should contain an override password to allow a user access to his laptop computer if he/she has forgotten his/her password or entered the password incorrectly when logging on. This should be accessible only by a supervisor, but should not divulge the officer's password.
7. On the station system, users should be automatically logged off and their work saved if there have been no keystrokes in a specified period.
8. In order to ensure that no unauthorized access to the divisional database is made, the desktop computer must be programmed to allow interface only with laptops containing an authorized access code.

9. The system must forward error check on modem transfers.

10. A unique report number must be assigned to each report, regardless of which machine produces it.

11. Reports must be immediately backed-up when they are transferred to the station system.

12. An active report status screen must be visible whenever no one is logged onto the station system. This screen should include information that would assist officers and supervisors in identifying reports on the system.

13. Allow the transfer of incomplete reports from laptop computers, but only after confirmation to ensure that the officer is aware of the report's status.

14. The system must allow for the maintenance of all files.

15. A file must be set up for the long term maintenance of automated reports.

Report Generation:

1. The system must allow officers to create, edit, delete, connect, print, and transfer reports.

2. Officers must log onto the laptop before using it and designate who the reporting officer is in a two-man unit; that officer must be listed first.

3. In creating a report, the system should automatically take the officer through the report modules, unless a particular module is specifically requested or the officer elects to bypass them.

4. All of the fields on the paper PIR must also be placed on the automated version, but the method used to collect the data should vary to allow direct transfer of data to other automated systems.
5. All the report-writing and approval rules that apply to the paper system also apply to ARS.
6. Data entry methods shall be devised to allow the input of the most detailed information possible without negatively impacting officer time, such as separating entry of different types of evidence into fields specifically designed for those types of evidence (e.g., narcotics, money, etc.).
7. Information must be captured in a format which is translatable to codes in the LAPD and other criminal justice databases (e.g., choice from tables, standard abbreviations).
8. For all fields which limit responses due to the use of a picklist, provision must be made for the input of text in case the choices are not adequate or where more information is available than is allowed by the available choices.
9. Data fields from which database codes are generated should allow the input of code from memory (with immediate validation) or be presented with choice tables. After selection, the English interpretation should be displayed.
10. A simple, easy-to-use text editor should be provided for writing report narratives.
11. Screen layouts for the laptop computer will be determined based on hardware selection. The screens will be primarily menu selection and function key driven. They should allow

access to any module in any sequence to provide flexibility to the officer during input. Some modules should allow for multiple inputs (e.g., crime type, suspect).

12. The system should provide a listing of all parties (suspects, victims, witnesses, etc.) listed in the report and make it available anywhere in the report.
13. A pop-up memo field should be available anywhere in the report to attach notes to the report.
14. The transfer of data from the laptop computer to the division desktop computer shall be completed by one or more of the following methods: modem, diskette, or direct port connection.
15. The system should complete the "Notifications" and "Extra Copy To ..." fields based on the LAPD report-writing rules and the information in the report.
16. An ASCII data stream shall be created for transfer from laptops to the desktop computer at the station.
17. On laptop computers, there should be an audible and visual notification of the successful transfer of a report.
18. Connecting (referencing) related reports must be possible for reports in the computer and for reports not in the computer for which a report number exists.
19. The laptops should be capable of receiving disapproved reports from the station system, complete with any supervisor notes.
20. Prior to allowing an officer to sign a report, the system should do a validation check to ensure that all required

fields have been completed and all report-writing rules have been followed.

21. The system shall provide the ability to print a report in case the station system is unavailable.

22. A quick logoff should be available using a function key to allow an officer to rapidly logoff the computer and save all work.

23. Officers should not be able to log off completely until all reports have been transferred.

Report Processing:

1. Incoming reports should be coded and placed in priority order into an approval queue based on their status (priority, kickback, etc). This queue should be visible on all unattended station system terminals.

2. There should be an audible notification of report transfer into the station system. Priority reports should continue to announce periodically until handled.

3. Reports in the queue that have not been approved in a specified period shall increase their priority levels.

4. Access to reports shall be gained by use of the user password. Officers should only have access to the reports they or their partners wrote; supervisors should have access to any report.

5. The system must have a supervisor review process, including the ability to be automatically taken through just those

screens containing report information while pressing only one key.

6. Data entry screens must appear the same to the user in the supervisor edit mode as in the officer create mode.
7. During report approval, supervisors shall have the ability to change field contents and to mark fields needing correction.
8. The cursor position should be retained if a report review is interrupted so the user can return immediately to that point.
9. If a supervisor has made any changes to a report during the review process, the entire report should be checked for completeness and correction.
10. To kickback or approve reports a user password should be required.
11. All reports returned for error correction should be stored in an electronic "mailbox" for the originating officer.
12. When a disapproved report is selected for correction, an automatic function should present only those screens with error notations in them.
13. The officer's or sergeant's name, rank, and serial number shall be automatically added to the report at the time of signature or approval, based on password.
14. Reports must automatically receive the DR number at time of approval.
15. Upon completion of all report functions, each record should be saved to one or more of the following: hard disk, diskette, tape drive, or optical disk.

16. The system shall have the ability to print final reports and draft copies. Duplicate originals and drafts should be labeled as such.
17. Hardcopy reports printed from the system should resemble existing reports as closely as possible.
18. The ARS must be designed so that the electronic output should be compatible with the LAPD crime and arrest database system.
19. Once a report is approved and submitted for data entry, no changes shall be allowed to the report; all changes must be submitted using established LAPD procedures.

Technical Requirements:

The following software technical requirements are based on the equipment purchased for the pilot project:

1. The programming language must be compatible with DOS based computers.
2. The program must run within 640k of RAM.
3. The program and files for a normal day's work must require no more than the available memory.

Detailed Design

After approval of the User Requirements Document by the City's Department of Information Services, the task force began work on the detailed design of the ARS system. The detailed design included the following:

1. Data set definition - included all required data elements and their respective format, size, and edit criteria;
2. Program narrative - a detailed description of the functions to be accomplished by the ARS programs. This included edit rules whenever possible;
3. Screen layouts - screens were designed with Formtool and functional flowcharts were provided to document interrelationships.

Application Development

The actual development of the ARS software was the joint effort of a contract programmer, the City's Department of Information Services, and the ARS Task Force. Working from the design documents created by the task force, this group established detailed system requirements, evaluated and selected development tools, reviewed design concepts, documented edit criteria, approved final designs, and maintained system documentation.

Once the core system had been developed, the task force began revising and debugging the system. Extensive in-house testing was done by entering simulated PIR information from actual crime reports. An attempt was made to use a broad cross-section of crime reports in order to test all possible uses of the ARS.

In order to effectively manage the over 300 changes to the original ARS design, a revision management system was designed and implemented by the task force. Using a Paradox database, modification requests were monitored from inception to completion. Forms were created for persons reviewing the application to log requested changes, document system problems, and recommend possible solutions (Figures 4 & 5). The ARS System Evaluation form, Figure 4, was used to log problems that did not result in a system failure. The System Crashes - Nuisance List form, Figure 5, was used to document system failures/crashes. This information was then entered into a Paradox table, Figure 6, and reports were turned over to the programmer at weekly or bi-weekly intervals. At the same time, all outstanding requests were reviewed to update their status.

This system allowed the task force to maintain version control and prevented duplicate or conflicting revision requests. In addition, as time and money became a critical issue, revision requests could be prioritized to optimize the use of the programmer's time.

Beta Testing

Following the development and initial in-house testing of the ARS programming, live field testing (beta testing) commenced. This took place in Hollywood Patrol Division using report-car personnel. Hollywood Patrol Division was chosen so users could provide additional input into the development of the system and to provide that Division with some exposure to the system prior to implementation. The primary job of an officer assigned to a report car is to take police reports throughout his/her entire shift; laptop use by report-car personnell served to optimize

FIGURE 4

ARS SYSTEM EVALUATION

DATE: / / VERSION: REVIEWER:

SCREEN	FIELD	PROBLEM	SUGGESTED REVISION
--------	----------	----------------------------	----------------------------
--------	----------	----------------------------	----------------------------
--------	----------	----------------------------	----------------------------

FIGURE 5

NAME: SYSTEM CRASHES - NUISANCE LIST

DATE: / / VERSION:	SCENARIO:
REPRODUCIBLE? yes no	
ERROR MESSAGE:	

FIGURE 6

3/11/91 ARS SYSTEM EVALUATION Page 1
REQUESTED REVISIONS

Revision No.: 241 PRIORITY: 2

Ver: 1.27 Screen: INVOLVED PERSONS Field: TYPE OF INV

Problem: ONE PERSON MAY HAVE MORE THAN ONE TYPE OF INVOLVEMENT

Revision: MAKE THREE "TYPE" FIELDS ACROSS THE FIRST LINE AND MOVE THE "PARENT OF" QUESTION TO THE NEXT LINE DOWN

Status: COMPLETE

Date revised: 4/18/90 Version: 1.46

FIGURE 7

ARS BETA TEST - SYSTEM EVALUATION		
DATE: / /	VERSION:	REVIEWER:
DESCRIBE LOCATION PROBLEM OCCURRED	DESCRIBE PROBLEM:	SUGGESTED REVISION OR MODIFICATION:
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During the entire beta testing period, all reports written on the laptop computers were thoroughly evaluated by ARS Task Force personnel. The Hollywood beta test personnel were regularly debriefed for suggestions on the following: how information required on a PIR could be input in a user-friendly manner, whether all information input into the computer came out on the form legibly and in the right place; and what "bugs" the program had that could jeopardize report information. In addition, end users were interviewed to ensure that the output met their needs.

When the task force was satisfied with the performance of the programming, the beta testing was halted and implementation began.

Post implementation development

After implementation, a formal change order process was used. Only those items which impacted the proper operation of the ARS system were addressed. All other change orders were logged for post pilot project consideration. Additional change requests were received through a suggestion box procedure and the comparative analysis data collection.

LEGAL ISSUES

Four legal areas were addressed prior to implementing the ARS and conducting the comparative analysis. These areas were the use of human subjects in research, issues regarding liability, issues regarding prosecution, and the use of preformatted narratives in crime reporting.

Use of Human Subjects in Research

The NIJ adopted the U.S. Department of Health and Human Services' Model Policy on Human Research Subjects. This policy requires that each institution engaged in NIJ research provide written assurances that it will comply with federal regulations.

A review of the Model Policy on Human Research Subjects found the ARS Pilot Project exempt from the requirement of providing written assurance because the research did not include subject responses that, if known to anyone, could reasonably place a subject at risk of criminal or civil liability or be damaging to a subject's financial standing or employment. The NIJ verified these findings.

Liability Issues

Legal and procedural opinions were obtained from the Senior Assistant City Attorney, Civil Liability Division, Office of the City Attorney regarding issues of liability. Questions asked by the ARS Task Force and a paraphrased response are included in the following:

1. Will the lack of a signature by a victim or person reporting a crime create a liability?

There is no requirement that a victim or witness sign an arrest or crime report and no substantial, if any, increase in liability is created by the lack of such signature. The Los Angeles Police Department currently completes combined crime and arrest reports that contain no reporting person's signature. However, if a private person's arrest is made, the California Penal Code requires the arresting party sign a document to that effect in order to ensure immunity from liability to the transporting police agency.

2. Will the lack of an approving supervisor's signature create a liability?

There is no requirement that a reviewing supervisor physically sign a report. However, procedures should be such that they ensure that the supervisor can be clearly identified.

3. Will the lack of an individual officer's handwriting create a liability?

There is no requirement that an officer handwrite reports. However, the procedures should be such that they will ensure that officers are clearly identified.

4. The Los Angeles Police Department is a custodian of records. Are there any legal issues that will result from electronic storage of crime and arrest reports in lieu of hard copy original reports?

Both the California Government Code and the Los Angeles Administrative Code establish requirements for the preservation of public records. Any automated system should ensure compliance with those requirements and allow for disclosure to the public as may be required under the California Public Records Act.

5. Are there any legal issues that will result from the use of a certified copy of a computer printout in lieu of a certified copy of a handwritten original report?

There are no legal distinctions between a certified copy of a computer generated printout of records and a certified copy of a handwritten document as used in the past.

Prosecution Issues

Legal and procedural opinions were obtained from the Chief Deputy District Attorney, Office of the District Attorney, and from the Chief of Criminal Operations, Office of the City Attorney, regarding issues that may effect criminal prosecutions. The responses outlined by both offices were very similar. The questions asked by the ARS Task Force and the combined paraphrased responses included the following:

1. Is the signature of the victim or person reporting a crime legally required?

The signature of the victim or reporting individual is not legally required on a crime or arrest report for a criminal prosecution. However, police reports are often used at a preliminary hearing or trial to refresh the memory of a victim or witness. The victim's signature may increase the validity of information in the report and makes the report a more valuable tool for purposes of corroboration, and if necessary, rebuttal. Signatures of arresting private persons will still be required.

2. Will the lack of an approving supervisor's signature negatively effect a criminal prosecution?

An approving supervisor's signature on a crime or arrest report is not legally required and its lack would not effect a prosecution. However, it is important that the approving supervisor's name and serial number be included on the report upon review and approval. This will help to maintain high standards of reporting by ensuring review by a supervisor.

3. Will the lack of an individual officer's handwriting negatively affect a criminal prosecution?

The lack of an individual officer's handwriting should not negatively affect a prosecution. However, his/her name or serial number must be included on the report. Handwriting in the text of a report has, in the past, assisted an officer in recalling that he/she actually wrote a report. Some form of identifier needs to be in place.

4. The Los Angeles Police Department is a custodian of records. Are there any legal issues that will result from electronic storage of crime and arrest reports in lieu of hard copy original reports?

There appears to be no legal barrier to this issue, but it was requested for the purpose of the pilot project, that the hard copy original of the printout be stored as a handwritten original.

5. Are there any legal issues that will result from the use of a certified copy of a computer printout in lieu of a certified copy of a handwritten original report?

There are no legal distinctions between a certified copy of a computer generated printout of records and a certified copy of a handwritten document as used in the past.

Preformatted Narratives

Legal opinions were received from both the Office of the District Attorney and the Office of the City Attorney. Both found no legal barriers to the use of preformatted narratives in crime reporting.

ENHANCEMENTS

Because of the limited time and money available to the task force for the pilot project, several features originally planned as possible enhancements to the ARS were not implemented. In addition, research determined that some concepts in the original ARS design would not work well in the operating environment of the system. This led to the elimination of the following design elements.

Pin-mapping

Collecting crime data in an electronic format led naturally to the concept of automated pin-mapping. Pin-mapping is the process of tracking crime trends by placing an indicator on a map of each occurrence of a particular type of crime. Several off-the-shelf PC-based mapping programs were reviewed by the task force for use as pin-mapping devices. However, the key issue was determined to be the collection of the address information. In order to create records which can be effectively mapped, the addresses must be edit-checked to verify spelling and street type, number, and direction. Meetings with City personnel responsible for the database which contains address data determined that the processing and memory requirements of address verification were too great for the ARS Pilot Project system.

Cellular Modem Transfer

One of the original features in the user requirements document was the ability to transfer PIRs over cellular phone modems directly from police vehicles. Although modems have been developed specifically to handle the unique data handling requirements of this type of transfer, the systems which were evaluated had difficulty establishing and maintaining cell sites during data transfer procedures. The reason for this failure appeared to be a saturation of cell sites by cellular phone users. This occurs several times a day in the Los Angeles area when cell sites are overwhelmed. As a result, it was determined that this method of data transfer was not reliable enough and could lead to officer frustration.

Spell Checking

One of the features most requested for inclusion in the ARS system was a spell checking capability. Although the merits of spell checking reports are obvious, it was not included in the pilot system for several reasons.

The primary reasons for not including the spell check feature related to system requirements and functionality. Because of the limited memory available on the laptop used for the pilot project, there was not sufficient space to store the required programs and dictionaries. In addition, the extensive use of non-standardized abbreviations, combined with the fact that laptops are issued to different users each day, would create unmanageable dictionaries.

Moving the spell check function to the desktop level would help to alleviate some of these problems. However, this would shift the burden of spell checking to the supervisor, dramatically slowing down the review process. In addition, if the spell check function is not on the laptop, it will not serve as a learning tool for the officers.

Because the text editor used to create the narratives was developed specifically for the ARS system, there are no commercially available spell checking programs which can be used with it. Consequently, a system would have to be developed from scratch, at more time and expense than the pilot project allowed.

Additional Reports

A logical progression in the development of the ARS would be to add additional reports. In order to keep the pilot project manageable in the areas of development, training, and support, only the Preliminary Investigation Report was used. Laptop hardware limitations and development costs also precluded attempting the automation of any additional reports.

Research done during the pilot project indicated a thorough review of the existing reporting system and its related forms should be done prior to further automation. This would significantly reduce the overall development costs of a fully integrated automated reporting system.

Detective Systems Development and Interface

One of the tasks in the original pilot project concept was the development of an automated divisional detective case management system. This task would have included the development of a divisional database to be used for investigation, caseload management, and detective follow-up data input purposes.

The cost and time required to complete this task prohibited its completion for the pilot project. However, a program was developed to create a Paradox table which could be used by the existing Detective Case Management System (DCMS). This existing system manages statistical case data for detectives, allowing them to create daily, weekly, or monthly recaps of case activity. If the LAPD's mainframe communications system is modified to accept ARS uploads, the ARS will be able to interface with all future detective case management developments.

Preformatted Narratives

Extensive research was done by task force personnel regarding the use of preformatted narratives in police reports. Preformatted narratives could save significant officer time by inserting information from the body of the report into text which has been prewritten for a particular crime type, resulting in a complete narrative.

A committee was formed, consisting of representatives from the Office of the District Attorney, the Office of the City Attorney, LAPD detectives, and ARS Task Force members, to draft exemplars of preformatted narratives. The purpose of the committee was to:

1. Conduct research as to the legal acceptability of preformatted narratives in crime reporting.
2. Obtain written documentation from both the City and District Attorney's offices to document the legal acceptability and establish policy for their use.
3. To identify those crimes that would lend themselves to preformatted narrative use for the purposes of the pilot project.
4. Write the narratives and document by correspondence their acceptance by the City and District Attorney's offices.

Numerous committee meetings were held to decide which crimes would lend themselves to this issue for the pilot project and to develop narratives that would prove useful and acceptable to detectives and both prosecuting agencies. After several months of development, narratives for the crimes of Burglary from Motor

Vehicle (BFMV), Theft from Motor Vehicle (TFMV), and Vehicle Vandalism were developed and approved. Those narratives are included in Appendix C.

IV. IMPLEMENTATION

PHASED IMPLEMENTATION

Following the beta testing period, phased implementation of the ARS began. The implementation was done in phases for two reasons: (1) to allow for the deployment needs of Hollywood Patrol Division and (2) to accomodate the limited resources of the ARS Task Force.

Implementation was completed in three phases, one for each of the three primary watches (day, PM, and morning watches). On each watch, starting with days, implementation began with four, eight-hour training sessions conducted during normal watch hours. All patrol personnel from each watch being implemented attended one of these eight-hour training sessions.

Immediately following the first training session, day watch began using the ARS to write their PIRs. The laptop computers were issued at the beginning of watch to each patrol unit (regardless of whether it was a one or two-officer unit), the telephonic report-writing (STORM) desk, and desk personnel. One desktop computer was installed in the sergeants' room, operating in stand-alone mode because the local area network (LAN) was not yet available. In stand-alone mode, the desktop computers provided the ability to approve, print, and archive reports but lacked the LAN features that provided data integrity, system security, file sharing, or automatic issuance of report numbers. Officers transferred their completed reports to the desktop computer (exclusively via diskette as the modem transfer capability was not yet available) where normal approval and printing processes occurred.

The next watch was not scheduled for implementation for three weeks after day watch to ensure that the system was running correctly and to allow the task force the opportunity to provide constant on-site personnel to assist Hollywood personnel in learning the ARS. Due to the limited resources of the task force, it was not possible to have all three watches brought on-line at the same time.

PM watch was implemented next, followed two-weeks later by morning watch. PM watch was done in exactly the same manner as day watch, using the same procedures and equipment. However, morning watch was implemented at the same time as the LAN was brought on-line.

With the introduction of the LAN, individual desktop computers were set up in the officers' report-writing room, in the sergeants' room, on the telephonic report-writing desk, and on the assistant watch commander's desk. Full ARS functionality was then available except modem report transfer and the automatic uploading of report information into the LAPD crime and arrest database.

TRAINING

One of the top priorities of the pilot project was the training of the system users. It was anticipated that user attitude would have a significant impact on ARS success and acceptance. That attitude would be greatly influenced by how well the training provided them with the information they needed to use the system with confidence and comfort. To accomplish this, a training program was developed according to the following guidelines:

1. A sufficient number of proctors should be provided for each class, to ensure each student can be monitored and helped so that none fall behind.
2. Instruction should be hands-on. This reinforces the information as it is received by students and enables the tutors to gauge student understanding.
3. Use the standard I.P.A.T. teaching formula to ensure maximum student understanding and retention. I.P.A.T. stands for Introduction, Presentation, Application, and Test. In the introduction phase, the topic is introduced and the student is shown why it is important to him/her. The material is then presented and the student actually applies that information. A test (verbal, written, or hands-on) is then given at the end. This format can be done for each section of training and to the training as a whole.
4. Instructors and tutors should be from the ranks of the users to provide the students with the maximum comfort level, to

ensure the greatest level of acceptance, and to establish a cadre of divisional personnel who can provide the first level of field support.

5. Do not include training on typing skills as research showed no correlation between typing ability and ability to use a laptop report-writing system. In addition, typing skills take more time to acquire than is available in the class.
6. Do not attempt to make computer experts of the students. This is not necessary for the student to learn how to use the ARS program.
7. Teach only the information the students need to use the system; do not teach all of the "bells and whistles" or alternative methods of performing one function. This just tends to confuse the student. The extra information can be learned more easily later, after the student is comfortable and competent on the system.
8. Instruction should be gauged to a student with no experience in using a computer to ensure that all students are able to keep up with the class.
9. The instructor should show the class what he is doing using a clearly visible large screen monitor so everyone can follow along.
10. Schedule classes on the students' watches so they will be as alert as possible.
11. Class size should be kept to a minimum, 15 or less, so all students can get as much individual attention as possible.

12. Provide supervisors and officers the same class, but hold supervisors over for instruction on functions relevant only to them.
13. Provide the students with a field manual containing information not accessible in the computer help system. This should be distributed at the end of class to avoid any distractions.
14. Due to operational requirements, the class should be no longer than eight hours for officers and nine hours for supervisors.
15. All Hollywood Patrol Division personnel below the rank of Captain must receive training.

A two-day course of instruction was developed for and presented to the six-person Hollywood training cadre four weeks prior to the beginning of implementation. The initial intent was to provide them with all of the knowledge they needed to train and answer questions from the Hollywood user group. This was done by presenting the information on a segment of the ARS program, then allowing the cadre members to demonstrate that knowledge through a prepared application. It quickly became apparent that too much information was being presented to allow for total assimilation. In order to improve the student retention rate, the course was altered so that information was applied as it was presented and the amount of information being taught was reduced. The cadre members were then given full outlines of all ARS functions available on the laptop computer were assigned a laptop computer to familiarize them with the ARS program.

The training of the users was done in classes at the LAPD Academy (See Appendix D for materials developed for and used in this training.) Four classes, each containing approximately 15 officers, were conducted during normal work hours for the respective watches. A 27-inch monitor was set up at the front of the class, attached to an IBM AT, and laptop computers were set up at each student's desk. A large cardboard mock-up of the laptop computer keyboard was also available for reference at the front of the class. Three to four training cadre personnel were assigned to each class; teaching and proctoring duties rotated among them throughout the eight-hour class. The ARS program was taught by having the class complete an imaginary crime report together. Students entered information, as instructed, as they learned how each section worked. The instructor input the report information on the IBM AT, visible to the students on the large screen monitor, at the same time the students entered it on their laptops. During the last 1 1/2-hours of the day, after the instruction was done, the students paired up. One acted as a victim while the other wrote a full crime report on the laptop; they then reversed roles. Before leaving, each student was given his/her own copy of the field manual for reference.

SYSTEM SUPPORT

Support for the ARS Pilot Project went into effect as soon as the system was installed and became operative at Hollywood Patrol Division.

Initial Support

Users tend to be most critical of a new system when they first start to use it. Recognizing this phenomenon, the ARS Task Force maintained one of its members on site for a period of ten days following the introduction of the ARS program to each watch. This individual's duties were to ensure that the hardware and software were properly utilized and to answer any questions regarding the operation of the system.

Continuing Support

Throughout the pilot project, members of the ARS Task Force provided support 24 hours-per-day, 7 days-per-week. In order to provide an adequate level of support coverage, the following procedures were adopted:

1. ARS Task Force members were assigned to on-call duty for one-week periods.
2. A beeper was rotated weekly to ensure that the duty person would be available at all times.
3. A call-out sheet was compiled and given to Hollywood personnel listing the task force members' names, beeper and home telephone numbers, and the on-call duty schedule.

Programming support throughout this period was provided by members of the ARS Task Force and the software developer. Members of the task force developed utilities to automate some of the system's repetitive tasks and worked on isolating problems (debugging) in the software. Most of these problems were reported by the Hollywood personnel in their daily use of the system. Once isolated, the problems were discussed with the software developer, who made the necessary corrections.

<u>Trouble Calls</u>

The majority of trouble calls received by the ARS Task Force dealt with the proper use of the ARS software. In order to minimize the amount of time required to respond to these questions, a reference guide was prepared by members of the ARS Task Force team in which answers to the majority of this type of question could be found. As users would call with questions on the use of the software, they were given instructions and asked to reference the appropriate section(s) of the reference guide.

Trouble calls of an emergency nature were handled on a case-by-case basis. Occasionally, a trouble call would require that the assigned support member drive to the station in order to resolve the problem. More often, however, the trouble call was resolved telephonically by instructing the originator of the proper steps to take. Emergency trouble calls ranged from a lost report on a laptop computer to a full system failure.

System Maintenance

The ongoing maintenance of the ARS included support of both the data files and equipment.

Data support involved performing those functions needed to maintain the software files and directories, but which were beyond the capabilities of the users. Data support for the ARS can best be described by citing two examples. First was the need for support personnel to periodically remove archived PIRs from the network. This was done in order to prevent the data from being lost in the event of a network failure. Second was the need for support personnel to modify the officers' network password file each deployment period. (This password file allows the officers to log onto the station system.)

Equipment maintenance was an ongoing task for both the field and station systems. On the field system, the support performed by task force personnel included the recovery of PIRs, reformatting available memory, and reloading the ARS software onto the laptop computers whenever the laptop would halt operation of the software (see the Problems section for a full discussion). Equipment that required service that could not be performed by the task force, due to laptop damage or failure, was delivered to an authorized Toshiba repair shop.

On the station system, equipment support primarily involved periodic replacement of laser printer cartridges and the troubleshooting of defective network cables and plugs.

Training Support

The Hollywood training cadre consisted of a small, selected group of officers who were chosen by the ARS Task Force to train the rest of the division on the use the system. The close proximity that these individuals shared with their peers made them ideal candidates to provide day-to-day on-site training support to the rest of the division.

Following the initial training provided to the training cadre, continued support was provided to these individuals. This support involved (1) additional training on the use of the software, as needed; (2) technical help with relocating and installing computer equipment used to provide officer training, such as a large screen monitor; (3) supplying any additional training materials; and (4) intermittent monitoring of classes to ensure all necessary information was being properly covered.

FINAL SYSTEM DESIGN

This section documents the functionality of the ARS along with the hardware and software components for both the station and field systems. Other related topics are also discussed in this section.

Primary Functions Overview

Preliminary Investigation Report (PIR) data may be captured at two locations: (1) the field system, and (2) the station system. The primary functions overview, below, provides a description of the main processes of the ARS software in both these environments. The number of each item below is a reference to a corresponding number on the system flowchart (Figure 8).

1. The logon process is available on both the station and field systems. On the station system (network), only the officer's serial number and password are needed to gain access to the program. On the field system (laptops), an officer must supply more complete information, including a unit designation, serial number, name, and password (Figure 9). After logon, the main screen shows all reports currently on the system that pertain to just the officer(s) logged-on and a menu of options (Figure 10). A supervisor can view all reports on the system, not just his/her own.

Figure 8
Los Angeles Police Department
Automated Reporting System

Primary Functions Overview

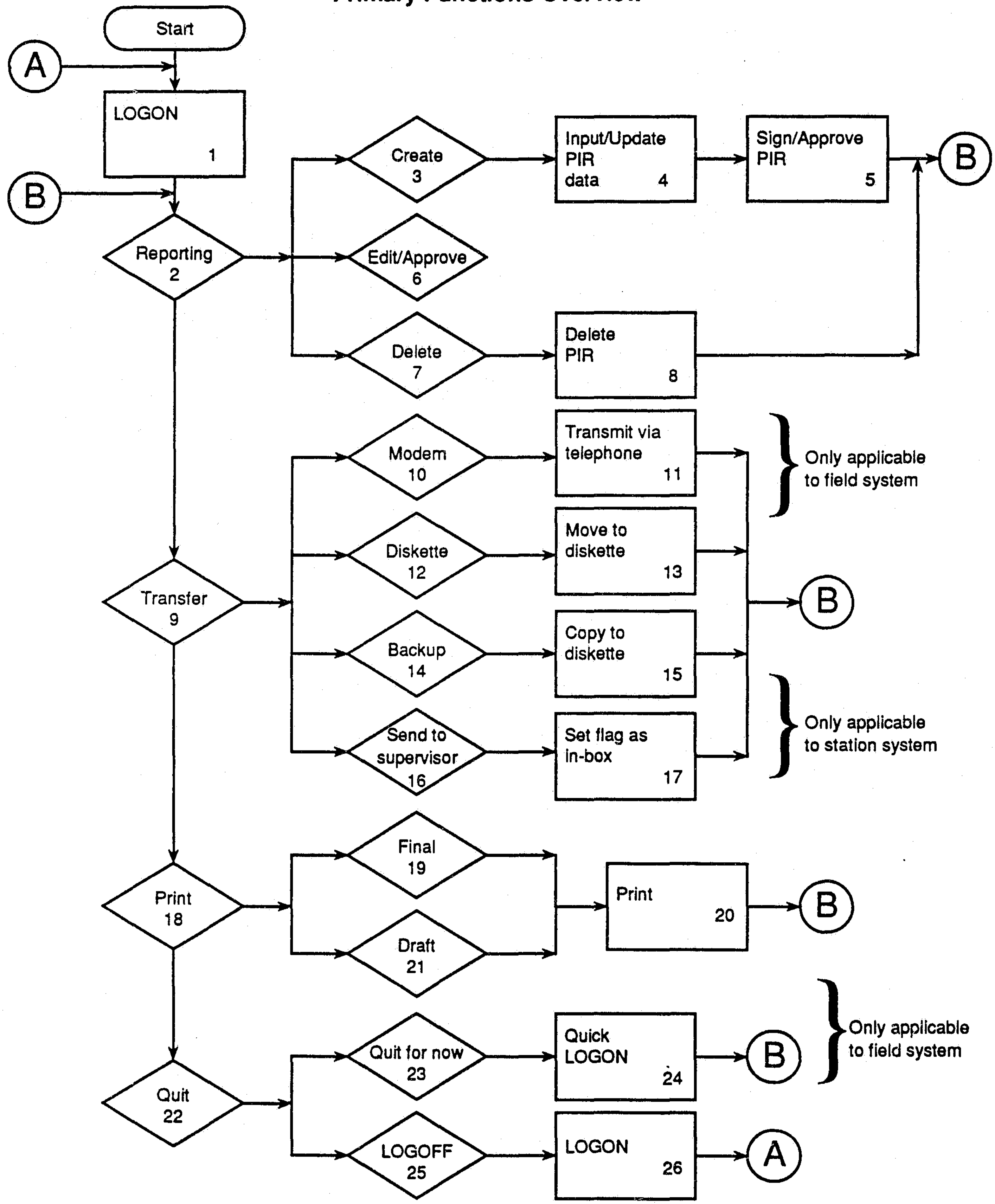


FIGURE 9

```
                      WELCOME TO THE
              LAPD  AUTOMATED  REPORTING  SYSTEM

 Date      04/06/90                 Division  ............................
 Time      07:16                    Unit      .......

             Reporting Officer 1              Reporting Officer 2

 SN:         .....                            .....
 LName:      ............................     ............................
 FI,MI:      . .                              . .

 Rank        ..........                       ..........

 Passwd:     ....................             ....................
 Again:      ....................             ....................

 Notes:    At least 1 Reporting Officer is required.  SN's require 5 chars
           Use F12 or Cntrl-Enter to Accept Info & leave form.
```

FIGURE 10

```
Reporting functions (Create, Edit, Delete, Connect)
  Reporting        Transferring        Print        Supervisor        Quit
== PIR STATUS ======================================== Room for 1823.5 PIRs ==
Report       Crime 1                      Victim 1                 Rpt Ofcr     Status
 04545       ROBBERY                      ANDERSON                 SMITH    Incomplete
 04544       ADW                          JONES                    SMITH    Incomplete
 04542       BURGLARY                     CITY OF LOS ANGELES      SMITH        Signed

LAPD ARS Ver 3.10       3 PIRs        •    Use , F1 Help  AltF12 FastQuit6
```

2. The reporting option on the main screen provides access to a menu containing create, edit/approve, and delete options (see Figure 11).

FIGURE 11

```
Begin a new report
 Reporting         Transferring        Print         Supervisor           Quit
=  Create PIR          ================= Room for 1823.5 PIRs ====
R  Edit/Approve PIR                Victim 1          Rpt Ofcr      Status
-  Delete PIR
                                   ANDERSON          SMITH     Incomplete
 04544       ADW                   JONES             SMITH     Incomplete
 04542       BURGLARY              CITY OF LOS ANGELES SMITH       Signed

LAPD ARS Ver 3.10      3 PIRs          •   Use , F1 Help  AltF12 FastQuit6
```

3. The create option, available from the reporting menu, is selected when an officer wishes to begin work on a new PIR.

4. The input/update of PIR data refers to the initial data entry as well as the revision of PIR data. Refer to the Additional System Functionality section and Appendix E, System Software Functionality, for more details on this process.

5. The assignment of electronic signatures to a PIR is accomplished by re-entering the password used when the user logged on. An officer will normally sign a PIR prior to forwarding it to his/her supervisor for approval. The supervisor will approve the report by entering his/her supervisor password.

6. The edit/approve process, available from the reporting menu, is used when an officer wants to gain access to an existing PIR or when a supervisor wants to review a report. The approval process is normally performed on the station system.

7. When an officer wants to discard a PIR, he/she must select Delete from the reporting options menu.

8. The delete process will erase an existing PIR from either the field or station systems. Approved PIRs cannot be deleted.

9. Transfer options are available from the main menu (see Figure 12). These can be categorized as applicable only to the field or station systems.

FIGURE 12

```
Selectively mark some PIRs to transmit
 Reporting           Transferring        Print          Supervisor        Quit
== PIR STATUS ===  Mark PIRs & Transfer          ====== Room for 1824.0 PIRs ===
Report     Crime 1 Download PIRs to diskette               Rpt Ofcr      Status
                   Upload PIRs from diskette
 04544     ADW     Offload PIR Backups                     SMITH     Incomplete
 04542     BURGLAR Send to Supervisor        OS ANGELES    SMITH         Signed
 04545     ROBBERY Kickback to Officer                     SMITH     Incomplete

LAPD ARS Ver 3.10      3 PIRs          •   Use , F1 Help  AltF12 FastQuit8
```

10. The modem transfer process is only applicable to the field system. The user will select this choice when he/she wishes to telephonically transmit data from one or more PIRs to the station system.

11. The telephonic transmittal of PIR data to the station system is accomplished once PIRs have been compressed and encrypted on the laptop.

12. When a user decides to transfer PIR data via diskette from the field to the station system, he/she will select this menu choice.

13. The process of transferring PIR data from the field to the station system involves the compression of selected PIRs and the relocation of the data to a diskette media. As a safety feature, prior to moving a PIR to diskette, a backup PIR is first copied to a separate location in the laptop's memory.

14. By selecting the backup option, a user can retrieve the backup PIR data from the laptop's memory. An officer will need to do this whenever data copied to diskette has become damaged and therefore becomes irretrievable.

15. The backup PIR is copied to diskette. It is deleted from the laptop's memory when a new officer logs onto the laptop computer.

16. In order to notify a supervisor that a PIR is available for his/her review, the user must select "Send to Supervisor" from the transfer options. Send to supervisor is only available on the station system.

17. PIRs created or edited on the station system and sent to supervisor will have a status flag of IN-BOX set on them (Figure 13). PIRs sent to the station system via diskette or modem are automatically assigned a status flag of IN-BOX. This visually alerts the supervisor of the need for required attention.

FIGURE 13

```
Reporting functions (Create, Edit, Delete, Connect)
 Reporting        Transferring        Print        Supervisor        Quit
== PIR STATUS ================================ Room for 1823.5 PIRs ==
Report      Crime 1                     Victim 1              Rpt Ofcr     Status
 04542      BURGLARY                    CITY OF LOS ANGELES   SMITH        INBOX/ Sup

LAPD ARS Ver 3.10      1 PIR          •   Use , F1 Help  AltF12 FastQuit6
```

18. The printing of PIRs is a process normally done at the station system. However, in the event of a system failure, PIRs can be printed directly from the laptop. The print menu choice leads the user to the available print options (Figure 14).

FIGURE 14

```
Print a PIR, Final File Copy
 Reporting          Transferring         Print            Supervisor          Quit
══ PIR STATUS ════════════════════════  Print Final PIR          r 1823.5 PIRs ══
Report        Crime 1                   Print Draft Copy         t Ofcr       Status
                                        Print Field Notes
 04542        BURGLARY                  Print General Notes      ITH     INBOX/ Sup
 04544        ADW                       Printer Setup            ITH     Incomplete
 04545        ROBBERY                                            ITH     Incomplete






LAPD ARS Ver 3.10        3 PIRs              •   Use , F1 Help  AltF12 FastQuit6
```

19. Printing final is only allowed on approved PIRs. (See Appendix F for an example of an ARS generated report.) Printing final more than once will cause the word DUPLICATE to appear on the printed PIR output. More than one PIR can be printed at a time. Once a PIR is printed final, the electronic copy is compressed and flagged as archived.

20. The print process will send a formatted output copy of the PIR to the printer.

21. Any PIR can be printed as a draft; there are no special criteria that a PIR need satisfy before draft printing. Printing a draft will cause the word DRAFT to appear as part of the printed PIR output.

22. The quit options are available from the main screen. Their functions are to terminate ARS processing.

23. The "Quit for Now" option is only applicable to the field system. By using this option, an officer does not need to complete a full logon each time he/she logs off the laptop. ARS processing is merely suspended, and a user will only need to reenter his/her password to regain use of the program.

24. The quick logon feature checks for the original password. If properly supplied, it allows the officer to regain use of ARS processing in the laptop (see Figure 15).

FIGURE 15

```
Resuming Automated Reporting System... (03/13/91)
Laptop ID# 600  (Ofcr SN 12345)

Enter your Signature Password:
```

25. The logoff option is available on both the field and station systems to terminate ARS processing.

26. The logoff process terminates ARS processing. An officer using a laptop will need to do this at the end of his/her watch assignment; doing so readies the laptop for future use by another officer. On the field system, an officer is not allowed to logoff with PIRs remaining on the laptop.

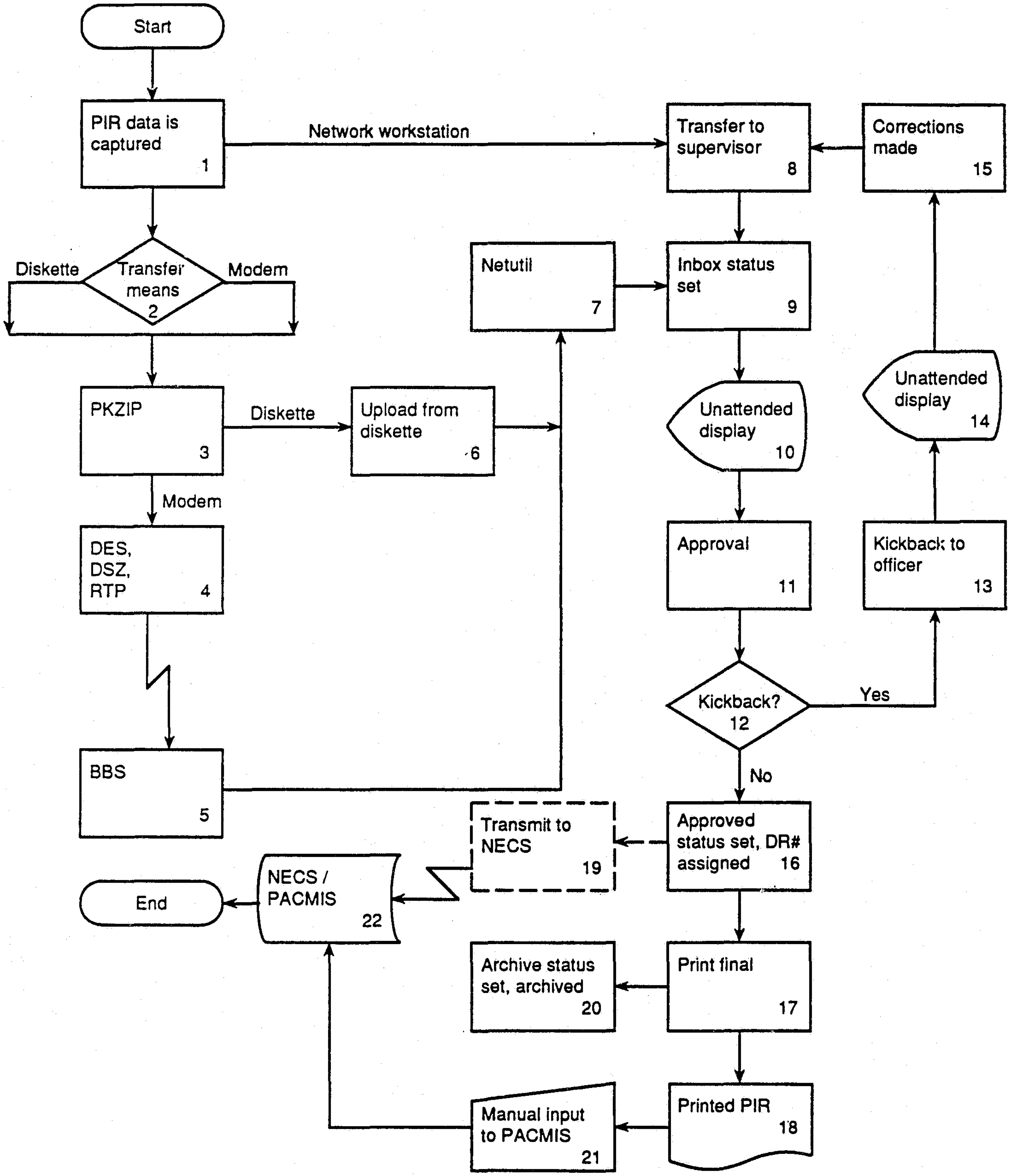
Data Flowchart

The ARS Data Flowchart (Figure 16) describes the logical flow of a PIR through the Automated Reporting System. The numbered descriptions refer to corresponding numbers on the flowchart.

1. PIR data is captured in the field with the use of a laptop computer (refer to the Primary Functions Overview section for more details on this process) or is entered directly into the station system using one of the network workstations, usually by the telephonic report writing officer.
2. Data from a laptop can be transferred either by modem or diskette to the station system.
3. Regardless of the method used to transfer the data from the laptop, PIRs are compressed with the use of PKZIP to ready them for transmission. By compressing a PIR, valuable time is saved during transmission.
4. PIRs selected for transmission via modem are encrypted with the use of DES and transmitted to the Bulletin Board System with the use of DSZ and RTP.
5. The Bulletin Board System receives PIRs sent to it via telephone and places these compressed and encrypted files directly onto the network.
6. PIRs transferred by diskette are loaded still compressed and encrypted, directly to the network using one of the station system's workstations.

Figure 16
Los Angeles Police Department
Automated Reporting System

Data Flow Chart



7. Netutil continually checks the ARS file server and uncompresses and unencrypts PIRs, thus allowing ARS to process them. This program runs on a dedicated computer (an IBM AT) attached to the network.
8. Transfer to supervisor refers to the process by which a PIR, written or edited on the network, is made available for supervisorial review (IN-BOX).
9. All PIRs must have their status flags set as IN-BOX in order to notify the supervisor that they are available for approval. As a supervisor logs onto the ARS, he/she sees all IN-BOX PIRs by default.
10. Unattended display refers to the functionality which displays on all unused station system's workstations all PIRs in use or needing action. As PIRs are sent to the network, from a laptop or another workstation, their status is displayed automatically. Screens on all network workstations are automatically refreshed every thirty seconds.
11. The approval process involves the steps that a supervisor goes through to approve a PIR. Normally this involves reviewing each screen of a PIR for correctness.
12. A supervisor makes the basic decision of whether or not to approve a particular PIR.
13. If a supervisor decides to kickback a PIR, he/she changes the status flag of the PIR from IN-BOX to KICKBACK and may enter some general notes to notify the reporting officer of the corrections needed.
14. An officer can view the unattended display of a workstation to determine if any reports have been kicked back to him/her.

15. Once an officer determines if any kickback reports pertain to him/her, the officer logs onto the ARS and makes the necessary corrections as directed by the supervisor in the PIR's general notes. The officer is then responsible for letting the supervisor know that these PIRs are once again ready for approval by transferring them back to the supervisor. This changes the status flag back to IN-BOX.

16. If a supervisor approves a PIR (by the use of his/her password), the status flag for that PIR is changed to APPROVED and a permanent report number, called a Division of Records number (DR #), is automatically assigned to the PIR based on the location where the crime occurred. PIRs cannot be changed or deleted once they are approved.

17. Print final is then selected only on those PIRs which have been approved (see Appendix F for exemplar of an ARS report). Selecting to print final on a PIR which has already been printed final will cause the word DUPLICATE to appear on the printed copy.

18. Printed PIRs are processed according to normal department policies.

19. The automatic transmission of PIRs, without operator intervention, is currently not being performed due to changes required by the LAPD crime and arrest database system (NECS/PACMIS) to receive the PIR data. However, this issue was addressed in the pilot project with the use of a High Level Language Program Interface (HLLPI). Through the use of preformatted screens which emulate a data entry operator's

keystrokes, PIR data can be sent to the mainframe applications.

20. Report files, which together comprise the PIR, are archived on the network by the use of PKZIP (which compresses the files). The files are then set with a status flag of ARCHIVE for future reference and/or audits.

21. The process of updating the LAPD crime and arrest database using the printed PIR is a manual one at this point, normally accomplished by a record clerk.

22. PIR data becomes a part of the LAPD crime and arrest database.

Additional System Functionality

The ARS offers a wide range of functionalities which cannot be neatly categorized, yet their importance is such that they were included as part of the system documentation.

On-line Help

On-line instructions on the use of the ARS are offered throughout the program. By pressing a predefined key, an officer will be presented with a screen which provides him/her with appropriate information (see Figure 17 for sample help window). The help given can pertain to a field on the screen or to the entire screen being displayed.

Pressing the help key twice will display an index screen where the user can select the topic that he/she wishes to view (Figure 18). Another type of on-line help information is a one-line

FIGURE 17

```
LAPD/ARS 3.10   Form: PIR    Ofcr   12345                Tue Mar 12, 1991  14:08:07
                                                          Report Number 04542
======== CRIME INFORMATION =================================================
                               ========== ENTRY POINT ==========
  Point of Entry (POE) into a structure or vehicle.  Required for:

    * BURGLARY

    * BURGLARY, ATTEMPTED                                                      0

    * BURGLARY FROM MOTOR VEHICLE

    * BURGLARY FROM MOTOR VEHICLE, ATTEMPTED

  Optional for other crimes where a point of entry is applicable.

» Point of entry;  Press <F2> for picklist
 F1-Help  F5-Summary  F8-FldNote  F9-GenNote  F10-Action  AltF12-RapidSave   OVR
```

FIGURE 18

```
LAPD/ARS 3.10   Form: PIR    Ofcr   12345                Tue Mar 12, 1991  14:09:33
                                                          Report Number 04542
======== CRIME INFORMATION =================================================
                                  ========== Topics ==========
  KEYS                                       Notif/Dead Body
  Movement commands                          Notif/Deadly Weapon
  Exit commands                              Notif/Espionage
  GENERAL REPORTING                          Notif/Extortion
  Abbr Use & Rules                           Notif/Hijack                      0
  Abbr-Areas/Divisions                       Notif/Imm. Invest.
  Abbr-Bureaus                               Notif/Intelligence
  Abbr-Offices                               NOTIFICATIONS
  AIRCRAFT,CHECKS,BOATS                      OCCURRENCE DATES/TIMES
  ANALYZED EVIDENCE CLASSES                  OFFICE EQUIPMENT
  Automatic Entry                            OUTSIDE AGENCIES
  Body/Window Features                       PACKAGING AMMUNITION
  BOOKING EVIDENCE                           PACKAGING ANALYZED EVIDENCE
  BOOKING EXPLOSIVE SUBSTANCE                PACKAGING PROPERTY
  BOOKING FIREARMS                           PACKAGING VOLATILE FUELS
  BOOKING MONEY.                             PHOTOS
  BOOKING OF LICENSE PLATES                  Phys. Descriptor Narrative
  Burglary                                   Physical Descriptors
                                                               for more
» Point of entry;  Press <F2> for picklist
 F1-Help  F5-Summary  F8-FldNote  F9-GenNote  F10-Action  AltF12-RapidSave   OVR
```

descriptor at the bottom of the screen which briefly tells the user whatinformation should be entered and what type of data entry is required in a particular field.

Data Entry Methods

The ARS provides a variety of methods to allow the user to enter data, including text fields, picklists, and scrolling fields (see Figure 19 for an example of a data entry screen). Probably the most common of these methods is the picklist (see Figure 20). A picklist is a pop-up window that provides the user with a series of choices. Pick-lists are convenient since it is normally easier for a user to recognize an entry than it is to recollect it from memory. An additional functionality provided by picklists is their ability to translate the data into LAPD crime and arrest database codes in a manner that is transparent to the user.

FIGURE 19

```
LAPD/ARS 3.10  Form: PIR   Ofcr  12345               Wed Mar 13, 1991  09:41:24
                                                       Report Number 04544
======== VICTIM INFORMATION =================== Victim No. 1 ================
 Last Name: JONES··································    Business? N
 1st & mid: JOHN····················  M·····················    ···
 Sex: ·  Descent: ······················    DOB: ··/··/····    Age:  ···
 Res Addr: ·······  ·································    ··     #·····
     City: ··································    State: CA     Zip: ·····
     Ph:   ···/·······  x·····   Days? N        Country: USA················
 Bus Name: ······································
 Bus Addr: ·······  ·································    ··     #·····
     City: ··································    State: CA     Zip: ·····
     Ph:   ···/·······  x·····   Days? N        Country: USA················

 DL/Other:    ····························     State:   CA
 Language:    ··························
 Occupation:  ·····································
 ·  Victim's Vehicle(s) Information Window
    Vehicle Info Summary: ······································
 N   Indemnification Given?           |Person:    Victim·····················
                                      |Location:  Scene of Crime·············
                                      |Date:       3/12/1991
  DR Number:  ·········               |Time:      14:44
» Enter any suffix victim may have (eg, Jr., Sr., III etc)
 F1-Help  F5-Summary  F8-FldNote  F9-GenNote  F10-Action  AltF12-RapidSave   OVR
```

descriptor at the bottom of the screen which briefly tells the user whatinformation should be entered and what type of data entry is required in a particular field.

Data Entry Methods

The ARS provides a variety of methods to allow the user to enter data, including text fields, picklists, and scrolling fields (see Figure 19 for an example of a data entry screen). Probably the most common of these methods is the picklist (see Figure 20). A picklist is a pop-up window that provides the user with a series of choices. Pick-lists are convenient since it is normally easier for a user to recognize an entry than it is to recollect it from memory. An additional functionality provided by picklists is their ability to translate the data into LAPD crime and arrest database codes in a manner that is transparent to the user.

FIGURE 19

```
LAPD/ARS 3.10  Form: PIR   Ofcr  12345                Wed Mar 13, 1991  09:41:24
                                                        Report Number 04544
======== VICTIM INFORMATION ================== Victim No. 1 ==============
 Last Name: JONES·····························             Business? N
 1st & mid: JOHN··················  M··················        ···
 Sex: ·  Descent: ···················   DOB: ··/··/····    Age:  ···
 Res Addr: ·······  ·································      ··    #·····
     City: ·································       State: CA     Zip: ·····
     Ph:   ···/···-····  x····   Days? N      Country: USA················
 Bus Name: ··································
 Bus Addr: ·······  ·································      ··    #·····
     City: ·································       State: CA     Zip: ·····
     Ph:   ···/···-····  x····   Days? N      Country: USA················

 DL/Other:      ···························       State:    CA
 Language:      ···························
 Occupation:    ·································
 · Victim's Vehicle(s) Information Window
   Vehicle Info Summary: ·······································
 N  Indemnification Given?           |Person:    Victim·····················
                                     |Location:  Scene of Crime·············
                                     |Date:       3/12/1991
  DR Number:  ···-······             |Time:      14:44
» Enter any suffix victim may have (eg, Jr., Sr., III etc)
 F1-Help  F5-Summary  F8-FldNote  F9-GenNote  F10-Action  AltF12-RapidSave   OVR
```

FIGURE 20

```
LAPD/ARS 3.10  Form: PIR   Ofcr  12345                 Mon Mar 11, 1991  14:02:35
                                                        Report Number 04541
======== CRIME INFORMATION ============================================
 Crime1:      ..............................................
 Cri ============= Assault/Battery/Homicide Crimes =============
 Cri |ADW                                                          |
 Cri |ADW AGAINST PO                                               |
     |BATTERY-FELONY                                               |
 Loc |BATTERY-MISDEMEANOR                                          |  06
 Dat |BATTERY ON FIREMAN - FELONY                                  |
 Dat |BATTERY ON PO - FELONY                                       |
     |MAYHEM                                                       |
 Pre |MURDER-ATTEMPTED                                             |
 Ent |MURDER                                                       |
 Exi |MANSLAUGHTER, NEGLIGENCE                                     |
 Ent |SPOUSAL BEATING/WIFE BEATING                                 |
 Ins ===============================================================

 Invest. Div:      06 HOLLYWOOD..................

 DR Number:        ..........

» Primary Crime. Press <F2> for PICKLIST
 F1-Help  F5-Summary  F8-FldNote  F9-GenNote  F10-Action  AltF12-RapidSave   OVR
```

There are two basic types of picklists: mandatory and non-mandatory. Mandatory picklists involve fields where the only method by which data can be entered is through the use of a picklist. This type of picklist is called-up by pressing any key.

Non-mandatory picklists involve fields where the user can enter data without the need to invoke a picklist. However, if the entry is invalid, the picklist will appear and the user will need to select the correct entry from the picklist. This type of picklist provides a valuable data validation technique.

Another unique method used to enter data is through the use of scrolling text fields. A scrolling text field is one in which the length of the field on the screen does not appear to be large enough to hold all the required text. However, as data is entered, the field will scroll to the left, thereby allowing the user to continue entering data up to the maximum length of the field.

Certain screens have pop-up windows that can only be accessed by telling the application that the user wishes to visit that window. An example of this is the crime location window (Figure 21). The user must enter "Y" in the location field, as directed by the help line at the bottom of the screen. Once this is done, a window appears in which the user enters the crime location. Data entered on this screen is automatically copied, if applicable, to the victim's residence or business address sections.

FIGURE 21

```
LAPD/ARS 3.10  Form: PIR   Ofcr  12345             Mon Mar 11, 1991  14:00:00
                                                       Report Number 04541
======= CRIME INFORMATION ====================================================
 Crime1:      ..................................................
 Cri ========================= Crime Location ===========================
 Cri | N Same as Victim's Residence?                                  |
 Cri | N Same as Victim's Business?                                   |
     |                                                                |
 Loc | Number    Dir Street Name                         Type Apt     |  06
 Dat | ........  .   ................................... ..   .....   |
 Dat |           .   ................................... ..           |
     | Quadrant:     ..                                               |
 Pre | City:        ......................................            |
 Ent | State:       CA          Zip:  .....                           |
 Exi | Country:     USA.................                              |
 Ent |                                                                |
 Ins ==================================================================

 Invest. Div:       06 HOLLYWOOD..................

 DR Number:         ..........

» Location of occurrence same as Victim's residence address? "Y" or "N"
 F1-Help  F5-Summary  F8-FldNote  F9-GenNote  F10-Action  AltF12-RapidSave   OVR
```

Field and General Notes

It is sometimes desirable for a user to attach additional information to a particular field. This is done in order to notify the supervisor of any additional information that pertains to the field. A special character will appear on the screen next to the field where the note has been recorded to indicate the note's presence.

General notes are similar to field notes except that they pertain to and can be accessed anywhere in the PIR. A supervisor normally uses general notes to notify an officer of the reason(s) he/she refused to approve the report. An officer can also use the general note to pass information to the supervisor.

Both general and field notes are deleted once a PIR has been approved. This is done since both general and field notes are the electronic equivalent of notes that might be attached to a paper report.

Auto Entry/Auto Review

The ARS offers certain "short cuts" which can reduce the amount of time and effort that officers and supervisors use to input or approve PIRs.

Auto entry allows an officer to select only those screens which he/she knows will require data input. After preselecting the screens to be used, the system automatically presents each of those screens to the officer for data input. This can significantly reduce the time required for data input.

Auto review is a method which can be used by supervisors to shorten the time required to approve a PIR. After selecting auto review, all screens and windows are sequentially displayed. Once a supervisor completes a review of a screen, he/she presses a key and the program automatically displays the next screen. Report information can be added or modified in this mode.

Copy Functions

The ARS provides the ability to copy PIR data from one place to another. An example is the need to copy the victim's residence information to the suspect's residence fields. The ARS also allows the user to copy items of the same type such as property items, suspect information, vehicle descriptions, and evidence items.

A PIR's narrative often contains more data than any other section. Narratives in two PIRs may hold many details in common, such as multiple business burglaries at a strip mall. In order to minimize the time required to enter similar narrative data from one PIR to another, a copy function was designed which allows an officer to copy the text from one PIR's narrative into another. An officer can then make any required changes to the text. This function offers the potential for considerable time savings.

Confirmation Windows

To prevent accidental data loss, certain functions in the program will pop-up a window asking the user to verify his/her intent to continue with the operation. Any time a user decides to exit a screen without first saving its contents, a confirmation window will pop-up, prompting the user for a response prior to exit. Examples of this are the delete and cancel PIR functions.

Summary Windows

As a user enters data into the various screens, it is desirable at times to quickly view information which has been entered up to that point. On a handwritten PIR, the user can visually scan the report and note information about other portions of the PIR.

The ARS offers a function which can quickly tell the user what individuals and vehicles have been recorded thus far. For example, if an officer is entering information in a narrative, he/she might need to recall suspect descriptions. Pressing a predefined key will pop-up a window anywhere in the program which summarizes that information.

Enforcing the Rules

There are many report writing rules that can be enforced through the use of computers. The ARS enforces many of these rules by reminding the user of errors or omissions at the time that an officer attempts to electronically sign a PIR (see Figure 22). An added feature is the ability for the user to go directly to the

FIGURE 22

```
LAPD/ARS 3.10  Form: PIR   Ofcr  12345                  Wed Mar 13, 1991  09:35:02
                                                        Report Number 04544
 PIF ---------- PIR Entry Anamolies, Omissions or Other Errors ------------  364
    Crime Info: Premises is REQUIRED for an ADW Crime
  C MO: At least one M.O. is REQUIRED. You have none.
  V Crime Info: RD (Reporting District) number is NOT VALID
  S Crime Info: Address fields not properly filled in
  T Crime Info: The Time of Crime Occurrence is REQUIRED
  I Misc/Notif:  Yes/No Fields MUST have a positive entry
  P Misc/Notif:  You MUST explain why you didn't take prints
  M Victim 1: A Victim's FIRST Name is REQUIRED
  E Victim 1: The Victim's SEX is REQUIRED
  N Victim 1: Victim's Age OR DOB is REQUIRED
    Victim 1: Victim's Residence Street Name is REQUIRED
  A Narrative MUSTN'T be empty!
                               -
  1- Signature        -  (not yet signed)
  2- Approval         -  (not yet approved)

  X- CANCEL REPORT
  Y- AUTO REVIEW                                             NO Gen Notes
  Z- AUTO ENTRY
 or letter
F1-Help  F5-Summary  F8-FldNote  F9-GenNote  F10-Action  AltF12-RapidSave   INS
```

location of the error or omission. After it is corrected, the system returns to the list of errors or omissions and the user can select the next one to be fixed. The user can also elect to ignore these warnings since a strict enforcement of these rules would prove extremely inflexible.

Similarly, at the end of the approval process, the supervisor is notified of any errors or omissions left on the report. The supervisor may correct the report or withhold approval until such corrections are made.

Forgetting a Password

The ARS provides the supervisor with the ability to generate a unique password. This unique password allows officers to gain access to their laptops if they forgot their personal password or sign on with an incorrect password. Once an officer provides his/her serial number and laptop identification number, the supervisor generates a unique password that will work only for that day for that laptop and for that officer. Once signed-on with this unique password, the officer's personal password appears briefly on the screen to refresh the officer's memory. The supervisor never needs to know an officer's personal password.

Station System Hardware Components

Hardware components used by the pilot project in the station system are documented in Figure 23. A description of each follows.

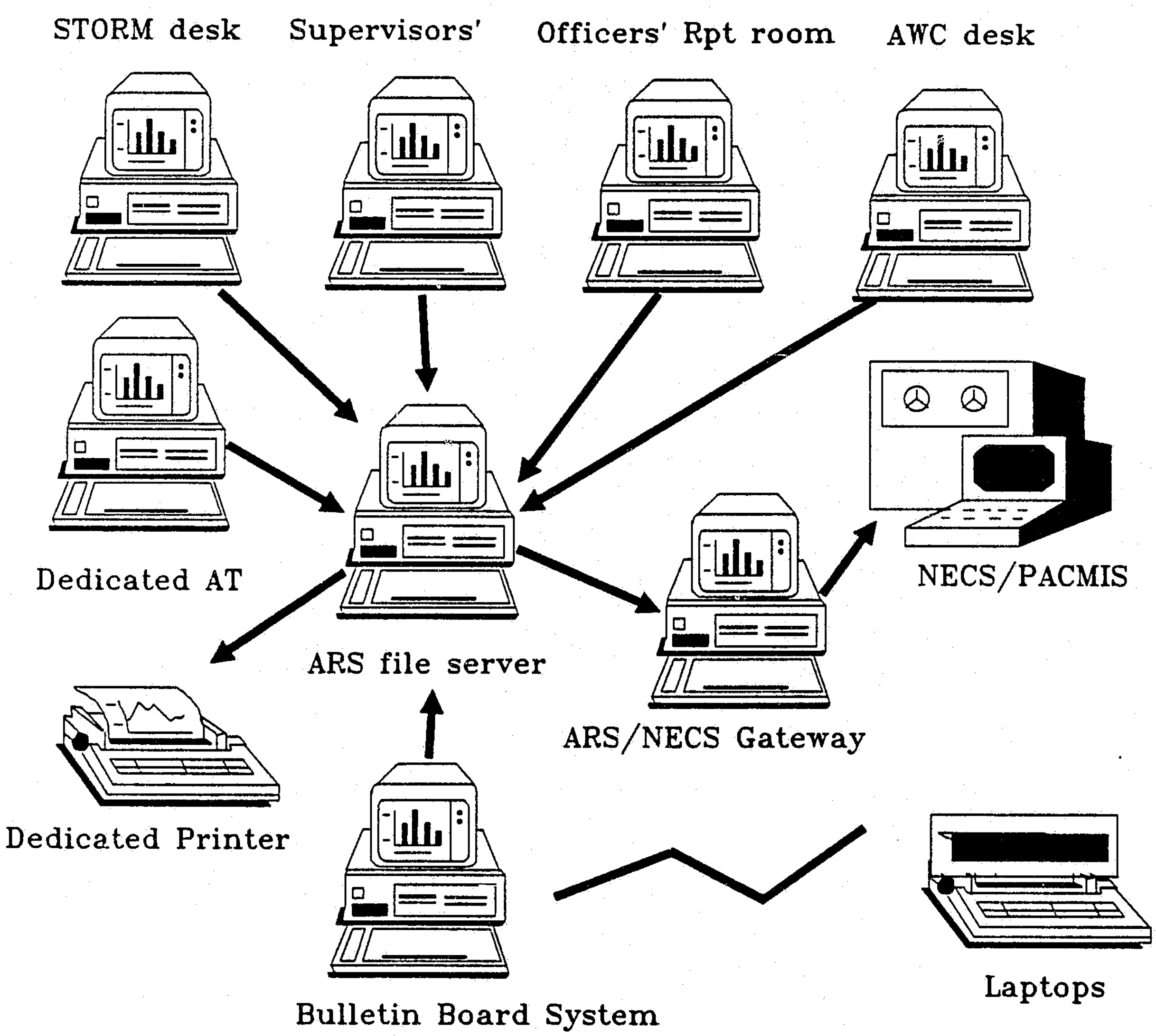
ARS File Server

This is a computer serving the basic function of electronically linking (networking) all other hardware peripherals, including other station computers, in order to provide resource sharing. Resources include data files and print capabilities. The file server is an IBM PS/2 model 80 running Novell Netware SFT (System Fault Tolerance) 286.

Two disk drives of 115 megabytes each are disk mirrored to help maintain data integrity from potential hardware failures.

Figure 23

Automated Reporting System Hardware Components



Six megabytes of RAM (Random Access Memory) are available on the server. LAN (Local Area Network) capabilities are made available through the use of IBM's token ring topology.

User Workstations

These are dedicated workstations on the station system. Their primary function is to run the ARS software. The workstations are normally used to write PIRs directly to the file server (such as the telephonic report writing, or STORM desk), to approve PIRs, and to upload PIRs from the laptops to the station system. Each is an IBM PS/2 model 70 with a minimum of four megabytes of expanded memory. This expanded memory is made available to the ARS application through Quarterdeck Expanded Memory Manager 386.

Dedicated AT

This is an IBM AT used to uncompress and unencrypt PIRs that have been sent to the file server for processing. Because this computer does not run the ARS software, it is not available to police officers or sergeants for use in writing or approving PIRs.

Bulletin Board System

The bulletin board system allows dial-in access from the field to accept electronically transmitted PIRs (via telephone) and make them available to the file server for processing. The bulletin board system runs on an IBM PS/2 model 50Z with three megabytes of RAM. It is dedicated to run Phil Becker's Bread Board System and contains an internal Micro Channel DigiBoard MC/8. This is connected to eight dedicated Hayes 2400 baud modems which are connected to eight telephone lines on a rotator.

An added feature of the bulletin board is its ability to schedule events such as the execution of programs at given time intervals, in order to perform file backups.

ARS/NECS Gateway

This computer is used to electronically transmit PIR data from the ARS file server to the City of Los Angeles Host Computer system. This is an IBM PS/2 model 50Z with an installed IBM 3270 adapter card. It normally runs Attachmate's Extra! software together with a customized HLLPI (High Level Language Programming Interface) module.

Dedicated Printer

This is a Hewlett Packard Laserjet Series II printer with one megabyte of internal storage and built-in print fonts. Its main function is to print the PIRs under the control of the ARS software.

Field System Hardware Components

The only hardware component used in the field system is the laptop computer. Thirty-four Toshiba T1000SE laptop computers were used; each with an internal one-megabyte RAM card, a built-in 2400 baud Hayes compatible modem, and a three and one-half inch floppy disk drive. Additional features include one megabyte of RAM on the mother board and one parallel and one serial port. The laptops' main function is to capture, store, and transmit PIRs.

All MS-DOS (Microsoft Disk Operating System) programs are part of ROM (Read Only Memory), freeing up the RAM to be used entirely for the ARS programs and data files. A removable, rechargeable nicad (nickel cadmium) battery provides the necessary power to the laptop and maintains all of the ARS programs, data files, and support files on the RAM card.

An additional rechargeable battery is located within the computer as a backup power source to the laptop. This maintains the volatile programs and data in the absence of the removable battery.

ARS Software Components

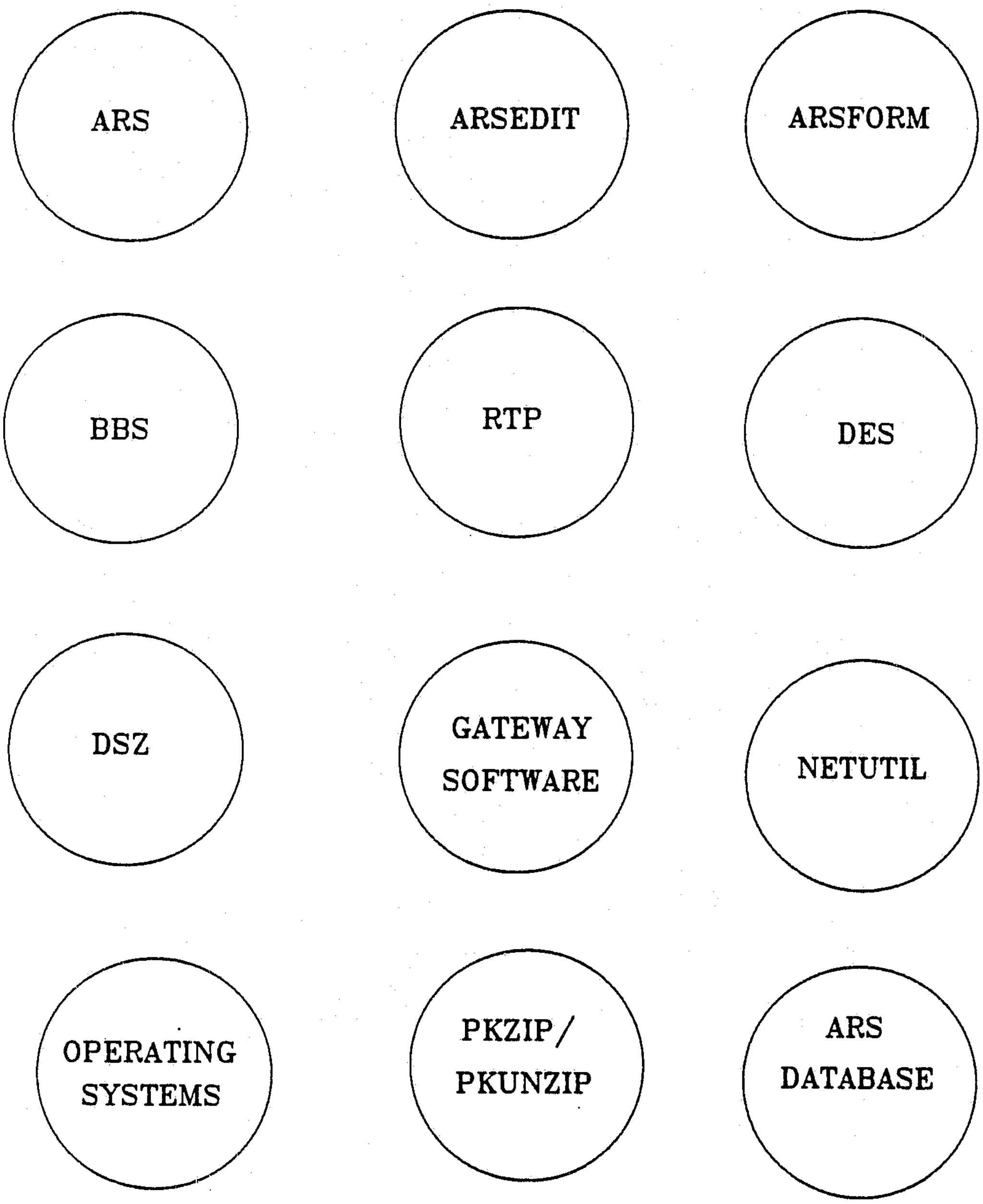
Software components for the Automated Reporting System are referred to in Figure 24.

ARS

The ARS is the main executable program used to create, edit, and approve PIRs. It is written using the 'C' programming language. The same version of the program is run on laptops and network computers. Because the laptops do not come equipped with a color monitor, a parameter is used at start-up time so that the program can run in monochrome mode. On the station system, the ARS

Figure 24

Automated Reporting System Software Components



software runs only on the network workstations; not on the file server.

ARSEDIT

The ARSEDIT is a Turbo Pascal program used to provide basic word processing features to the ARS software. It runs on both the field and station systems.

ARSFORM

ARSFORM is a Turbo Pascal program used to produce the paper output form of the PIRs. It also produces the interface files for transmittal to the City's Host Computer (CHC). ARSFORM runs on both the field and station systems.

BBS

The Bulletin Board System (BBS) is run on a dedicated computer attached to the network, and therefore only runs on the station system. This program is used for two basic functions:

1. To receive telephonically transmitted PIRs onto the network.
2. To conduct periodic backups on order to ensure the integrity of the data on the network in the event of a system failure.

RTP

The Remote Transfer Program (RTP) is used to provide the automatic dialing and modem settings used by the ARS application to telephonically transmit PIRs to the network from the laptops. It runs only on the field system.

DES

DES is a utility program popularly used in the data processing industry to encrypt and unencrypt data. Data are encrypted to prevent unauthorized viewing. Passwords are used with DES to restrict access to the encryption and unencryption processes. This program is used on both field and station systems.

DSZ

DSZ is another utility program used to provide the communications protocol for the telephonic transmittal of PIRs to the network system. DSZ provides the necessary error correction facilities to help safeguard the data against unforeseen problems with the communications media (telephone lines). This program is used on both field and station systems.

GATEWAY SOFTWARE

Gateway Software programs provide access to the LAPD crime and arrest database. They are comprised of Attachmate's Extra!, which provides 3270 terminal emulation, and a customized HLLPI software module, which emulates a data entry clerk's keystrokes. These programs run on a dedicated computer attached to the network.

NETUTIL

Netutil is a program designed to run on a dedicated computer attached to the network, and therefore runs only on the station system. Its main function is to call other programs to prepare a PIR for ARS processing.

Operating Systems

There are two operating environments in which the ARS operates: (1) MS-DOS (Microsoft Disk Operating System) and (2) Novell Netware.

MS-DOS is a popular operating system used for personal computers used on all of the station system's dedicated workstations and laptop computers. Novell Netware is a popular network operating system used on the station network. It allows personal computers to interface with each other and to share resources such as data files and printers.

PKZIP/PKUNZIP

Pkzip/Pkunzip are a set of utility programs used to compress and uncompress PIRs respectively. Compression is done prior to transmission to expedite the transmission process done either by diskette or modem.

ARS Datafiles

The ARS Datafiles are the backbone of the ARS, since all other ARS programs are designed to support the data. The Datafiles are comprised of a grouping of DOS files which interact with one another to make up a PIR.

Data Integrity

Station System

Data integrity refers to the process by which information on a computer system is kept safe. Data on a network is especially vulnerable to deliberate or accidental destruction. This section covers procedures used to prevent accidental data destruction. (Techniques used to prevent deliberate data destruction or alteration will be addressed in the data security section.)

Sensitive electronic components, such as those found on the ARS file server, are extremely vulnerable to electrical surges. These can result from generator tests or downed power lines. An uninterrupted power supply (UPS) unit serves as the best means to maintain any file server free from such electrical surges. One BC-450 LAN UPS supplies the ARS file server with constant, conditioned electrical input.

Novell Netware, installed on the ARS file server, provides the means by which data written to one of the file server's hard disks can be mirrored (copied simultaneously) to another hard disk. This helps safeguard the data in the event of a failure.

Another data integrity mechanism in place is the use of the Bulletin Board System to schedule periodic backups of the data from the file server. These events occur without the need for operator intervention. In the event of a system failure, data can be restored from the backup media with minimal loss.

Throughout the ARS program, confirmation windows are displayed. These prompt the user prior to the continuation of a particular process, including the deletion of existing PIRs. This helps safeguard the data from accidental erasure.

Field System

Data integrity on the field system is provided by duplicating the data at the time that a transfer to diskette or modem occurs. (Refer to Appendix E, System Software Functionality, or item number thirteen on the Primary Functions Overview section for further details on this process.)

If data becomes damaged during the transfer process, duplicate copies can be retrieved from the laptop by the use of a menu selection. This added safety feature was instrumental during the pilot project in safeguarding sensitive PIR data.

Data Security

Data security addresses the issue of preventing deliberate modification or destruction of data.

Station System

The ARS station system offers various levels of security. These include data encryption and passwords. Data transferred through modem is encrypted prior to transmission. Data encryption refers to the process by which characters (bytes) are rearranged according to a given algorithm. Once data files arrive at the station system, a decryption process takes place which rearranges the data back to its original form. A password is often required to gain access to the encryption and decryption processes. The Bulletin Board System's password file is encrypted on the station system to prevent viewing by unauthorized persons.

The network contains a password file that is matched against an officer's serial number when he/she logs on to the station system. In addition to logging on, passwords determine the level of access a person will have to the system. Supervisors have special rights not normally allowed to officers, including the ability to reset an officer's network password. A supervisor, however, is not able to view an officer's current password.

Once a PIR has been approved on the system, no further modifications can be made to the file. In addition, the delete and download functions are disabled for any approved PIRs. This is done because an approved PIR is a legal document which could be used in a court of law.

Field System

The field system offers an arrangement of data security measures similar to the station system. These also include data encryption and password protection.

It has already been mentioned that when an officer transfers a PIR via modem to the station system, the data is encrypted prior to transmission. The password used to log onto the network's Bulletin Board System is encrypted on the laptop. In the event that any unauthorized person gains access to a laptop computer, he/she will be unable to view the password file which provides access to the Bulletin Board System.

Before an officer is allowed to use the ARS software, he/she must identify him/her self to the program by providing such items of information as a name, serial number, and password. If applicable, the same information is also required for the officer's partner. An officer is able to stop work on a laptop computer and later resume work by resupplying the password used at the beginning of the watch assignment. The password file is discarded once officers log off the laptop at the end of their watch assignment.

PROBLEMS AND RESOLUTIONS

It is typical of every automated system for certain problems to manifest themselves throughout the various phases of the system's life cycle. These can be categorized as being either hardware, software, or user-related in their nature.

The ARS is not exempt from such problems. Furthermore, as one considers the differing platforms (local area network and laptops) in which the software is designed to operate, one can begin to grasp the complexity of the problems at hand.

Laptops

Hardware

1. Problem: A significant problem related to the nickel cadmium (Nicad) batteries is their tendency to hold less and less of an electrical charge each time they are recharged.

   Solution: Preliminary investigation of this problem entailed relating the problem to technicians from Toshiba America

Information Systems, Inc. The discussion has identified two primary reasons for the occurance of this problem.

The first problem concerns the development of battery memory. A memory is common in nicad batteries and develops when they are, on a repeated basis, only partially discharged before being recharged. Very few laptops are being used a sufficient time for the battery to fully discharge prior to recharging, resulting in declining power availability as a nicad develops memory.

The second problem, overcharging, occurs when the nicad batteries are placed in the recharger prior to being at least partially discharged. Overcharging has the effect of slowly destroying the cells within the battery until the battery is unable to hold an electrical charge for more than twenty to thirty minutes.

Solution: One solution to the overcharging problem would entail performing a partial discharge on the batteries prior to recharging them. This would require the purchase of a partial discharging device and the coordination of necessary procedures with the equipment room officers to ensure that all batteries are properly cycled prior to being issued with the laptops. This solution, however, would exacerbate the memory-related problem. To alleviate the memory problem, no matter what its source, will require a periodic full discharge of the nicad batteries. This will restore the batteries to their full power potential.

The recent introduction by Toshiba America Information Systems, Inc. of a nickel-hydride battery for their more powerful notebook computer line begins to address this critical issue. In addition to having 22 percent more power capacity and a significantly shorter recharging time, the nickel-hydride battery is specifically designed to eliminate the "battery memory" effect. This battery technology was not available at the time the equipment was purchased for the pilot project and is not currently available for the laptop computer selected.

2. Problem: Laptops used in this project contain an internal memory card requiring constant power to maintain memory. When laptops are stored in the equipment room for a prolonged period of time, the lack of sufficient electrical charge from the battery to the memory card causes all program data to be erased.

Solution: Procedures call for laptops to be stored in the kit room with fully charged batteries. Additionally, a diskette (labeled the ARS Load Diskette) has been prepared which installs the ARS software onto the laptop when such a problem does occur.

A long-term solution would involve plugging the laptops into an electrical outlet while they are stored in the kitroom.

This would ensure that data on the memory cards remain intact. Due to the lack of space in the kit room and budgetary constraints, however, this solution has not been put into effect.

Other alternatives would include:

a. The use of laptops with hard disks instead of memory cards.

b. The use of nonvolatile memory (ROM) within the laptop to store the ARS programs.

3. Problem: The use of diskettes to transfer PIR data between laptops and the network has proved to be unreliable. The reason for this is the high failure rate associated with the diskettes. Data written on diskettes with bad sectors resulted in the inability of the ARS program to read the compressed PIR data being transferred to the network.

Solution: The use of a software utility has proven to be highly valuable in recovering data from the damaged diskettes. This utility relocates the data from damaged portions of the diskette, allowing the ARS to continue processing the information. Additionally, a feature included in the ARS system design allowed members of the ARS Task Force to retrieve the data from the laptops. This feature entailed the storage in the laptop of a compressed backup copy of the PIRs at the time that they are transferred to diskette.

Plans for future development should include installing a null modem (a special hardware device used for communication between personal computers) on the system in order to bypass the use of diskettes entirely. Additional use by the officers of the existing modem transfer utilities would require less dependency on the use of diskettes, alleviating the problem.

Software

1. Problem: The ARS program halts execution and notifies the user with the following message:

RUNTIME ERROR: 209

When this error occurs, the laptop becomes completely disabled until the ARS software is reloaded onto the laptop.

Solution: Upon closer scrutiny of this problem, it was discovered that portions of the disk where the ARS software was stored on the laptop were damaged. Hence the program was unable to continue processing. In an effort to identify and correct the problem, several approaches were taken.

First, a utility program used by the programmer to help compress the ARS program on the disk was removed on half of the laptops being used on the field. The Task Force then proceeded to keep a record of the laptops on which the errors occurred with the most frequency.

It was found that on those laptops where the compression program was being used, the problem occurred with significantly greater frequency than on those where it was not being used. The problem was minimized by the removal of the compression utility entirely from all of the laptops.

On those laptops where this error occurred, it was necessary to determine whether any untransferred PIRs were left in the laptop at the time that the software failure occurred. A diskette with a special program (labeled ARS Emergency Extraction Utility) was developed which accomplishes the following:

a. Starts the laptop's operating system.
b. Checks whether any PIRs are left stranded in the laptop.
c. If PIRs are found, compresses them and moves them to diskette.
d. Notifies the user of whether report(s) were found on the laptop.
e. Instructs the user to notify the appropriate personnel of the problem and to upload any PIRs found to the network system.

Upon notification, the support personnel would reformat the memory card (in order to clear the damaged portions of the disk) and reload the ARS software using the ARS Load Diskette.

User Related

1. Problem: Laptops with a low electrical charge remaining on their batteries were sometimes assigned to officers at the beginning of their watch assignment. These laptops would warn the user of the need for replacement soon after the laptops were turned on. In some instances, the users ignored these warnings. This caused a loss of power while a PIR was being created or modified, resulting in data loss.

   Solution: Two additional fully charged nickel cadmium batteries were issued with each laptop at the beginning of an officer's watch assignment. Also, it was emphasized during training that once an officer received an audible battery-low warning, he/she should replace the battery before proceeding.

2. Problem: There were instances when a laptop lost power without first warning the user of a low charge remaining on the battery.

   Solution: These instances were attributed to the fact that an officer might have disabled the alarm by the use of the pop-up window utility supplied by Toshiba as part of the laptop's system software. Training was provided in the use of this utility.

3. Problem: There were instances when officers forgot to completely logoff their assigned laptop prior to returning it

to the kit room at end of watch. This created a problem because the previous officer, who was no longer available, had to fully logoff before a new officer could logon. The previous officer's password had to be entered to gain access to the ARS program. Since passwords were kept confidential, the laptop was temporarily unusable.

Solution: The aforementioned ARS Emergency Extraction Utility diskette was modified to include the ability to log an officer off the computer. As mentioned previously, the diskette then searched for reports that were not transferred to the station system.

3. Problem: Although the correct procedure for replacing the batteries on the laptops was addressed in the training sessions, there were occasions when officers removed the batteries from the laptops without first performing a power-down of the unit. This resulted in the loss of data.

Solution: The correct procedure entailed performing a short logoff and a power down of the laptop prior to replacing the battery. This was further emphasized through additional training.

Network

Hardware

1. Problem: The electrical circuitry at the Hollywood Patrol Division represented one of the major challenges for the maintenance and continued support of the network system. Periodic unscheduled generator tests and electrical surges created an environment hazardous to the operation of sensitive electronic equipment. For example, on November 16, 1990, data on the network was lost due to a system failure caused by an electrical surge. This surge disabled the network entirely for a period of four days.

   Solution: Several steps were taken following the network failure. These were taken in order to preserve network data and to prevent the problem from occurring again in the future.

   a. An uninterruptible power supply unit (UPS) was installed to help protect the system from future electrical surges and outages.

   b. A program was written to periodically backup the data on the network utilizing the scheduling capabilities of the Bulletin Board System.

2. Problem: There were occasions when the communication between some of the network workstations and the ARS file server dropped. This caused users to become disconnected from the

network and disabled ARS processing on that workstation.

Solution: The problem was attributed to poor connections on cables used to interface the workstations with the file server. After the cables were reconnected, the machine was restarted. A long-term solution would involve performing detailed system diagnostics which can isolate trouble areas on the network.

3. Problem: The transfer of PIR data, via telephone, between the laptop's internal modem and the station system was only intermittently successful.

Solution: The trouble was attributed to several factors:

a. Noise interference on the telephone lines.

b. The timing of scheduled Bulletin Board System backups conflicting with the transfer of data.

c. Down telephone lines.

By periodically removing completed PIR data from the network, backup time was minimized. Thus, the timing conflict between scheduled backups and the transfer of data was also minimized. Telephone line problems could not be resolved because dedicated lines could not be used in this application.

Software

1. Problem: Throughout the design and implementation of the network ARS software, numerous problems were found which caused the software to halt at various times. The majority of these problems were concerned with the sharing of files on the network. That is, as two programs compete to have access to the same data file, errors occurred which halted the execution of the ARS software.

   Solution: These problems were addressed on an individual basis and brought to the attention of the software designer. He would then develop and implement the appropriate corrections to the program(s).

   For example, the file sharing problem was corrected by overriding some of the network's defaults and allowing the files to be accessed in shared mode. In addition, some utility programs were developed in order to resolve some of the problems encountered with the improper setting of file attributes. In general, the 'debugging' process entailed one of the most difficult and time consuming tasks for the members of the ARS Task Force.

2. Problem: The formatting of PIR output for the laser jet printer was very slow.

   Solution: One solution would be to speed-up processing by simplifying the printed output so fewer control codes would be created. Another alternative would include the use of a dedicated computer which can perform the task of formatting and queueing the output to print independent of the users' workstations. These solutions were not implemented due to time and budget constraints.

3. Problem: The overall processing speed of the network was at times very slow.

Solution: The creation of temporary files used by the ARS software to format the output for its mainframe interface caused a slowing of the system's performance. Due to required changes to the mainframe, it was not possible to complete this phase of the project. Therefore, the temporary files were not routinely deleted by the software. In order to increase the processing efficiency of the network, it became necessary to regularly delete these temporary files as part of the normal manual system maintenance.

<u>User-Related</u>

1. Problem: User-related problems on the network system constituted most of the trouble calls. Most of these were the result of insufficient training on the system or fear of computers in general. Questions from the users can be categorized as follows:

   a. Why do I need to do this particular task?

   b. How can I accomplish a particular task?

Solution: In order to explain the reasons for performing tasks, explicit references were made about the procedures used in the manual system. Similarities between the manual and automated systems were emphasized at every opportunity. The task force addressed the means of accomplishing tasks by providing the users with specific instructions and plenty of hands-on training. In addition, the software was equipped with on-line help screens which could answer most of the questions. To help minimize off-hour trouble calls, reference documentation was prepared for most questions. These manuals were made accessible to the users and reference was made to them each time a user called with a question. Additional training was also provided to help ease the fear of the system.

BACKUP PROCEDURES

These procedures were developed and/or used to ensure the continuity of the LAPD reporting system without loss of data.

Local Area Network Failure

Network failures could occur from a power problem or system failure.

Power Problems

Initially the ARS lacked an Uninterrupted Power Supply (UPS); therefore, scheduled power interruptions required that the entire station system had to be systematically powered down for the duration of the interruption. Since the duration of these interruptions was normally less than 3 hours, officers continued to use the laptop computers and reports were saved on diskette for later upload to the station system. If a power interruption was not scheduled or if there was a voltage spike, there was a high probability that some of the files on the file server would be damaged. To minimize the potential for data loss, the file server was shut down until everything could be thoroughly checked out. In the meantime, reports generated on the laptop computers were uploaded to station PCs operating in stand-alone mode (using ARS software but not connected to the LAN) for approval and printing.

A UPS was not initially purchased for the pilot project due to an anticipated lack of funds. However, one was purchased as soon as it became clear that there was sufficient funding available.

System failure

System failure would be handled in the same manner as an unscheduled power problem.

Laptop Computer Failure

If a laptop computer failed while the officer was in the field, but before a report was started on it, the officer was to use the manual paper reporting system. If a report had been started, the officer would have the option of taking the report on paper or attempting to recover the report using one of the tools described under the Problem and Resolutions section.

Printer Failure

Most printer failures were the result of an empty toner cartridge or loose cabling. If these problems could not be corrected by personnel at the scene, additional assistance was necessary. During the intervening time before help arrived, use of the ARS system continued, but no reports were printed.

Unusual Occurrences

There were no unusual occurrences (major police events) during the pilot project. If there had been an unusual occurrence, the ARS system could have continued to be used by the maximum number of officers possible. Officers from other divisions not familiar with the system and officers not assigned computers would have reverted to the standard manual report system. Ultimately, the decision to use the ARS would have been made by the supervisors handling the incident.

V. RESULTS OF COMPARATIVE ANALYSIS

CALIFORNIA STATE UNIVERSITY, FULLERTON FOUNDATION REPORT

The comparative analysis of the ARS was conducted by California State University, Fullerton Foundation, under contract to the Los Angeles Police Department. The report of that analysis is attached as Appendix A. The Summary and Conclusions section of that report is repeated in full so the reader can be assured of an unbiased and accurate interpretation.

The Experiment

With support from the National Institute of Justice (NIJ) the Los Angeles Police Department (LAPD) obtained laptop computers and wrote appropriate software to automate the preparation of Preliminary Investigation Reports (PIRs). A field experiment was designed and executed to assess the effect of PIR automation on the time use of officers, supervisors, and clerks. In addition, computer effects on officer and supervisor job performance, morale, and PIR quality were assessed. The Hollywood Patrol Division was used as the experimental group where computers were introduced. The nearby Wilshire Patrol Division served as a control group for comparison purposes. The Wilshire officers continued to prepare their PIRs with the existing handwritten system. Data were collected in both divisions before computers were introduced at Hollywood. A second data collection wave took place in both divisions approximately six months later in December 1990.

Computer Effects on PIR Processing and Quality

From the standpoint of costs and benefits, the Automated Reporting System tested in this research had modest effects on the efficiency of the Hollywood officers. Overall, there were no changes in the amount of time officers spent in investigation, PIR writing, PIR review and approval, or travel associated with PIR processing. Nor did the supervisors at the Hollywood Patrol Division report a change in the amount of time they spent reviewing and correcting PIRs. Furthermore, there were no significant changes in the number or type of errors supervisors noted in the PIRs. Apparently, writing a PIR with an electronic medium does not increase the amount of time devoted to this activity, nor the overall level of errors in the reports.

Those differences that were noted in writing time and travel varied by watch and the number of PIRs written during the experiment. These differences seem to be a function of the amount of practice an officer had with the Automated Reporting System. Those who wrote a greater number of reports spent less time writing each one. Perhaps a greater impact would surface when the use of the computer becomes routine and all officers have received adequate practice in using it.

The computer system tested in this research lacked a practical option of transmitting PIRs by telephone modem linkage to the station system. If this feature could be included in the Automated Reporting System, additional savings in officer travel time for PIR review, approval, and correction could be eliminated. This would permit the officers to spend more time in their patrol areas devoted to actual crime control.

The finding that overall PIR error rates as noted by supervisors at the Hollywood Patrol Division did not change as a result of the Automated Reporting System appears to be due to watch differences that masked the experimental effect. In terms of total PIR errors the Hollywood Mid-Day watch reduced their errors to zero while the Mid-PM and AM watches increased their errors.

In contrast to the Hollywood supervisors' assessment of PIR errors, the attorneys' and detectives' evaluations of PIR quality showed an improvement in incomplete, inaccurate, or missing entries on PIRs written with the Automated Reporting System compared to handwritten reports. These evaluators also reported an improvement in the quality of officer observations in the automated PIR narrative. Their overall subjective assessment was that the automated PIRs were much better in quality and slightly easier to use than the handwritten versions. However, with respect to the corpus elements of the crime, the automated reports did not fare as well as the handwritten reports. This may have been due to administrative changes at the Wilshire Patrol Division rather than the reporting method used.

A. Computer Effects on Officers and Supervisors

In both divisions the job performance of the officers and supervisors was rated by superiors as being adequate or better than adequate in all performance dimensions. Depending on the rank of the officer, computerization of PIR writing was associated with changes in some facets of supervisor rated job performance. For Hollywood PO I's and PO III's improvements in initiative, effort, time utilization, and communication skills were noted. Time use effectiveness of Hollywood Sergeants declined slightly. With respect to rated work quality, the Hollywood PO I's improved, while the PO II's and PO III+1's showed slight decreases compared to their Wilshire counterparts. No differences were noted between Wilshire and Hollywood Patrol Divisions in officer job knowledge, capacity to learn, ability to work independently, or overall job performance.

Associated with computer use was a decline in various leader behaviors exhibited by the Hollywood supervisors. As rated by their subordinates, after computerization Hollywood supervisors showed less consideration, participation in decision making, role clarification, and goal setting than their Wilshire counterparts. One possible explanation for these findings is that the overall need for supervisory attention may have been reduced by computerization of PIR writing at Hollywood.

Some Hollywood officer ranks showed changes in job perceptions or attitudes but these changes were by no means uniform for all officers. Over the course of the experiment Hollywood PO III's and Sergeants reported an increase in workload, perhaps as a result of their training duties associated with computerization. The PO III's also indicated a significant increase in self esteem. In addition, compared to their Wilshire counterparts the Hollywood PO I's reported a reduction in computer related anxiety while the PO II's reported an increase. Both divisions showed a decline in feelings that one's skills are being under utilized. However, the change at the Wilshire Patrol Division was greater than at the Hollywood Patrol Division. The Hollywood change is what would be expected as a result of computerization, but the Wilshire improvement is likely due to some unreported change in officers' job duties that did not also take place at Hollywood.

Morale and job satisfaction at both divisions appear high and did not change as a result of the computer experiment. This conclusion is based on measures of anxiety, depression, irritation, overall job satisfaction, and commitment to the

LAPD. On the whole the mental well-being of officers in both divisions was quite high.

Officer evaluations of the handwritten and computerized PIR systems revealed that the computer system was easier to use in making PIR corrections, enhanced the quality of reports, and improved job performance. The Hollywood officers were also more satisfied with the computerized system than the handwritten system. From the officers' perspective there were no differences between the two systems with respect to ease of use, frustration or irritation from using the system, time lost due to system problems, or the perceived amount of time spent each day writing reports.

At the end of the experimental period Hollywood detectives, supervisors, and officers were asked to reflect on their experiences with the computerized system. These post-hoc evaluations revealed that the detectives felt the automated system reports were an improvement over the handwritten reports even though their crime clearance and filing rates remained unaffected. They would support a department-wide automation effort. They felt a spell-check feature would improve the system as would a larger type face.

The Hollywood officers in their post-hoc assessment of the computerized system were neutral to slightly favorable in overall evaluation of the system, tended to approve of the various software and hardware features of the system, and felt comfortable with their assessment of their own computer capabilities. Hollywood supervisors were slightly less positive in their overall evaluation of the system and its features than were the officers. On the average the Hollywood officers did not experience serious problems with computer storage, getting used to the system, or using the various on-screen features. Furthermore, they felt the training received was adequate. According to the Hollywood supervisors, the automated reports were easier to review and approve, at least as complete as the handwritten reports, and had fewer errors.

It is apparent that the change in the report writing method at the Hollywood Patrol Division had few, if any, negative side effects that might be expected when new work methods are introduced. The amount of time used to prepare reports did not increase, nor did the number of errors per PIR. Responses of the officers also seem to show that their skills were not overtaxed as might be expected for those whose typing ability is not well developed. Furthermore, morale as indicated by job satisfaction, commitment to the organization, depression, anxiety, or irritation was not adversely affected by the system. Indeed, there seems to have been an increase in self esteem for some of the Hollywood officers during the course of the experiment.

C. Computer Effects on Clerical Functions

Clerical functions remained essentially unchanged as a result of the computer system investigated in this research. The clerks still entered data from the PIRs into the department's mainframe computer, made and distributed copies of each report, and filed the computerized reports in the same manner as the handwritten reports. It is not surprising, therefore, that the only significant change noted at the Hollywood Records Unit was a slight increase in total clerical time devoted to each PIR. There were no significant changes in the components making up total time such as clerks' data entry time, error correction time, copy/distribution time, or filing time.

In spite of these findings, it is reasonable to hypothesize that the immediate benefit to full implementation of the ARS would be from savings in clerical processing time and copy costs. Direct entry of PIR data into the department's mainframe after report approval would eliminate virtually all clerical time associated with PIR processing. The reason this effect was not noted in this study is because, while it is feasible to have the officers' PIRs entered electronically into the mainframe, this feature was not included in the prototype system. Full clerical cost savings should immediately follow the implementation of a fully automated reporting system due to the elimination of the redundant functions the clerks performed during the experiment that would be performed by automated data entry. It appears clear that the elimination of coding selection and data input by clerical personnel is possible without any increase in officer PIR processing time or supervisory review and approval time.

End Users

In addition to clerical savings, this research supports the conclusion that end users of the officers' PIRs clearly prefer the automated reports to the handwritten ones. Detectives and attorneys found the computer generated reports easier to use and of better quality. The supervisors who review the officers' reports felt that the automated reports were easier to review and approve, had fewer errors, and were no less complete (if not more so) than the handwritten ones. Even the officers evaluating the system felt their job performance was improved by computer use and that their reports were of higher quality. Perhaps the ultimate benefit from computerization of reports will be an improvement in the conviction rate of criminals whose cases are prosecuted using better quality reports.

Automated Reporting System Task Force Research

In addition to the analysis conducted by Cal State Fullerton, the task force collected and analyzed the following data:

LAPTOP RELIABILITY

During the 5 1/2 month pilot period, a total of 16 hardware related problems were recorded. These problems occurred on 10 of the 40 machines used. The average turnaround time from the reporting of the problem to the return of the unit to service was seven working days. All repairs were performed by an authorized Toshiba service provider located approximately 7 miles from the Hollywood station and 15 miles from the ARS Task Force office. ARS Task Force personnel handcarried the laptops to and from the service provider to expedite the repair process. Of the 40 units acquired for the ARS Pilot Program, 34 were used in the field on a regular basis. The remaining six units were used by the task force for development evaluation.

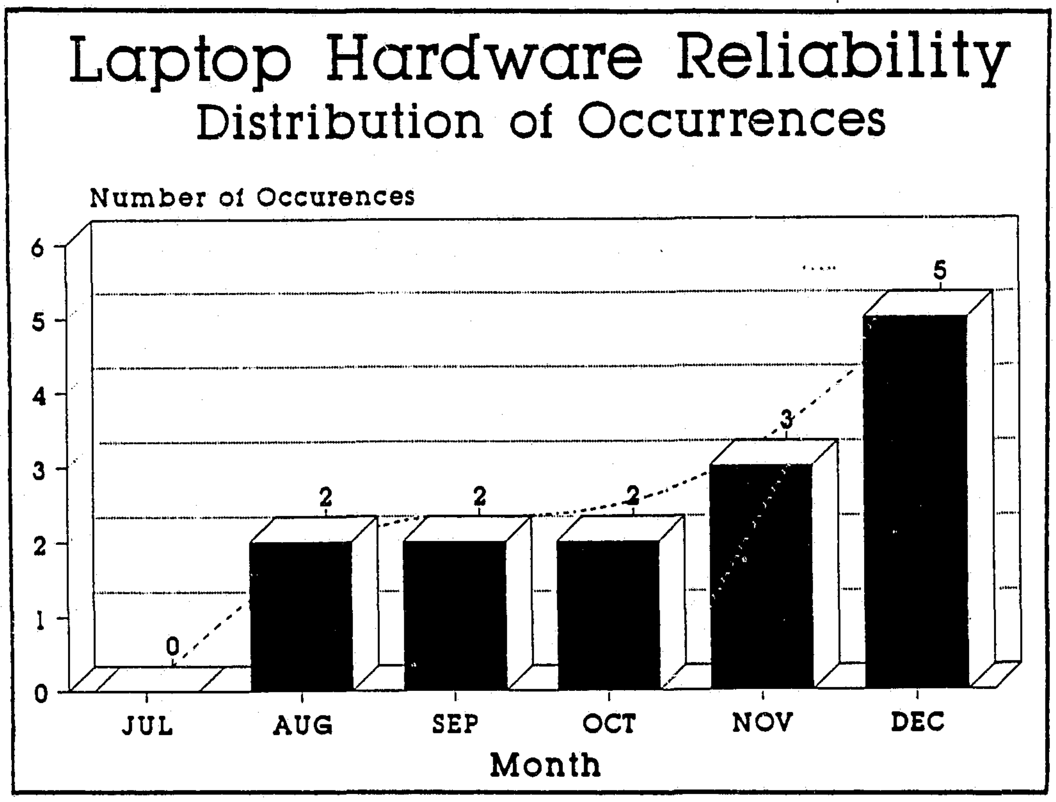
Hardware Problem Summary

Problem	# of Occurrences
* High pitched noise when machine is turned on	4
* Loss of backlighting	3
* Defective keyboard	2
* Defective diskette drive	2
* System board failure	2
* Periodic loss of power	1
* Defective speaker	1
* Random characters on display	1
	16

Forty laptops were used and it was determined that two of these occurrences were the result of defective third party modems. No industry-wide figures were available for comparison against the pilot project's hardware reliability. Therefore, it is not possible to determine exactly what impact the police environment had on reliability. However, several conclusions can be drawn from the data collected:

1. The distribution of occurrence dates of hardware-related problems indicates that, as time passed and usage increased, the laptops hardware problems increased (Figure 25).

FIGURE 25



2. An average of 2 percent of the laptops were out of service for hardware-related problems at any given time. Given the 24-hour-a-day usage, this down-time ratio was more than acceptable.

3. Although the laptop used was not designed for the law enforcement environment, it did perform well.

Other Hardware Related Issues

Battery Life

Toward the end of the pilot project, the average battery life had deteriorated significantly. This posed a problem when an officer was required to change batteries several times during a watch, often interrupting the reporting process. The battery life problem was the result of procedural rather than mechanical problems. (See the Problem Resolution section.)

Laptop Use in Patrol Environment

One of the issues evaluated during the pilot project was the functionality of laptops in the patrol environment. As previously stated, the number of hardware-related problems which required that the laptop be taken out of service was acceptable. However, because the laptop was not specifically designed for this type of use, some damage occurred when the laptops were inadvertently dropped or mishandled. The effects of mishandling ranged from cosmetic damage to the shell of the unit to lost plastic covers; however, none of these occurrences resulted in the unit needing repairs.

Throughout the pilot project, input was solicited from users regarding the functionality of the laptop in the field. The limited amount of response seems to indicate a general acceptance by patrol personnel. The following items were taken from the comparative analysis data collection and "suggestion box" submissions:

Officer Safety

Concern was raised that the concentration required in using the laptop may affect an officer's awareness of his surroundings. The issue seems to be related more to the learning of a new process than to the use of the laptop. Additional or enhanced officer training may sufficiently address this concern.

Extra Equipment

Because an officer is already required to carry a significant amount of equipment, some officers indicated that adding the laptop was an inconvenience. Although the laptop itself weighs only 5.9 pounds, a fully-loaded case with two additional batteries weighs closer to 8 pounds. This issue was compounded by the vendor providing a case which was more bulky than anticipated.

Modem Transfer

Because the system allowed only land-based telephone modem transfer, some officers indicated that this restricted its use because they were limited to the crime location as a transfer point. Officer response indicated that the victim's phone could not always be used to transmit reports to the station because it was not always possible to complete reports at the crime location.

Use in Vehicle

Although it was not specifically stated as a problem, the laptop used for the pilot project could not be used behind the steering wheel of a patrol vehicle. This was primarily because the display would not tilt back flat against the computer. It is not apparent what impact, if any, this had on the report writing process. However, if cellular or RF modem transfer capabilities from the vehicle had been provided, this restriction may have had more of an impact.

IMPACT OF ARS GENERATED REPORTS ON PROSECUTORS' FILING AND CONVICTION RATES

The impact of ARS-generated reports on prosecutors' filing and conviction rates was based on interviews with the Head Deputy, Central Operations Complaint Division of the Office of the District Attorney, and the Supervising Attorney of the Hollywood Branch of the Office of the City Attorney. These two individuals supervise the filing deputies who used ARS-generated reports and both continually liaised with ARS Task Force personnel throughout this project.

District Attorney - Felony Filings and Convictions

Only a small percentage of the cases filed by the Office of the District Attorney are based solely on PIRs and those cases are used only for obtaining arrest warrants. The vast majority of cases presented to or filed by the Office of the District Attorney are in-custody cases where arrest and follow-up reports are used along with crime reports as the basis for a filing.

According to the Head Deputy, Central Operations Complaint Division, report print-outs from the ARS had no influence, positive or negative, on report content, filing, or conviction rates for the test period. Because Hollywood was the only Detective Division to present cases for filing using the ARS reports, the experience of the District Attorney's Office was very limited.

Although the ARS system had no influence on report content, it was reported that ARS reports were easier to use due to their increased neatness and readability. After filing deputies became accustomed to the automated PIR, the increased neatness and readability accelerated the filing process.

<u>City Attorney - Misdemeanor Filings and Convictions</u>

The Hollywood Branch of the Office of the City Attorney receives all misdemeanor cases presented for filing from Hollywood Area. The City Attorney's Office not only prosecutes cases based on arrest reports, but also many cases based on PIRs (with follow-up investigations attached). They had more extensive experience with the automated PIR print-outs than did the Office of the District Attorney.

According to the Supervising Attorney of the Hollywood Branch, after the initial training and accustomation period, Deputy City Attorneys found that ARS reports were an improvement over handwritten reports. It was related that officers were forced to provide required information with greater accuracy and completeness with ARS reports.

The ARS system had no influence on report narrative content or conviction rates. Although they may have had a slightly positive influence on filing rates, this could not be quantified. There appeared to be a slight increase in filing speed due to the increased legibility. It was felt that a case filed with an ARS report made a better presentation in court.

IV. CONCLUSIONS

Law enforcement agencies are information processing machines. They collect information, analyze it, and use it to prevent crimes and to catch and convict criminals. Therefore, the effectiveness of any law enforcement agency is largely dependent on its ability to collect and use information. The LAPD is currently being overwhelmed by a million crime and arrest reports a year and the number keeps increasing. This mountain of paperwork critically impairs the LAPD's ability to effectively use the information collected.

Private industry has demonstrated that automated report/record management systems are more reliable, more effective, and more desirable than paper systems. The major drawback for the LAPD has been the cost of entering the report information into such a system. However, several recent successful law enforcement projects have indicated that this cost can be reduced or eliminated.

The pilot project looked at two law enforcement systems that have successfully automated the data entry function of the crime reporting process. The first project, and the one that was the impetus for this pilot project, was the St. Petersburg, Florida, Police Department's Paperless Information System Totally On-Line (PISTOL) Project. The PISTOL Project equipped patrol officers with a Tandy 102 computer and software that allowed officers to write all of the reports on the computer. The results were very encouraging, but they were not based on a comprehensive comparative analysis. After a detailed look, it was determined that the PISTOL system would not be able to handle the LAPD's data collection requirements for direct input into its existing mainframe databases. The second project reviewed was the St. Louis County, Missouri, Police Department's Computer Assisted Report Entry (CARE) Project. The CARE project uses operators who receive information via telephone directly from the public or an officer and enter the crime report information into St. Louis County's mainframe computer system. This system was sophisticated enough to handle LAPD's data collection requirements. However, the required staffing levels for a sufficient number of telephone operators to handle the LAPD's volume of reports made this system too expensive.

Because neither of these systems met the needs of the LAPD, the ARS was developed. A comparative analysis of the ARS and the current manual report-writing system was conducted. The results of that analysis prove that a law enforcement agency such as the LAPD can effectively automate the initial data collection function while providing substantial benefits to its effectiveness. The following is a list of potential benefits that the LAPD should realize with full implementation of the ARS:

1. Increased Officer Availability:

   The comparative analysis found that there is no difference between the amount of time it takes for the average officer to write a crime report by hand or by computer. LAPD officers average 66 minutes to complete a basic crime report, of which 8.6 minutes is the average amount of time used to transport the paper report to the station. An automated report can be electronically transferred via telephone to the station which would eliminate this 8.6 minutes in travel time. Based on the number of crime and arrest reports written by the LAPD, this equals $5.4 million dollars in annual salary costs, or the equivalent of 53 full-time officers per year.

The study also found that officers who wrote four or more reports in a two-week period wrote computer reports faster than the average officer who wrote fewer than four reports in the same period. This indicates that, if the comparative analysis period had continued, the learning curve may have resulted in a reduction in overall average report-writing time and an increased officer availability even greater than that stated above.

2. Reduced dependence on clerical support:
Because the ARS collects the properly formatted data from the officer writing the report, clerical data entry of report information into the LAPD's crime and arrest database can be eliminated along with audits to verify the validity of that data. The time spent by clerical personnel on these functions can be redirected elsewhere to assist field officers in their duties. In the LAPD,

this time is equal to $576,000 in annual salary costs.

3. Increased data reliability:
   Automated report writing also has the side benefit of speeding up the data entry process and of virtually eliminating data entry errors. Manual data entry results in a high error rate in the database used for investigative and statistical analysis. Reductions in the error rate and in the time required for data entry will improve the usefulness and reliability of the database.

4. Reduced report form, distribution, and storage costs:
   Once a report is in an electronic format, it is possible to automate the entire crime report writing system, from electronic report distribution to storage. This would severely reduce, if not eliminate, the need for the stockpile of paper report forms and the copying, distribution, and storage of the completed forms. Los Angeles Police Department savings would be substantial, estimated to be over $4.5 million dollars per year.

5. Increased detective and prosecutor effectiveness:
   The study found that detectives and prosecutors who used the computer reports preferred them over handwritten reports. The reports were easier to read and presented a more professional appearance. Although the results are inconclusive, it is anticipated that this would have a

positive effect on filing and conviction rates.

The task force conservatively estimates that over 10 percent of the LAPD's annual $500 million budget is spent operating and maintaining its manual crime reporting system. A fully automated system would greatly reduce this cost and allow more resources to be focused on serious crime problems such as those caused by drugs and gangs.

In addition to the savings and increased LAPD effectiveness that an ARS would provide, there are substantial benefits from other systems made possible by the ARS. These systems could be developed both within the LAPD and in the overall criminal justice system.

The systems possible within the LAPD could have a significant impact. Patrol officers could have up-to-the-minute crime and suspect information via their Mobile Data Terminals (MDT) as soon as a report is approved. Supervisors could use the database to allocate resources to target crime problems and combat emerging crime trends. Detective case management and expert systems could be developed to assist detectives in their investigations.

The criminal justice system as a whole would also benefit from systems made economically possible through the ARS. Law enforcement agencies are part of a larger criminal justice system which ties law enforcement agencies and courts in the U.S. together in varying degrees. Information contained in police reports is shared extensively by all levels of the criminal justice system. There is no question that prosecutors and the courts are dependent on the reports produced by law enforcement agencies. A law enforcement agency's effectiveness is dependent to the same degree on the sharing of reports and information with other entities within the criminal justice system. Taken as a whole, it becomes obvious that the effectiveness of one entity can impact the entire system, both vertically and horizontally. For example, an overburdened court system causes a backlog of cases, which in turn inhibits filing of new cases, thereby causing police and public frustration with the lack of timely justice in the system.

A fully automated paperless criminal justice information system would improve the communication among the various members of the criminal justice system. This would greatly improve the effectiveness of the criminal justice system. The automated system will be most effective when all agencies within the criminal justice system are involved because suspects do not limit their criminal activity to one jurisdiction. For example, if a defendant is out on bail during his trial for a crime and is arrested on a new charge, there is no easy way for either the agency making the arrest or the court conducting the trial to connect the two cases. The court usually finds out about the new charge only if the defendant cannot bail out and get to court. The police find out only if they can track down the status of the prior arrest or the suspect tells them. An automated system could immediately notify both the court and the police of a defendant's status which would allow the court to revoke bail and protect the community from a habitual criminal. Also, if a suspect commits a series of crimes in one city and then in another, it is difficult for either city to see a pattern and share information which might quickly identify the suspect.

Law enforcement agencies, prosecutors, and the courts, need to develop a system of information collection, storage, retrieval, analysis, and sharing so that every segment of the criminal justice system would have access to all of the information known. This would greatly improve the criminal justice system's efforts to identify, track, and prosecute criminals. The development of a truly paperless criminal justice information system would allow for automation of a police officer's work from field interviews and citations to arrest and follow-up reports. The reports would be sent electronically to a supervisor for review and approval. Once the report was approved, it would automatically update a database and be electronically stored. The report information would be automatically added to the work load of the detective assigned to follow-up on such cases. The detective would also use a computer to review cases, document his/her investigation, identify suspects, and prepare a case for filing of formal charges. Instead of making copies and delivering the paperwork to a prosecutor's office for filing, the detective would electronically send the necessary reports and forms to the prosecutor who would review them on-line. If the case was rejected, the information would be sent back to the detective for appropriate action. If the case were filed, the necessary forms and reports would be automatically transferred to the court clerk's system where it would be added to a courts' arraignment docket. Courts and prosecutors would be fully automated without any front-end data entry costs. This would greatly improve the efficiency of the courts and prosecutors. Consequently, they could reduce the resources they spend solely on moving paperwork through the system and redirect those resources to help eliminate the backlog of cases.

The automation and sharing of crime and arrest information should be the ultimate goal of every agency in the criminal justice system. As previously stated, information is the commodity that the criminal justice system deals in. In order to give the criminal justice system the edge over a highly mobile and well-financed criminal element, the timely sharing of information is no longer a luxury, it is a necessity. The criminal justice system needs to have access to cheap reliable sources of information. Members of the criminal justice system currently spend a great deal of time and money collecting information, much of which may already exist elsewhere in the system. But, because the agency collecting the information does not know it already exists or because finding information buried deep in a cumbersome system usually takes longer than recollecting it, information is often collected more than once. At a time when many agencies are faced with reduced budgets, this duplication of effort and the subsequent waste of time and money can no longer be tolerated.

A recent study by the Institute of Criminal Law and Procedure at Georgetown University Law Center stated, "One of the crucial functions of the police is to gather information and transmit it to the prosecutors for disposition decisions. Greater amounts of information in the police reports does result in cases being more likely to be resolved on their merits, which in effect means more likely to reach a more severe disposition than might otherwise occurred. Thus the police should be required to have the skills and technology appropriate to this crucial function. They should be able to type and should have data processing equipment and software to support this function."[1] Data processing and report writing are not the glamorous or exciting parts of the law enforcement business. It is difficult to get the public and the politicians excited about spending money on these areas. Georgetown University goes on to say that, "No one would think of sending the police out without guns or with the cheapest possible guns or without training in the handling of guns. But police officers rarely use their guns whereas, in contrast, they produce a dozen or more reports a week; yet, they are not expected to be typists and they are not given word-processing equipment."[2] This

1. William F. McDonald, Katherine C. Brown, and Joque Soskis, Improving Evidence Gathering Through a Computer-Assisted Case Intake Program: Executive Summary (Washington D.C., 1988), p. 33

2. Ibid., p. 12

example points out that the basic function of the police is often overlooked and supports the need to provide the necessary budget resources to modernize the primary function of the police, information gathering. The effectiveness of any police agency is based on how well it uses the information it gathers. Technology has progressed to a point where it will greatly improve the efficiency of information gathering, storage, retrieval, analysis, and sharing at a reasonable cost. The criminal justice system must make use of this technology or, as an industry, it will fall further and further behind the criminal element in society.

The results of this pilot project's comparative analysis, when combined with the previous successes of the St. Petersburg, Florida, and St. Louis County, Missouri projects, clearly support the conclusion that law enforcement agencies can benefit from the automation of their report writing systems. Even if an agency cannot generate interest in a larger automated criminal justice information system in its area, it should strongly consider the use of an automated system to gather, transmit, store, retrieve, and analyze crime and arrest report information. It is time that the criminal justice system modernize its infrastructure, for in a few years the 21st century will be upon us and we cannot afford to continue using 19th century systems to manage the life blood of the criminal justice system, **INFORMATION.**

GLOSSARY

ASCII American Standard Code for Information Interchange. The ASCII code format is commonly used for data exchange.

Backlighting The process of providing internal illumination to a laptops LCD display.

Baud The modem transmission speed of data in bits per second.

BBS Bulletin Board System. A program which allows users to communicate with a centralized system via modem. Used by the ARS to allow simultaneous report transfer by multiple users.

Cellular Modem A data transfer modem designed specifically to handle the structure of the cellular communications network.

Data Set A collection of interrelated data.

Debugging The process of identifying and correcting problems in a software program. Such problems are commonly called "bugs."

DES The utility program used by the ARS to encrypt and unencrypt data during modem transfer.

Diskette A removable data storage device used by the ARS to transfer report data from the laptops to the station system.

DOS Disk Operating System. Commonly used operating system found on IBM compatible personal computers. See **Operating System.**

DSZ The utility program used by the ARS to telephonically transmit data. This program has several built-in data correction features in the event that noise interference is found on the phone line.

Encryption The encoding of data for security purposes to prevent viewing or alteration by non-authorized persons.

Expanded memory Computer memory beyond the conventional 1MB reserved for DOS which can be used by application programs with the use of a memory manager.

Formtool A software program for IBM compatible computers used to design and print forms.

Function keys A set of keys on the keyboard that are used to send specific commands to the computer.

__Hard Disk__ A magnetic data storage device made of metal and covered with a magnetic recording surface.

__Hardcopy__ The printed output of an electronic file.

__HLLPI__ High Level Language Program Interface. The program used in the automation of PACMIS data entry to emulate an operator's keystrokes.

__Kit Room__ The room in a police station where equipment is stored and dispatched.

__LAN__ Local Area Network. The means by which personal computers are linked to share data and resources.

__Laser Printer__ A printer that uses the electrophotographic method used in copy machines to print a page of output.

__Logon/Logoff__ The process of establishing a connection and breaking a connection with a computer system.

__Mainframe__ A large scale computer which can handle millions of bytes of main memory and hundreds of billions of bytes of disk storage.

__Mainframe Emulation__ A program used on a personal computer to emulate an IBM 3270 type mainframe terminal. Used by the ARS to complete the PACMIS interface.

__Megabyte (MB)__ One million bytes (characters).

__Modem__ A device used to allow a computer to send and receive data over telephone lines.

__Mother Board__ The main circuit board found in a computer. This board houses the computer's bus, microprocessor, and all the chips used for controlling the standard peripherals (keyboard, display, comm ports, mouse).

__NECS__ NEtwork Communications System. NECS is the LAPD's primary method of access to Federal, State, and County law enforcement databases and is the controlling factor in assuring security and proper routing of queries. NECS is not a database but simply acts as a message switcher.

__Netutil__ The utility program used to enable ARS to process data sent to the network.

__Nicad Batteries__ The rechargeable batteries used to power laptop computers.

__Nickel Hydride__ A new technology introduced for rechargeable laptop batteries which overcomes some of the problems found in the nickel cadmium batteries.

Notebook Computer A class of full-featured portable computers noted for their extremely small size and weight.

Novell Netware A local area network operating system from Novell, Inc.

Null Modem The device used to allow data transmission from one personal computer to another without the need for diskette or remote modem communication.

Operating System The master control program that runs a computer and acts as a scheduler and traffic cop.

Optical Disk A data storage device that is written to and read by light. Optical disk offers storage and retrieval capacities far beyond magnetic disks.

PACMIS Police Arrest and Crime Management Information System. The LAPD's on-line data entry and retrieval system which provides information about crimes and arrests as well as statistical reporting functions.

Paradox A relational database management system that runs on IBM compatible PCs.

Parallel Port The output port on the computer which transmits data as a continuous stream. Normally used to hook-up to printers.

Password A word or code used to identify an authorized user.

Picklist A data entry method in which the desired input is selected from a list displayed to the user.

PIR Preliminary Investigation Report. The report completed by the LAPD in the initial investigation of an incident.

PKZIP The utility program used by the ARS to compress data prior to transfer to the station system.

RAM Random Access Memory. A computer's primary working memory.

ROM Read Only Memory. A memory chip that permanently stores instructions and data. Commonly used in laptop computers to store the operating system.

RTP The utility program used on the laptops to automatically dial the station's network computers.

Scrolling-text A special data entry field which allows the user to continue typing beyond the area displayed on the screen.

Serial Port The output port on the computer where data is transmitted in a serial fashion. Normally used to hook-up modems.

Shared Mode The special attribute given to a file on a network so that multiple users are able to view it simultaneously.

Tape Drive A physical unit that holds, reads, and writes to magnetic tape. Used primarily for long-term storage and back-up.

Topology The pattern by which computers are interconnected.

Uncompress The reverse of data compression. PIR data is uncompressed upon arrival at the station system.

Unencrypt Reverse of data encryption. PIR data is unencrypted upon arrival at the station system via modem.

Uninterrupted Power Supply A device used to provide a constant flow of electrical power to a computer.

APPENDIX A CALIFORNIA STATE UNIVERSITY, FULLERTON FOUNDATION, COMPARATIVE ANLYSIS REPORT

Comparative Analysis of the Los Angeles Police Department's Crime Report Writing Systems

A Research Report

Prepared by

Bronston T. Mayes, Ph.D.
Richard Wiseman, Ph.D.
Mary E. Barton, Ph.D.

Comparative Analysis of the Los Angeles Police Department's Crime Report Writing Systems: A Research Report

prepared for the

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National Institute of Justice

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Comparative Analysis of the Los Angeles Police Department's Crime Report Writing Systems: A Research Report

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I. Introduction

A. Prior Research

During the past ten years attention has been paid to the use of computers in public sector administration. Current thinking is that benefits can be achieved through computerization of police department report writing and record keeping. Of particular interest is the degree to which computer use might affect the time allocation of officers to various aspects of their report writing process. In addition to report writing efficiency criteria, computer use in reporting might be expected to affect the officer's morale, perceptions of his/her task-role, relationships with reviewing supervisors, and overall job performance. It was also expected that clerical time devoted to processing PIR's would be decreased if officers reports were directly entered into the department's mainframe computer. This study evaluated the amount of officer, supervisor, and clerical time devoted to this process.

The ultimate use for the Preliminary Investigation Reports (PIR's) is in the investigation of crimes and prosecution of criminals. If a computerized reporting system could be designed to reduce some of the common errors in the PIR's it is likely that clearance and filing rates might be improved and that prosecuting attorneys might be better served in their attempts to remove criminals from society.

B. The LAPD Automated Reporting System Study

With the assistance of funding from the National Institute of Justice the Los Angeles Police Department (LAPD) has undertaken a study to evaluate the effects of computer use in writing Preliminary Investigation Reports (PIR's). A controlled field experiment was conducted to assess changes that occur in officer, supervisor, and clerical time use, morale, job perceptions, job performance, and report quality as a result of computer use. The LAPD Hollywood Patrol Division served as the experimental group that received laptops. The comparison, or control group, was the Wilshire Patrol Division. These divisions were selected because of their *a priori* similarity with respect to size and the nature of crimes encountered. Indeed, the areas of these two divisions border each other and serve as part of the West Bureau of the Los Angeles Police Department.

This report presents the results of this study which was conducted between April and December 1990. The design of the research protocol, data collection, data analysis, and report preparation was accomplished by a team of researchers at California State University, Fullerton (CSUF) with the assistance of the LAPD Automated Reporting System Task Force.

II. Method

A. Subjects

Participants in this research were the full-time operations and clerical personnel at the Hollywood and Wilshire Patrol Divisions of the LAPD. Included in the sample were all uniformed levels of each watch. Their ranks ranged from Lieutenant to Police Officer I. Each participant was informed that his/her data would not be seen by members of the LAPD and that no information would be returned to the department that would identify the provider of the information. Members of the research team were given the serial numbers of the participating officers for tracking purposes only, but were never told the names of the participants.

B. Measures

1. PIR Data. During a two-week period in June 1990, before computer training began at Hollywood Patrol Division, and during a two-week period in December 1990 all completed PIR's were collected from the Hollywood and Wilshire Patrol Divisions. Each officer was asked to attach a data collection form to each PIR written during this period. A copy of this time data collection form and the corresponding instructions to the officers, supervisors, and clerical personnel are presented in Appendix J. The data collection form was organized into three sections, one to be completed by the officer writing the report, one by the supervisor

reviewing the report, and one by the records clerk processing the report.

The officer's section of the data collection form requested identifying data such as serial number, watch, date, and detail assignment for the period during which the PIR was written. Then the officer was asked to record the start and stop times for investigation of the crime, writing the report, travel to or from the station for the purpose of getting the report reviewed and approved by a supervisor, and the amount of time spent by the officer in review and correction of the report.

Supervisors were asked to provide their serial number, watch, and date of PIR review. They recorded the start and stop times for their review and correction activities related to the PIR, and counted the number of missing entries, inaccurate entries, incomplete entries, unreadable/illegible entries, and spelling errors. The supervisors then recorded the number of corrections <u>they</u> made to the PIR.

The PIR's with attached forms were then routed to the records section where clerks entered portions of the PIR content into the department mainframe computer, made copies of the report, distributed the copies appropriately, and filed the report. Records clerks were asked to provide identifying information (serial number, watch, and date), and record their start and stop times for data input, correction of errors, photocopy/distribution, and filing time for the PIR. They also recorded the number of copies made of each PIR. The clerks then attached the PIR data collection sheet that had been completed jointly by the reporting officer, supervisor, and records clerk to a copy of the PIR and held these for pick-up by a member of the LAPD research team.

The PIR data were then aggregated by reporting officer's serial number to generate average investigation, writing, approval/correction, and supervisory review times for the officer's reports. The other data fields on the PIR were similarly aggregated to yield the average number of each type of error, average clerical function times and average number of copies made. The aggregated data were then used in analyses of experimental effects.

2. Officer Evaluations of Reporting Systems. At the conclusion of each two-week PIR collection period all officers were asked to complete a ten item evaluation of the reporting system they were currently using. This evaluation form is included in Appendix J. For the Wilshire Patrol Division these evaluations focused on the hand-written reports in June and December. For the Hollywood officers, these evaluations focused on the hand-written system in June and the computerized reporting system in December. The same questionnaire items were used at both times to evaluate both systems.

Likert scaled single-item indicators measured the ease of system use (1= Very easy; 5= Very difficult), frustration/ irritation caused by the system (1= None; 5= A great deal), the amount of productive time lost (1= None; 5= A great deal), system error proneness (1= Not at all; 5= Very much), ease in making corrections to the report (1= Very hard; 5= Very easy), effect on overall job performance (1= Hurt a lot; 4= No effect; 7= Helped a lot), satisfaction with the reporting system currently used (1= Very dissatisfied; 4= Neutral; 7= Very satisfied), and system effect on report quality (1= Hurt a lot; 4= No effect; 7= Helped a lot). Then the officers were asked to estimate the amount of time in minutes spent each day writing PIR's. Comments about the reporting system were also solicited for anonymous feedback to the ARS Task Force.

3. Attitudes and Perceptions. Likert-scaled items were used to measure a number of relevant officer attitudes and perceptions about their jobs and organization. The questionnaire measuring attitudes and perceptions is titled "General Information Questionnaire" and is included in Appendix J. These questionnaires were administered by a member of the CSUF research team at each roll call session for three days (chosen on the basis of maximum deployment). The scales, their coefficient alpha reliabilities (for scales with 3 or more items), and a sample item from each scale are as follows:

Scale	Alpha Reliability
1. Job satisfaction "All in all, how satisfied would you say you are with your job?"	.81

2.	Role Conflict "Persons whose requests should be met give you things to do which conflict with other work you have to do."	.76
3.	Role Ambiguity "How much of the time are your work objectives well defined?"	.87
4.	Quantity of workload "What quantity of work do others expect you to do?"	.64
5.	Skill underutilization "How often can you use skills from your previous experience and training?"	.76
6.	Experienced control "In general, how much influence do you have over work and work-related factors?"	.88
7.	Depression "I feel sad."	.85
8.	Anxiety "I feel jittery."	.71
9.	Irritation "I get irritated or annoyed."	.84
10.	Self Esteem "I feel that I'm a person of worth, at least on an equal basis with others."	.81

11.	Computer anxiety "How much nervousness does the experience cause you?- Applying for a job that requires some computer training."	.93
12.	Supervisor production emphasis "My supervisor emphasizes the importance of achieving a high level of performance."	.85
13.	Supervisor consideration My supervisor is friendly and easy to approach."	.93
14.	Participation in decisions "My supervisor asks subordinates for their opinions and advice before making an important decision."	.91
15.	Supervisor role clarification "My supervisor lets subordinates know what is expected of them."	.89
16.	Supervisor goal setting "My supervisor sets clear and specific performance goals for subordinates."	.90
17.	Commitment to the organization "I am proud to tell others that I am part of the LAPD."	.88

4. Report Quality. PIR report content was measured with an instrument developed for this study. The PIR Content Evaluation

form is included in Appendix J. The director of the CSUF research team met with two LAPD detectives and two prosecuting attorneys (one Los Angeles City Attorney and one Los Angeles County District Attorney), who frequently use reports generated by officers in the LAPD divisions participating in this research. Through a structured process the detectives, attorneys, and the director of the research team developed a set of criteria to determine the quality of PIR content. These criteria reflect the utility of a PIR for prosecuting a case or for conducting follow-up investigations. For each criterion an ordinal scale was created to differentiate PIR's along that dimension.

Based on this meeting the PIR Content Evaluation research instrument was constructed and mailed to the participating prosecutors and detectives for review and correction. The final version of the instrument was used to assess PIR quality along the following dimensions. What the officer saw reflects the completeness and detail included in the officer's description of what was observed at the crime scene (1= Obvious omissions; 4= Observations complete and fully described). Organization and writing style is a measure of the readability, organization, spelling, and grammar quality (1= Not readable, hard to analyze; 5= Excellent content, organization, no errors). Physical evidence reflects problems in the report regarding physical evidence related to the crime (1= Serious evidence problems; 3= No indication of evidence problems). Completeness of general investigation is an indication of the amount of information included about the investigation conducted by the officer (1= No narrative provided; 4= All information desired is present). Statements from victims, witnesses, suspects reflects whether all relevant parties to a crime were contacted and whether full statements were taken from each (1= No statements; 6= Full statements from all, or reasons why not). Corpus indicates whether all crime elements needed for filing a case are present in the narrative (1= No crime stated; 4= Complete listing of elements, no additions needed- full support for filing).

A random sample of 166 PIR's was taken from those submitted by officers who participated in both waves of data collection. These were randomly ordered in two packets sent to the detectives and prosecutors who participated in the design of the quality assessment method for content evaluation. One detective and one attorney evaluated each PIR packet to permit evaluation of interrater reliability of measurement. The packets were returned to the CSUF research team and a count was made of the number of words in each PIR narrative to control for rater bias that might arise from the amount of narrative in a report. Disagreements in ratings were resolved by having the rating pairs discuss their observations and reach agreement on their evaluations for each PIR; 100% agreement was obtained through these discussions.

After rating the PIR's each rater was interviewed and asked to provide a subjective assessment of the overall quality and ease of use of the automated PIR's compared to the hand-written ones. Seven point Likert scales were used to quantify their evaluations.

The scale anchors used were 1 = Hand-written PIR's very much better, 2= Hand-written PIR's much better, 3= Hand-written PIR's slightly better, 4= No difference between hand-written and automated PIR's, 5= Automated PIR's slightly better, 6= Automated PIR's much better, 7= Automated PIR's very much better.

5. Officer Job Performance Rating. In April and December the supervisors of each officer at the Hollywood and Wilshire Patrol Divisions completed a performance evaluation of each officer under their control. Officer performance was measured with Likert scales developed for this project. A copy of this instrument, titled "Job Performance Rating", is included in Appendix J. The facets of performance measured were degree of initiative, amount of effort exerted, job knowledge, work quality, oral communication skills, written communication skills, capacity to learn, effectiveness of time use, ability to work independently, and overall performance. The supervisors were also asked to record the length of time he or she had been the officer's supervisor.

6. Automated Reporting System Evaluation. A 55-item questionnaire was developed to assess the Hollywood officers' and supervisors' perceptions of the Automated Reporting System. This questionnaire is presented in Appendix J. The items targeted such areas as the features of the laptop computers, the abilities of the officers to use the laptop computers, the officers' overall evaluations of the laptop computers vs. hand-written reports, and the data transfer features of the laptop computers. Also, there were three items that were completed only by the supervisors and

asked about the errors in and approval of the reports generated by the laptop computers. All items were responded to on a five-point scale of "strongly disagree" to "strongly agree." Since all 55 items were focused on laptop computers, only officers of the Hollywood Patrol Division completed the questionnaire.

7. Detective Evaluation of the Automated Reporting System. A 13-item questionnaire was developed from the longer 55-item version for the use by the Hollywood Detective Division. This questionnaire is presented in Appendix J. In this questionnaire the focus was more on the benefits of the various features of the laptop computer, the detectives' overall evaluation of the ARS, and the suitability of laptop-generated reports. All items were responded to on a five-point scale of "strongly disagree" to "strongly agree." This questionnaire was administered to only the Hollywood Detective Division.

C. Procedures

1. Data Collection. A total of seven data collection instruments were used in this evaluation. The time-study data collection instrument asked police personnel to record the amount of time they spent on various PIR tasks (see Appendix J). For officers, those tasks were investigation time, writing/editing time, travel time, and approval/correction time. For supervisors, the task was basically their review and approval time. For records clerks, the tasks were data input time, correction time, photocopy/distribution time, filing time, and PACMIS re-verification time.

Police personnel from both divisions completed this time-study instrument. The pre-experimental collection of these data took place during June 6 and 16, while post-experimental collection took place between December 3 and 13. The completed time-study instrument was collected by records clerks and then retrieved by a representative of the evaluation team. In order to assess the reliability of the completion of this instrument, a sample of 45 police personnel were observed by members of the evaluation team. As this sample of police personnel completed and recorded over 200 PIR tasks, the evaluation team member also recorded the amount of time spent on the PIR tasks. Inter-rater reliability was extremely high ($\underline{r}$ = .93), suggesting that the police personnel were able to complete the instrument satisfactorily.

The second instrument, a short questionnaire assessing officers' perceptions of the PIR systems, was completed by officers from both divisions (see Appendix J). The questionnaire asked officers about their ease of use of the PIR system (either hand-written or automated, depending on division and time of data collection), the error proneness of the system, their satisfaction with the system, the quality of reports produced by the system, and the amount of time they spend completing PIR's. The instrument also solicited officers' open-ended comments and suggestions about the PIR system. The pre-test questionnaires were distributed during the first two weeks of April and the post-test questionnaires were distributed during the first two weeks of December. Officers returned their completed questionnaires to the evaluation team via a stamped, self-addressed envelope included with the questionnaire.

The General Information Questionnaire measuring attitudes and perceptions contained 143 items assessing the officer's morale, relations with supervisor, self-esteem, past experiences with computers, perceived role in the department, and the perceptions of LAPD in general (see Appendix J). Both the Wilshire and Hollywood Patrol Divisions were administered this questionnaire. The pre-test administration took place between April 6 and 12 involving 24 shifts (12 at Hollywood and 12 at Wilshire). A total of 78% of the officers assigned to these divisions during that time completed the questionnaire. The post-test administration took place between December 6 and 13 involving 30 shifts (15 at Hollywood and 15 at Wilshire). A total of 73% of the officers assigned to these divisions during this time completed the questionnaire.

At officer roll calls for both the pre and post-experimental administrations of the attitudinal questionnaire, a representative of the evaluation team explained the rationale for the questionnaire, answered any questions, and collected the completed questionnaires from the officers. No ARS Task Force personnel were present during the completion and collection of the instruments. It took an average of 25 minutes to complete the questionnaire.

The PIR Report Content Evaluation Questionnaire was developed to measure the quality of the PIR's (see Appendix J). The quality criteria included references to physical evidence, testimony from victims and witnesses, mention of the corpus, and readability of the document. A random sample of 166 PIR's was taken from those submitted by officers who participated in both waves of data collection. These were randomly ordered in two packets sent to two detectives and two prosecutors who participated in the design of the quality assessment method for content evaluation. One detective and one attorney evaluated each PIR packet to permit evaluation of interrater reliability of measurement. The packets were returned to the CSUF research team and a count was made of the number of words in each PIR narrative to control for rater bias that might arise from the amount of narrative in a report.

The Officer Job Performance Rating was completed by supervisors from both divisions. The instrument requested that the supervisor answer eleven questions regarding each of the officers under his/her supervision (see Appendix J). The questions focused on officer motivation, work efforts, communication skills, and overall performance. Pre-test data were collected between April 6-12, and post-test data were collected between December 6-13. Once the job performance instrument was completed by the supervisor, it was sealed in an envelope and transferred to Dr. Bronston T. Mayes, Principal Investigator of the evaluation.

The Automated Reporting System Evaluation was completed only by officers from the Hollywood Patrol Division. The 55-item questionnaire asked officers about their impressions of the laptop computers, their evaluations of the laptop features, and their experience with computers (see Appendix J). Also, three items were directed toward supervisors only and asked about their assessment of computer-generated reports. The administration took place between December 17 and 21 involving 15 shifts. A representative of the California State University, Fullerton research team explained the rationale for the questionnaire, answered any questions, and distributed and collected the completed questionnaires from the officers. No members of the ARS Task Force were present during the completion and collection of the instrument. It took an average of 15 minutes to complete the questionnaire.

Finally, a shortened Automated Reporting System Evaluation was administered to 35 Hollywood detectives. This 13-item questionnaire asked detectives about the suitability of laptop computer output, the utility of the laptop computer, the ease of use of laptop computers, and their overall evaluation of laptop computer generated reports (see <u>Appendix J</u>). This questionnaire with a self-addressed stamped envelope was distributed and completed between December 12 and 14. Once the questionnaires were completed, they were sent to Dr. Bronston T. Mayes, Principal Investigator of the evaluation team.

2. <u>Training</u>. Training in the use of the laptop computers at the Hollywood Patrol Division was accomplished two ways. First, a formal training program was provided by members of the Automated Reporting System to all officers assigned to the Hollywood Patrol Division during July-August 1990. Through normal officer assignment procedures used in the LAPD some of the trained officers were transferred out of the Hollywood Patrol Division and some

untrained ones were assigned to the division during the June-December 1990 period. New assignees were trained by Hollywood personnel who had been trained by ARS staff. At the end of the experimental period, however, the AM watch at Hollywood had received less computer training than the other watches.

D. Analysis

1. Data. Data included in the analysis of experimental effects were from officers that participated in both waves of data collection. In other words, matched data collected from police personnel at both the pre-experimental and post-experimental times were included for analysis. Data without matched pre or post-experimental counterparts were excluded from analysis. This sampling rule should help minimize any error introduced due to officer (or individual) differences. Given this sampling rule, a pre-experimental and a post-experimental measure for each variable were available for each analysis.

2. Regression Techniques. The primary method of analysis to test for experimental effects was hierarchical regression. This method was chosen in preference to analysis of variance because the number of subjects varied widely in experimental and control group cells when these populations were further subdivided by rank, assignment detail, or watch. Such unequal cell sizes will distort analysis of variance results, but will have no effect on regression analysis.

The test of an experimental effect is accomplished by comparing the December mean score of some criterion variable, for example average PIR writing time, of Hollywood officers with Wilshire officers after controlling for the June scores of the same variable. The control for June scores is needed to account for pre-experimental differences that may have existed between the two divisions before computers were introduced into Hollywood Patrol Division.

Since it is also possible, if not very likely, that computer use might affect watches, ranks, or details differently, the analyses also included a test for interactions between experimental-control group membership and the watch, rank, or detail of the officers. Separate regressions were conducted for interaction analysis of watch, rank, detail, organization tenure, amount of training received, and computer anxiety.

In each analysis the regression routine was accomplished as follows. At Step 1 the June measure of the criterion variable was introduced to control for Hollywood-Wilshire differences before computer introduction. At Step 2 the control variable or dummy codes for watch, rank, or detail were entered into the regression. A significant R^2 change at this step indicates a main effect for the control variable(s). At Step 3 of analysis the dummy coded variable accounting for division membership was entered into the regression. A significant R^2 change at this step indicates that the Hollywood and Wilshire Patrol Divisions differ with respect to the December criterion score after controlling for June differences and differences that may be due to the control variable(s). At Step 4 the product terms of the division dummy code and the control variable(s) were entered into the analysis. A significant R^2 at this step indicates an interaction is present and that the effect of computer use is not uniform for all levels of the control variable.

When significant interactions exist between the experimental group variable and watch or detail, this means that the effect of computer use is not uniform for all ranks/watches/details. Instead, compared to the control group (Wilshire) and the other ranks/watches/details, one or more rank/watch/detail is significantly different. The significant $\underline{B}$ for the interaction term means that for the affected rank/watch/detail the difference between Hollywood and Wilshire is 'B' units higher or lower (depending on the sign of B) than the difference between the mean score of all Hollywood and Wilshire watches/details. In effect, the use of computers was more (or less) effective in these groups than on the average.

To help illustrate the meaning of the significant regression analyses, bar graphs were constructed to show the criterion values for Hollywood and Wilshire in April/June and in December. These data and graphs are included in the Appendices to this report.

3. Statistical Significance. The customary level of statistical significance for social science research is $\underline{p} \leq \underline{.05}$. This means that the results obtained from an analysis would occur by chance alone less than 5% of the time. In other words one could

be 95% sure that the relationships detected in a study are accurate representations of the population providing data. For purposes of this report, a less stringent level of significance ($p < .10$) was chosen for inclusion of a statistical analysis in the report. This level was chosen as a conservative level of acceptable administrative error. If a manager could be sure that only 10% of his or her decisions are in error, he/she would be happy indeed. In fact, the customary level of administrative error is far in excess of 10%.

III. Results

A. Computer Effects on PIR Writing

The first set of analyses explored the effects of computerization on various aspects of PIR processing. Of particular interest was the degree to which computer use might change the amount of officer, supervisor, and clerical time devoted to this purpose. In addition, it was expected that the number or type of errors found in PIR's might change as a result of computer use. These analyses are based on PIR's collected at the beginning of the experiment in June and again at the end of the experiment in December. Only those officers providing PIR's at both times are included in this analysis.

1. Main Effects for Experiment. The first analysis conducted on the PIR data was to determine whether the use of computers in the Hollywood Patrol Division produced an overall change in officer time use, PIR errors identified by supervisors, or clerical functions related to PIR processing. There were no significant increases in officer or supervisor times in writing or processing PIR's (namely, investigation time, writing time, travel time, and approval time for officers, and review time for supervisors) as a result of computerization in the Hollywood Patrol Division. Further, there were no significant increases in the number of errors in PIR's (e.g., missing fields, inaccurate entries, incomplete entries, unreadable entries, or misspellings) as a result of computerization in the Hollywood Patrol Division. Thus,

computerization, especially at this early stage of technological adaptation, did not significantly increase officer times or inaccuracies for PIR tasks. At the significance level appropriate for administrative interpretation ($p < .10$), only average total clerical time showed a change that could be attributed to computerization ($p < .06$). The Hollywood clerks used more time per PIR than the Wilshire clerks after PIR writing was computerized.

In the absence of main experimental effects, additional analyses were performed to determine whether the experimental effects were different for watch, detail, or rank of the officer.

2. Main Effects for Detail. Analysis of the data shows that after controlling for June scores, there are differences among detail assignments for several categories of officer December time use in preparing PIR's. These detail differences are independent of computer use, that is, they occur for both the Hollywood and Wilshire Patrol Divisions. Figures A1 to A18 depicting these differences are located in Appendix A. The overall significance of detail differences and the number of officers included in the analysis are shown in the lower left corner of each figure. The significance level reported below for a particular detail is the p value for the regression beta coefficient of the dummy coded variable indicating an officer's assignment to the detail.

As depicted in Figure A1 in Appendix A, there was a significant difference among details for the average total amount of time an officer spends processing one PIR. The Patrol ($p < .001$) and U-Car ($p < .06$) are above the average of all details in total PIR processing time, while the Storm ($p < .02$) and Desk ($p < .01$) are significantly below the average in total PIR processing time.

The differences among details with respect to average PIR total processing time can be explained by analyzing the components of time use that are included in the total time computation. For example, Figure A2 in Appendix A shows that a similar pattern exists for average travel time per PIR. This is the amount of time spent traveling to or from the station for the sole purpose of processing the PIR, this would not reflect the amount of time traveling to the scene of a crime or travel time while investigating the crime. The Patrol ($p < .001$) and U-Car ($p < .08$) details are above the average travel time, while Storm ($p < .004$) and Desk ($p < .01$) details are below the average for travel time. The fact that Storm and Desk details have any travel time at all, since they are attached to the Division station may reflect activities while on ad-hoc assignment to the field.

Figure A3 in Appendix A shows that differences among details exist for average investigation time as well. The significant differences are for the U-Car detail showing higher than the average investigation time ($p < .01$) and the Storm detail reporting less than the average ($p < .04$).

Detail differences in average writing time are displayed in Figure A4 in Appendix A. After controlling for June writing time differences, the December writing time average for the Patrol detail at both divisions is significantly higher ($p < .001$) than the average of all details. While not statistically significant, it is interesting to note that PIR writing time tended to decline in general between the June and December data collection periods. Two exceptions are apparent; the Wilshire Storm detail increased in writing time, as did the Hollywood Desk detail.

3. Detail Interactions. One significant interaction was obtained between detail and experimental group membership indicating that the effect of computer use was not uniform for all details at the Hollywood Patrol Division. The criterion involved was the average number of copies made in December after controlling for June copy levels. Figure A5 in Appendix A shows that the December number of copies is lower for Hollywood compared to the Wilshire Patrol Division. The interaction analysis revealed that the Wilshire-Hollywood difference is smaller for the Patrol detail ($p < .03$) and larger for the Storm detail ($p < .007$) than the average difference for all details. Computer introduction seems to reduce the need for report copies compared to the hand-written reporting method.

4. Experimental Effects Controlling for Watch. Hollywood-Wilshire post-experimental differences in various clerical functions were masked by clerical differences associated with the watch of the officer filing the PIR. After removing the effects of watch by introducing dummy coded variables into the regression, experimental differences between the Hollywood and Wilshire Patrol Divisions became evident. Figure A6, Figure A7, and Figure A8 in Appendix A show the results of these analyses for average total

clerical time, average number of PIR copies, and average clerical input time. After controlling for watch differences, the Hollywood Patrol Division shows more average clerical time ($p < .002$), more average clerical input time ($p < .04$) and fewer PIR copies ($p < .001$) than the Wilshire Patrol Division in December. It would appear that the use of computers for PIR generation, at least in the short term, is associated with more clerical time per PIR, but a reduced need for PIR copies.

5. Experiment and Watch Interactions. Data analysis revealed that the effect of computer use on PIR errors and officer time use was not uniform for all watches. Experimental effects were more notable for some watches compared to others. Figure A9 in Appendix A shows the effect of computer use on average total PIR errors. After controlling for June levels of average PIR errors the post-experimental difference between Hollywood and Wilshire Patrol Divisions for the Mid-PM ($p < .02$) and AM ($p < .12$) watches is greater than the average difference among all watches. The Hollywood watches show more PIR errors for these watches than the Wilshire watches. For the Mid-day Hollywood watch, the average total PIR errors was reduced to zero. It would appear that in terms of average total PIR errors, compared to the Wilshire Patrol Division, the Hollywood Mid-day watch showed improvement, but the Mid-PM and AM watches worsened. In terms of the percent of PIR's containing errors, Figure A10 in Appendix A shows essentially the same data profile as Figure A9, as would be expected since similar computations were used to produce both tables. Figure A11 in

Appendix A provides additional information about the nature of the errors shown in Figure A9. This figure shows that inaccurate entries are the major source of PIR errors.

The effect of computer report writing on the average total amount of time spent per PIR is illustrated in Figure A12 in Appendix A. Again the experimental effect varies by the watch of the officer. The Hollywood-Wilshire post-experimental difference in average total time per PIR is less than the average for the PM watch ($p < .08$) and greater than the average for the AM watch ($p < .04$). Inspection of the bar graph shows that PIR total time either declined or remained approximately the same for both Hollywood and Wilshire Patrol Divisions except for the AM and Mid-day watches. At Hollywood the AM and Mid-day watch officers reported an increase in time devoted to PIR writing while the Wilshire officers reported a decline from the June to December time period. The AM increase in average time may be due to the limited amount of computer training given to these officers.

The data show that changes in travel time for accomplishing PIR review and correction took place during the course of the computer experiment. Figure A13 in Appendix A shows these changes. The Day and Mid-PM watches are significantly different from the average in Hollywood-Wilshire contrasts for December travel time after controlling for June travel time. Statistically, the Day watch shows a smaller ($p <.08$) adjusted difference and the Mid-PM watch a larger ($p < .01$) adjusted difference than the watch average. Inspection of the bar graph reveals that a reduction in travel time was achieved for all watches except Hollywood Mid-PM and AM watches where travel time increased.

Figure A14 in Appendix A shows the changes in average PIR writing time over the course of the experiment. Again the effect of computerization varied by watch. The Wilshire-Hollywood December difference in writing time (controlled for June differences) is less for the Day watch ($p < .07$) and greater for the AM watch ($p < .03$) than the average difference for all watches. The bar graphs show that, in general, there was a decline or no change in average writing time for all watches in both divisions. Two exceptions are the Hollywood Mid-day and AM watches that showed increases in PIR writing time over the course of the experiment.

6. Practice Effects on Writing Time. One explanation of why the Hollywood Mid-day and AM watches increased their PIR writing times and total PIR time use relative to other groups is that they may have had less practice in using the computer system. If they wrote fewer PIR's than other watches, their facility with the computer would not be as great. To test this possibility a comparison of frequencies was made for PIR's submitted by the Hollywood watches. A significant difference existed among the watches for December PIR submissions ($p < .007$). Over the data collection period, the Day watch provided an average of 4.9 PIR's, the Mid-day watch 2.3 PIR's, the PM watch 4.9 PIR's, the Mid-PM watch 3.0 PIR's, and the AM watch 2.5 PIR's. These averages show that PIR computer writing time seems to be a function of the number of PIR's produced. The more practice an officer has with the

computer system, less time is spent writing each PIR. From the standpoint of adaptation to technological innovations, these results suggest that given experience with the computer generated reports, officers are more proficient with and accepting of the computer technology.

To further explore the relationship between writing practice and officer time use, regression analyses were performed for writing, investigation, and total time with number of PIR's submitted and division as independent variables. Figure A15 in Appendix A illustrates the effect of PIR practice on total time devoted to PIR processing. The main effect for number of PIR's submitted ($p < .08$) shows that for both Hollywood and Wilshire Patrol Divisions, officers who submitted 4 or more PIR's during the December collection period spent less time per PIR than those officers submitting 3 or fewer PIR's. Figure A16 in Appendix A shows that the Hollywood Patrol Division officers took more time writing PIR's in December than the Wilshire officers ($p < .06$). Inspection of this figure, however shows that Hollywood officers who submitted 3 or fewer PIR's had a slight increase in PIR writing time over the course of the experiment, while those submitting 4 or more PIR's show a reduction in PIR writing time.

Investigation time was also affected by the interaction of computer use with practice ($p < .05$) as illustrated in Figure A17 in Appendix A. Hollywood officers providing 3 or fewer PIR's had an increase in investigation time compared to their Wilshire counterparts, while officers at both divisions submitting 4 or more PIR's had a decrease in investigation time.

These analyses suggest that the amount of time spent writing PIR's might be slightly reduced through computer use. However, this improvement is likely to occur only for those officers who write more than the median number of PIR's. It is possible, that their writing speed would increase if they use the computer system longer than the term of this experiment; such a conclusion, however, is not supportable with these data.

Average investigation time seems to be reduced through practice for both divisions, but, for officers below the median in PIR production investigation time may slightly increase when computers are used in report preparation. This may reflect the tendency of officers to use computers to record investigation information and those less familiar with the computer will naturally take longer.

7. Experiment and Rank Interactions. The effect of computer report writing on the time spent by an officer in getting supervisory approval and then making corrections differed by virtue of the rank of the officer. Figure A18 in Appendix A shows that for the PO I rank approval and correction time increased at Hollywood and declined at Wilshire ($p < .02$). PO II's at both divisions showed a reduction in approval and correction time, while PO III's showed a small increase in Hollywood and a larger increase at Wilshire. These differences in approval and correction time do not appear to be the result of practice effects as was the case

with writing and investigation time. No main or interaction effects were found for number of PIR's produced on approval and correction time.

B. Computer Effects on PIR Quality

A panel of end users of PIR's was convened to evaluate the quality of PIR's generated with the Automated Reporting System and with the hand-written system. This panel consisted of two detectives, a city attorney, and a district attorney. They were given a random sample of PIR's from both Hollywood and Wilshire Patrol Divisions taken before and after the introduction of the computerized system at the Hollywood Division. The PIR's were rated on the number of incomplete, inaccurate, or missing entries in the various data fields, or "boxes", on the form. In addition, the written narrative was evaluated for the quality of the officer's observations at the crime scene, organization/writing style, description of physical evidence, completeness of general investigation, quality of statements taken from victims, witnesses, or suspects, and the completeness of corpus elements needed to file for prosecution of the crime.

Compared to the hand-written system, the Automated Reporting System showed no changes in quality of writing style, description of physical evidence, completeness of general investigation, or statements taken from victims, witnesses, or suspects. Quality changes were noted, however, for total "box" entry errors, quality of observations at the crime scene, and listing of corpus elements.

Figure B1 in Appendix B shows that compared to the Wilshire Patrol Division, PIR's written with the Automated Reporting System improved in observation quality. In June both divisions showed equal observation quality and both divisions improved in December. The Hollywood PIR's, however, showed a greater degree of improvement ($p < .10$) than the Wilshire PIR's.

The most significant change in PIR content noted as a result of computerization was the improvement in average missing, inaccurate, or incomplete "box" entries. As shown in Figure B2 in Appendix B, the average number of these errors per PIR was significantly reduced ($p < .002$) at the Hollywood Patrol Division, while these errors increased slightly at the Wilshire Patrol Division. Apparently, the computer program requiring sequential attention to each PIR "box" had the desired effect on this aspect of PIR quality.

The quality of corpus element listings in the PIR's is presented in Figure B3 in Appendix B. While both PIR writing methods performed well in this respect, the hand-written PIR's demonstrated a slight, but significant ($p < .02$), advantage over the Automated Reporting System PIR's. While no change was observed in the Hollywood Patrol Division PIR's, the Wilshire Patrol Division PIR's improved in corpus quality over the course of the experiment.

This finding seems inconsistent with the improvement found in the officers' observations in the automated PIR narratives. Improved observations should increase the likelihood that essential corpus elements would be present. It is possible that the improvement in the Wilshire PIR's was due to an unspecified administrative change that took place at the Wilshire Patrol Division, but not at the Hollywood Patrol Division, and may not be due to the reporting system itself.

The members of the evaluation panel were interviewed and asked to subjectively rate the Automated Reporting System PIR's with respect to ease of use and overall quality compared to the hand-written reports. The consensus of the four panel members was that the automated PIR's were much better in quality and slightly easier to use. They stated that the reports would be easier to use as they became accustomed to the location of various kinds of information on the redesigned form. In addition, ease of use could be improved by enlarging the type face of the printed output.

C. Computer Effects on Officer Job Performance

1. Experimental Main Effects. The first analysis tested for simple experimental effects on officer job performance as rated by his or her supervisor. There were no significant differences between Hollywood and Wilshire Patrol Divisions for any facet of officer job performance in December after controlling for April performance and the length of time assigned to the rating supervisor. This means that the change to computer report writing

at the Hollywood Patrol Division had no effect on officer job performance or that the computer effect was masked by performance differences attributable to watch, rank, or detail. Additional analyses were performed to determine whether changes in job performance were due to rank, detail, watch or their interaction with computer report writing. These analyses revealed that job performance changes during the experiment differed with respect to the rank of the officer being evaluated.

2. Experiment and Rank Interactions. Figures showing the nature of the significant interactions between computer use and officer rank with respect to officer performance evaluations are contained in Figures C1 to C6 in Appendix C. Figure C1 in Appendix C shows the interaction of computer use and rank on ratings of officer initiative. The significance of this interaction ($p < .005$) is attributable to the PO I and Sergeant ranks. PO I's showed a larger Hollywood-Wilshire difference ($p < .0008$) and the Sergeants a smaller difference ($p < .01$) than the average difference for all ranks. Inspection of the bar graph reveals that these differences occurred because PO I's at Hollywood improved in initiative relative to Wilshire PO I's. The Hollywood Sergeants showed no change in rated initiative while their Wilshire counterparts demonstrated an improvement. It also appears that the PO III's at Hollywood showed an initiative improvement pattern similar to the PO I's; their initiative improved while the Wilshire PO III's declined.

Officer rated effort also differed with respect to rank and division. Figure C2 in Appendix C shows that the significant interaction ($p < .04$) was primarily due to the PO I's ($p < .009$) who had a larger Hollywood-Wilshire difference than the other ranks. The bar graphs also show that effort improvements are noted for Hollywood PO I's and PO III's; their Wilshire counterparts showed no appreciable change in effort. Effort for the Hollywood PO II's and PO III+1's declined while their Wilshire counterparts improved. Sergeants at Hollywood showed no appreciable change in effort contrasted with a slight increase at Wilshire.

Figure C3 in Appendix C illustrates the significant interaction ($p < .03$) between rank and computer use on officer work quality. The PO I rank showed a greater difference between Hollywood and Wilshire Patrol Divisions ($p < .004$) than the average rank difference and the Sergeants were below the average rank difference ($p < .05$) after adjusting for April work quality. The Hollywood PO I's work quality improved relative to Wilshire while the Hollywood PO II's and PO III+1's work quality declined. PO III and Sergeant work quality improved in both divisions.

As noted in Figure C4 in Appendix C, the effectiveness of an officer's use of time on the job also differed by rank and division interaction ($p < .03$). The ranks primarily responsible for this interaction are the PO I's (above the average difference; $p < .02$), PO III's (above the average difference; $p < .06$), and the Sergeants (below the average difference; $p < .04$). The pattern of time use effectiveness ratings shows that, compared to Wilshire officers, the Hollywood PO III's improved and the Hollywood Sergeants declined slightly. The Hollywood PO I's, PO II's and PO III+1's showed essentially no change in time use effectiveness, but their Wilshire counterparts improved (PO II's & PO III's) or declined (PO I's) over the experimental period. On balance, compared to Wilshire officers, the Hollywood POI's and PO III's time use effectiveness was enhanced by computerization, while the PO II's, PO III+1's and Sergeants' effectiveness declined.

Oral and written communication skills appear to be related to the interaction of computer use and rank. Figure C5 in Appendix C shows the interaction effect on oral communication skill ($p < .03$) and Figure C6 in Appendix C shows the interaction effect on written communication skill ($p < .11$). While this latter significance is outside the limit set for this report, the near significance and the relevance of this performance dimension for computer report generation warrant its inclusion here. For each dimension the PO I rank shows a significantly greater Hollywood-Wilshire difference than the average difference for all ranks. In the Wilshire Patrol Division all ranks except the PO I's showed an improvement or no change in both written and oral communication skills. For the Wilshire PO I's oral communication skills declined over the course of the experiment. In the Hollywood Patrol Division the oral and written communication skills improved for PO I's, PO III's, and Sergeants, and declined somewhat for the PO II's and PO III+1's. Compared to Wilshire officers, the Hollywood PO I's benefitted most from computerization with respect to their written and oral communication skills. While writing skill may be enhanced by computerization, the enhancement in oral communication skills of the PO I's were probably due to increased communication confidence resulting from their increased proficiency of the computer.

D. Computer Effects on Officer Attitudes and Perceptions

1. Main Effects for Experiment. Analysis of experimental effects on officer attitudes and work perceptions revealed that significant differences in perceptions of supervisory behavior existed between the Hollywood and Wilshire Patrol Divisions after introduction of computer report writing into the Hollywood Patrol Division. There were no significant main effect differences in the other attitudes and perceptions measured.

Figure D1 in Appendix D shows that Hollywood officers perceive that their leaders' consideration ($p < .03$), participation in decision making ($p < .001$), role clarification ($p < .01$), and goal setting ($p < .001$) became less frequent during the course of the experiment. It is also evident that officers perceive these behaviors to be less frequent at the Hollywood Patrol Division both before and after the experiment.

One explanation for this overall reduction in leader behavior is that automation of report writing may have slightly reduced the need for these leader behaviors at the Hollywood Patrol Division, perhaps as a result of less frequent officer interactions with supervisors. In other words, consistent with current thinking about leadership in organizations, computer use may actually substitute for some behaviors normally associated with leadership. This does not mean, however, that relationships between officers and their supervisors declined in quality. As will be reported later in this report, job satisfaction (usually associated with leader relationships) did not change over the course of the experiment for the Hollywood officers.

2. Experimental Effects Controlling For Rank. Some of the changes in attitudes and perceptions noted during the experiment differed based on the rank of the officer. These rank differences appeared to mask some experimental effects. Figure D2 in Appendix D shows the changes that took place in the amount of control officers felt they had over things that happen to them on the job. After controlling for April levels of experienced control, the Hollywood officers reported less control ($p < .09$) than their Wilshire counterparts reported in December. The patterns of officer responses reveal that only the PO III's at Wilshire failed to show an increase in experienced control, while at Hollywood control slightly increased for PO II's and declined slightly for Sergeants.

One possible explanation for these differences in control perceptions may rest on differences in leader participation in decision making, role clarification, and goal setting noted between the two divisions. These leader behaviors should be positively related to the amount of control the officers experience over some of their work outcomes. Therefore, because these behaviors were lower at Hollywood than at Wilshire, the amount of control experienced by Hollywood officers should be correspondingly lower.

The amount of workload reported by the officers varied by rank. After controlling for rank differences, the Hollywood officers reported an increase in workload ($p < .06$) compared to the Wilshire officers. Figure D3 in Appendix D shows that this increase in workload was experienced primarily by the PO III's and Sergeants at Hollywood. All ranks at Wilshire and the PO I's and PO II's at Hollywood reported a slight decrease in workload over the course of the experiment. These workload increases for higher ranking officers might be expected since they carried additional responsibility for coaching and instructing junior officers in the use of the computer reporting system.

3. Main Effects for Rank. The amount of depression experienced by the officers differed according to their rank. Figure D4 in Appendix D shows that Hollywood PO III's report significantly higher levels of depression in December than their Wilshire counterparts after controlling for April depression levels. These differences are probably not of any clinical significance since officers in both divisions report very low levels of depression. Furthermore, this aspect of mental health did not seem to change significantly at the Hollywood Patrol Division during the introduction of the computerized reporting system.

4. Experiment and Rank Interactions. Several attitudes and perceptions seem to have changed during the course of the computer

experiment that differ according to the rank of the officer providing data. Figure D5 in Appendix D shows that the amount of anxiety experienced about computer use, while rather low overall, does seem to depend on the rank and division of the officer ($p < .07$). Relative to Wilshire officers, the Hollywood PO I's experienced a reduction in computer anxiety ($p < .02$), while the PO II's reported an increase ($p < .04$).

Self esteem, another indicator of overall good mental health, showed division and rank differences. Extremely high overall, as shown in Figure D6 in Appendix D, self esteem of the PO III's at Hollywood was significantly higher ($p < .007$) than their Wilshire comparison group at the end of the experiment. This seems to be due to a decline in esteem at the Wilshire Patrol Division coupled with a slight increase at the Hollywood Patrol Division for this rank. This is similar to the self esteem profiles reported earlier and probably reflects the normal negative correlation found between these two aspects of mental health. Both divisions, based on these data seem to experience very high levels of mental well-being.

The degree to which officers feel their skills are underutilized varied by division and rank ($p < .008$). Skill underutilization is a job stressor that might lessen as a result of changing to a higher technology report writing system. Figure D7 in Appendix D indicates that only the Hollywood PO II's did not show a reduction in this job stressor. However, at Wilshire Patrol Division greater reductions in skill underutilization were noted for the PO I and PO II ranks than at the Hollywood Patrol Division.

In terms of statistical significance the Hollywood PO I's experienced less reduction in this stressor than Wilshire PO I's ($p < .02$) while Hollywood PO III's ($p < .07$) and Sergeants ($p < .02$) experienced more of a reduction than their Wilshire counterparts.

The improvement in skill utilization at Hollywood Patrol Division is what would be expected as a result of computerization of the report writing function. However the changes at the Wilshire Patrol Division for the PO I and PO II ranks are puzzling. It is possible that some change in the way these officers perform their duties took place in the Wilshire Patrol Division, but not at Hollywood. If this is the case, Hollywood changes may have been due to computer use, while Wilshire changes may be due to an undefined redefinition of job duties.

E. <u>Officer Evaluations of Both Reporting Systems</u>

Hollywood and Wilshire Patrol Division officers were asked to provide an evaluation of the PIR writing method they were presently using. These evaluations took place in both divisions in April and in December. At the Wilshire Patrol Division the hand-written method was being used at both times. At Hollywood, however, computers were introduced very soon after the April measurement wave, thus December measures at Hollywood reflect the experience with the computerized writing system.

1. <u>Experimental Main Effects</u>. The officer evaluations clearly demonstrate that the Hollywood officers' perceptions of the reporting system changed as a result of computer use. Virtually no

change in these perceptions took place at the Wilshire Patrol Division where the old system remained in place. Figures E1 through E4 in Appendix E show that Hollywood officers felt the computer system reports were easier to correct, improved their overall job performance, and enhanced the quality of reports written. The Hollywood officers were also more satisfied with the computer system than with the hand-written system. While slightly outside the statistical limits of acceptability for this study, the officers reported that the computerized system was somewhat less prone to errors than the old method ($p < .12$). No differences existed between the two reporting systems with respect to ease of use, frustration experienced with the writing system, time lost due to system problems, or amount of time spent each day writing reports.

Overall, the officers' evaluations of the computerized reporting system indicate that the system is better than the hand-written one with respect to the quality of reports, ease of making corrections, and impact on job performance. These benefits appear to have occurred without some of the negative side effects (time loss, frustration, system problems) that might be expected as a result of changing the report writing method.

F. Hollywood Detective Evaluation of the Automated System

A total of 35 Hollywood detectives were asked about their impressions of the automated reporting system. The results of this survey are presented in Table F1 and Table F2 in Appendix F .

Table F1 in Appendix F shows the scale response frequency for each questionnaire item. To further aid in interpreting these data the two "agree" response categories were combined to show overall agreement with each questionnaire item. The average (mean) response and the standard deviation (the statistical measure of response range) of the responses to each item were also computed to show the overall response profile for each item. Overall agreement, means, and standard deviations for each item are presented in Table F2 in Appendix F.

As shown in Table F2 in Appendix F the greatest amount agreement was expressed for the following four items: "The automated system reports would be easier to use if the print was larger" (90% agreement), "A spell-check feature in the ARS computers would improve the quality of reports" (85.8%), "Reports generated by the automated system are an improvement over hand-written reports" (80%), and "I would support a department-wide automated reporting system" (80%). The Hollywood detectives also noted that the ARS reports were at least as complete as the hand-written reports, were easier to read, and suitable for court testimony. They also felt that adequate training and support were provided by the ARS Task Force during the experimental period. These detectives, however, did not think that their overall crime clearance and filing rates would improve if all paperwork was automated. Thus, generally positive feelings for computer generated reports were expressed, although the ARS is not viewed as a panacea for problems in the jurisprudence system.

G. Hollywood Officer Evaluation of the Automated System

Hollywood officers and supervisors were asked to give their impressions of the automated reporting system by responding to a questionnaire administered at the end of the experiment. The results of this survey are presented in Tables G1 through G4 in Appendix G.

Frequency distributions for the officers' responses to the 52 items are presented in Table G1 in Appendix G. The supervisors' responses to these items and the three additional items they were asked to complete are presented in Table G2.

To simplify analysis of these data, a data-reduction statistic, factor analysis, was employed to discern the underlying dimensions of the 52 items. Identification of these dimensions shows which questionnaire items can be combined into summary scales that reflect important features of the ARS. Through this process a large number of statements can be combined into a few easily understood summary concepts.

The statistical routine used was an oblique factor analysis because it was felt that the underlying dimensions of evaluation were very likely correlated. Two criteria were used to determine the number of underlying factors: a scree test of the eigenvalues and the interpretability of the resultant factors. Based upon these two criteria, a four-factor solution was retained. A listing of the factor items and their correlations (i.e., loadings) on the four factors are presented in Table G3 in Appendix G.

In terms of the interpretation or labeling of the factors, a clear pattern emerges for the four factors. The factor loadings shown in Table G3 in Appendix G are used to define the meaning of the opposite ends of the factor scale. Negative loadings define one end of the factor scale and positive loadings define the other. The size of the factor coefficient indicates how important the questionnaire item is in defining the factor scale.

For Factor 1, one end of the scale reflects favorable attitudes toward hand-written PIR's. Those items used to define this end of the scale are the items with negative factor correlations (loadings) in Table G3 in Appendix G. For example, questionnaire item 17 states the officer would rather write reports by hand and its factor loading correlation is -.72. An officer who agrees with this statement has a favorable attitude toward the hand written system and would be less favorable toward the automated system. The other end of the Factor 1 scale reflects favorable attitudes toward the automated system. Those items used to define this end of this scale are those with positive factor loadings. For example, questionnaire item 43 states that entering reports by computer saves time. It has a positive (.67) factor loading and an officer who agrees with this item would have a favorable evaluation of the automated reporting system. This factor was labeled Overall Evaluation of the ARS and the items were combined into a single scale reflecting the favorableness of the officer's or supervisor's evaluation of the ARS. Low scores on this scale reflect an unfavorable evaluation of the ARS and a corresponding favorable evaluation of the written system. High scores on this scale would reflect a favorable evaluation of the ARS and an unfavorable evaluation of the written method.

The second factor consisted of items reflecting officers' ability/inability or experience/ inexperience with computers; thus, it was labeled, Computer Aptitude. The end of the scale defined by the items with negative loadings reflects familiarity with computers and some typing skill. The other end of the scale defined by items with positive loadings reflects a lack of prior computer experience, concern for being responsible for a delicate piece of equipment, and difficulty in using the laptop computer because of low typing skills. When the items were combined to form factor scores, recoding was performed so that high scores on this factor reflect adequate typing skill, a familiarity with computers, and experience in using computers. Low scores on this factor show a concern for being responsible for a delicate piece of equipment, or a lack of typing skill.

The items with significant loadings on Factor 3 were concerned with officer evaluations of the features of the laptop computers, e.g., keyboard, scrolling fields, screen, and on-screen help menu. This third factor was labeled Utility of Laptop Features. The scale end defined by negatively loaded items indicates difficulty in reading the screen, using the keyboard, and using the scrolling screens. The opposite end of the scale defined by positively loaded items indicates that the computer features were easy to use and training in their use was adequate. Higher scores on this factor indicate an overall positive experience with the features of the computer, while low scores indicate some degree of trouble arising from the computer's features.

Finally, the significant items loading on Factor 4 were concerned with the transfer and storage of data files. We labeled this factor, File Manipulation Ease. The factor scores were computed so that high scores on this scale indicate a lack of problems in transferring or storing computer files. Low scores on this scale show that problems occurred for the officer or supervisor in transferring data or losing files.

Reliability analyses were computed on the four sets of items having significant loadings on the four factors. The results indicated satisfactory levels of reliability for the four sets of items (Cronbach's alpha = .93, .83, .81, and .72 for factors 1-4, respectively). Given adequate levels of inter-item reliability, factor scores were computed as the average of the questionnaire item scores for the four factors. These factor scores were computed such that the larger the value of the score, the more favorable the disposition toward the automated computer system, e.g., the larger the value on the utility of laptop features scale, the more favorable the officer's rating of the laptop's features.

The overall means (and standard deviations) for the four scales are: Overall Evaluation Scale = 3.16 (.84), Computer Aptitude Scale = 3.58 (.83), Utility of Laptop Features Scale = 3.74 (.61), and File Manipulation Ease Scale = 3.27 (.94). Since these scales were based upon a 1-5 scale, we can infer that the officers were neutral to slightly favorable in terms of their overall ratings of the system and their assessment of the file manipulation capabilities of the system. The officers were a bit more positive in their assessments of their own computer abilities as well as the laptop computer features.

The four scales were examined to determine whether they significantly varied across officer rank, watch, and supervisor status (i.e., supervisor vs. non-supervisor). Analyses of variance revealed only two significant main effects: significant differences were found between supervisors and non-supervisors for both the Overall Evaluation Scale ($F=4.6$, $p<.05$) and the Utility of Laptop Features Scale ($F=5.0$, $p<.03$). In both cases, non-supervising officers provided more favorable assessments of the automated computer system than did their supervising counterparts.

Besides the four scales above (and their constituent items), there were twenty other items that were not included in the above analysis. These twenty items and their corresponding descriptive statistics are presented in Table G4 in Appendix G. The items attaining the greatest agreement among the officers were: "The pop-up windows are easy to use" (72.9% agreement), "I would be comfortable using a computer report to testify in court" (68.5%), "The laptop's report format is suitable for my needs" (60.4%), "Computer-entered reports are easier to correct" (56.3%), "A spell-check feature would make it easier" (55.6%), and "I received enough training in the use of computers" (54.1%). The overall impression from these results is that the officers have favorable opinions regarding laptop computers. The items attaining the least agreement were: "Laptops are a gimmick; they won't be around too long" (3.1%), "The telephone transfer of reports to the station system is easier than disk transfer" (4.7%), "It is difficult to find a place to store the laptop computer in the patrol car" (5.3%), "I received too much training in the use of computers" (6.0%), and "It took me a long time to get used to using the laptop" (8.3%). On the bases of these results, it would seem that the officers did not perceive significant problems with the use of laptop computers.

Analyses of variance for the twenty items not included in the four factors were computed for officers' rank, watch, and supervisory status (i.e., supervisor vs. not supervisor). There were no significant differences in the twenty items for officers' rank or watch, however four of the twenty items significantly varied between supervisors and non-supervisors. More specifically, supervisors indicated greater agreement than non-supervisory officers on "It is difficult to find a place to store the laptop in the patrol car" and "I received too much training in the use of laptop computers"; while non-supervisory officers indicated greater agreement than supervisors on "It took me a long time to get used to using the laptop computer" and "The pop-up windows are easy to use."

A frequency distribution for the Hollywood Patrol Division supervisors' responses to the Automated Reporting System evaluation questionnaire is provided in <u>Table G2</u> in <u>Appendix G</u>. In additicr.

to the questionnaire items completed by the officers, the supervisors answered three questions that were not answered by patrol officers. These last three items in Table G2 in Appendix G (and their corresponding descriptive statistics) were: "Compared to hand-written reports the automated system reports were easier to review and approve" (mean=3.29, sd=1.38), "Automated system reports were less complete than hand-written reports" (mean=2.57, sd=1.12), and "Automated system reports had fewer errors than hand-written reports" (mean=3.43, sd=.98). Since the response scale ranged from 1 strongly disagree) to 5 (strongly agree), these results can be interpreted as indicating moderate agreement for the favorable evaluation of the system and for the belief that fewer errors are produced by the ARS. Further, moderate disagreement was expressed regarding the perception that computer-generated reports were less complete than hand-written reports. Because of the way the question was worded, we cannot conclude that the ARS reports were more complete than the hand-written ones. A conservative conclusion is that supervisors found the ARS reports to be at least as complete as the hand-written reports.

These post-hoc assessments of the Automated Reporting System seem to be less favorable than the pre- and post- reporting system evaluations presented in section III-E (Officer Evaluations of Both Reporting Systems) above. This is most likely due to the fact that the post-hoc evaluations were completed by officers assigned to the Hollywood Patrol Division at the end of the experiment. The data presented in section III-E were provided by officers who were assigned to the division both before and after the computers were put in place. It would appear that officers who have had more opportunity to use the laptops are more favorably disposed to their use.

H. Supplemental Data

Information that could be used by the LAPD to assess cost savings associated with computer use in writing PIR's, such as the amount of time spent in various PIR preparation and processing activities and the errors noted in the PIR's, is presented in Appendix H. Table H1 contains data for the June PIR collection period and Table H2 shows data for the December collection period. These tables show the overall time and error content of all PIR's collected during these time periods.

At the request of the ARS Task Force, written comments were obtained as part of the officers' and supervisors' evaluations of the Automated Reporting system. These written comments and suggestions for improving the ARS are included verbatim in Appendix I.

IV. Summary and Conclusions

A. The Experiment

With support from the National Institute of Justice (NIJ) the Los Angeles Police Department (LAPD) obtained laptop computers and wrote appropriate software to automate the preparation of Preliminary Investigation Reports (PIR's). A field experiment was designed and executed to assess the effect of PIR automation on the time use of officers, supervisors, and clerks. In addition, computer effects on officer and supervisor job performance, morale, and PIR quality were assessed. The Hollywood Patrol Division was used as the experimental group where computers were introduced. The nearby Wilshire Patrol Division served as a control group for comparison purposes. The Wilshire officers continued to prepare their PIR's with the existing hand-written system. Data were collected in both divisions before computers were introduced at Hollywood. A second data collection wave took place in both divisions approximately six months later in December 1990.

B. Computer Effects on PIR Processing and Quality

From the standpoint of costs and benefits, the Automated Reporting System tested in this research had modest effects on the efficiency of the Hollywood officers. Overall, there were no changes in the amount of time officers spent in investigation, PIR writing, PIR review and approval, or travel associated with PIR processing. Nor did the supervisors at the Hollywood Patrol

Division report a change in the amount of time they spent reviewing and correcting PIR's. Furthermore, there were no significant changes in the number or type of errors supervisors noted in the PIR's. Apparently, writing a PIR with an electronic medium does not increase the amount of time devoted to this activity, nor the overall level of errors in the reports.

Those differences that were noted in writing time and travel time varied by watch and the number of PIR's written during the experiment. These differences seem to be a function of the amount of practice an officer had with the Automated Reporting System. Those who wrote a greater number of reports spent less time writing each one. Perhaps a greater impact would surface when the use of the computer becomes routine and all officers have received adequate practice in using it.

The computer system tested in this research lacked a practical option of transmitting PIR's by telephone modem linkage to the station system. If this feature could be included in the Automated Reporting System, additional savings in officer travel time for PIR review, approval, and correction could be eliminated. This would permit the officers to spend more time in their patrol areas devoted to actual crime control.

The finding that overall PIR error rates as noted by supervisors at the Hollywood Patrol Division did not change as a result of the Automated Reporting System appears to be due to watch differences that masked the experimental effect. In terms of total

PIR errors the Hollywood Mid-Day watch reduced their errors to zero while the Mid-PM and AM watches increased their errors.

In contrast to the Hollywood supervisors' assessment of PIR errors, the attorneys' and detectives' evaluations of PIR quality showed an improvement in incomplete, inaccurate, or missing entries on PIR's written with the Automated Reporting System compared to hand-written reports. These evaluators also reported an improvement in the quality of officer observations in the automated PIR narrative. Their overall subjective assessment was that the automated PIR's were much better in quality and slightly easier to use than the hand-written versions. However, with respect to the corpus elements of the crime, the automated reports did not fare as well as the hand-written reports. This may have been due to administrative changes at the Wilshire Patrol Division rather than the reporting method used.

C. <u>Computer Effects on Officers and Supervisors</u>

In both divisions the <u>job performance</u> of the officers and supervisors was rated by superiors as being adequate or better than adequate in all performance dimensions. Depending on the rank of the officer, computerization of PIR writing was associated with changes in some facets of supervisor rated job performance. For Hollywood PO I's and PO III's improvements in initiative, effort, time utilization, and communication skills were noted. Time use effectiveness of Hollywood Sergeants declined slightly. With respect to rated work quality, the Hollywood PO I's improved, while the PO II's and PO III+1's showed slight decreases compared to their Wilshire counterparts. No differences were noted between Wilshire and Hollywood Patrol Divisions in officer job knowledge, capacity to learn, ability to work independently, or overall job performance.

Associated with computer use was a decline in various leader behaviors exhibited by the Hollywood supervisors. As rated by their subordinates, after computerization Hollywood supervisors showed less consideration, participation in decision making, role clarification, and goal setting than their Wilshire counterparts. One possible explanation for these findings is that the overall need for supervisory attention may have been reduced by computerization of PIR writing at Hollywood.

Some Hollywood officer ranks showed changes in job perceptions or attitudes but these changes were by no means uniform for all officers. Over the course of the experiment Hollywood PO III's and Sergeants reported an increase in workload, perhaps as a result of their training duties associated with computerization. The PO III's also indicated a significant increase in self esteem. In addition, compared to their Wilshire counterparts the Hollywood PO I's reported a reduction in computer related anxiety while the PO II's reported an increase. Both divisions showed a decline in feelings that one's skills are being underutilized. However, the change at the Wilshire Patrol Division was greater than at the Hollywood Patrol Division. The Hollywood change is what would be expected as a result of computerization, but the Wilshire improvement is likely due to some unreported change in officers' job duties that did not also take place at Hollywood.

Morale and job satisfaction at both divisions appear high and did not change as a result of the computer experiment. This conclusion is based on measures of anxiety, depression, irritation, overall job satisfaction, and commitment to the LAPD. On the whole the mental well-being of officers in both divisions was quite high.

Officer evaluations of the hand-written and computerized PIR systems revealed that the computer system was easier to use in making PIR corrections, enhanced the quality of reports, and improved job performance. The Hollywood officers were also more satisfied with the computerized system than the hand-written system. From the officers' perspective there were no differences between the two systems with respect to ease of use, frustration or irritation from using the system, time lost due to system problems, or the perceived amount of time spent each day writing reports.

At the end of the experimental period Hollywood detectives, supervisors, and officers were asked to reflect on their experiences with the computerized system. These post-hoc evaluations revealed that the detectives felt the automated system reports were an improvement over the hand-written reports even though their crime clearance and filing rates remained unaffected. They would support a department-wide automation effort. They felt a spell-check feature would improve the system as would a larger type face.

The Hollywood officers in their post-hoc assessment of the computerized system were neutral to slightly favorable in overall evaluation of the system, tended to approve of the various software and hardware features of the system, and felt comfortable with their assessment of their own computer capabilities. Hollywood supervisors were slightly less positive in their overall evaluation of the system and its features than were the officers. On the average the Hollywood officers did not experience serious problems with computer storage, getting used to the system, or using the various on-screen features. Furthermore, they felt the training received was adequate. According to the Hollywood supervisors, the automated reports were easier to review and approve, at least as complete as the hand-written reports, and had fewer errors.

It is apparent that the change in the report writing method at the Hollywood Patrol Division had few, if any, negative side effects that might be expected when new work methods are introduced. The amount of time used to prepare reports did not increase, nor did the number of errors per PIR. Responses of the officers also seem to show that their skills were not overtaxed as might be expected for those whose typing ability is not well developed. Furthermore, morale as indicated by job satisfaction, commitment to the organization, depression, anxiety, or irritation was not adversely affected by the system. Indeed, there seems to have been an increase in self esteem for some of the Hollywood officers during the course of the experiment.

D. Computer Effects on Clerical Functions

Clerical functions remained essentially unchanged as a result of the computer system investigated in this research. The clerks still entered data from the PIR's into the department's mainframe computer, made and distributed copies of each report, and filed the computerized reports in the same manner as the hand-written reports. It is not surprising, therefore, that the only significant change noted at the Hollywood Records Unit was a slight increase in total clerical time devoted to each PIR. There were no significant changes in the components making up total time such as clerks' data entry time, error correction time, copy/distribution time, or filing time.

In spite of these findings, it is reasonable to hypothesize that the immediate benefit to full implementation of the ARS would be from savings in clerical processing time and copy costs. Direct entry of PIR data into the department's mainframe after report approval would eliminate virtually all clerical time associated with PIR processing. The reason this effect was not noted in this study is because, while it is feasible to have the officers' PIR's entered electronically into the mainframe, this feature was not included in the prototype system. Full clerical cost savings should immediately follow the implementation of a fully automated reporting system due to the elimination of the redundant functions the clerks performed during the experiment that would be performed by automated data entry. It appears clear that the elimination of coding selection and data input by clerical personnel is possible without any increase in officer PIR processing time or supervisory review and approval time.

E. End Users

In addition to clerical savings, this research supports the conclusion that end users of the officers' PIR's clearly prefer the automated reports to the hand-written ones. Detectives and attorneys found the computer generated reports easier to use and of better quality. The supervisors who review the officers' reports felt that the automated reports were easier to review and approve, had fewer errors, and were no less complete (if not more so) than the hand-written ones. Even the officers evaluating the system felt their job performance was improved by computer use and that their reports were of higher quality. Perhaps the ultimate benefit from computerization of reports will be an improvement in the conviction rate of criminals whose cases are prosecuted using better quality reports.

V. Glossary of Terms

1. Alpha Reliability (or Cronbach's Alpha Reliability) refers to the degree of consistency between items that are supposed to be measuring the same concept. Traditionally, an alpha of .8 or more is used to conclude that a set of items are indeed measuring the same concept, i.e., not apples and oranges, but only apples. The statistic referring to this reliability is often called coefficient alpha or alpha.

2. Dummy Codes are used to create separate variables based upon group categories. For example, a category of officer rank could be dummy coded to create new variables of "PO III," "PO II," and "PO I." Dummy coding is often necessary to convert categorical data into data that can be used in advanced statistics.

3. Eigenvalues refer to a mathematical concept which measures the merit (vs. spuriousness) of a set of questionnaire items as a recognizable (valid) scale. Traditionally, an eigenvalue of 1 or above indicates that a set of items comprises a valid scale.

4. Hierarchical Regression is a statistical routine which tries to isolate the effect of one variable after controlling for other variables. For example, we might believe that rank and pre-

test ability influence post-test performance, this technique would isolate the separate effects of these two variables on post-test performance. The measure of one variable's influence or effect on an outcome, after controlling for a third variable, is called a regression beta coefficient (or beta coefficient). It indicates the magnitude and direction of the effect.

5. Inter-rater Reliability indicates the agreement or consistency of raters' or judges' assessments of particular traits. For example, it would be used to assess whether two detectives rate the errors in a PIR similarly. Traditionally, an inter-rater reliability of .8 or above is considered satisfactory.

6. Likert Scale is a means of measuring a respondent's attitude toward a single concept. The scales for responding are bipolar in orientation, e.g., strongly agree/strongly disagree, very satisfied/very dissatisfied.

7. Oblique Varimax Solution is a technique for reducing a large number of items into a smaller set of common scales. It is a technique for simplifying the complexity of the data. It results in a parsimonious set of scales that reflect the larger set of items.

8. Ordinal Scale is a measure that represents gross gradations in the variations of a questionnaire item. For example, the item "age" might be measured as "young," "middle-aged," or "old." The measure reflects order, but not the degree of difference between the categories.

9. R^2 Change indicates the amount of influence (relationship) one variable has on an outcome after controlling for other variables. In statistical terms, it represents the change in the percentage of variance in the outcome variable accounted for by that particular variable. For example, an R^2 of .25 for division's influence on PIR time would indicate that there is a 25% increase in the prediction of division on PIR time.

10. Scale is a composite of items that measure the same concept or variable. For example, a number of items could measure one's attitudes toward computers, and, if they prove to be internally reliable (consistent), could be summed across the items to create an overall sum or scale.

11. Scree Test is a statistical test to determine the number of significant factors (scales) in a large set of questionnaire items.

12. Statistical Significance indicates the level of one's confidence in the credibility (validity) of the results. It

addresses the issue of whether the results are due to chance/error or actual relations among the variables. Traditionally, social scientists accept a .05 or lower level of significance to decide that a result is statistically significant. This .05 level of significance suggests that the results found were due to chance in only 5 out of 100 times. Lower levels of this significance suggest lower levels of chance/error being the explanation of the results.

VI. References

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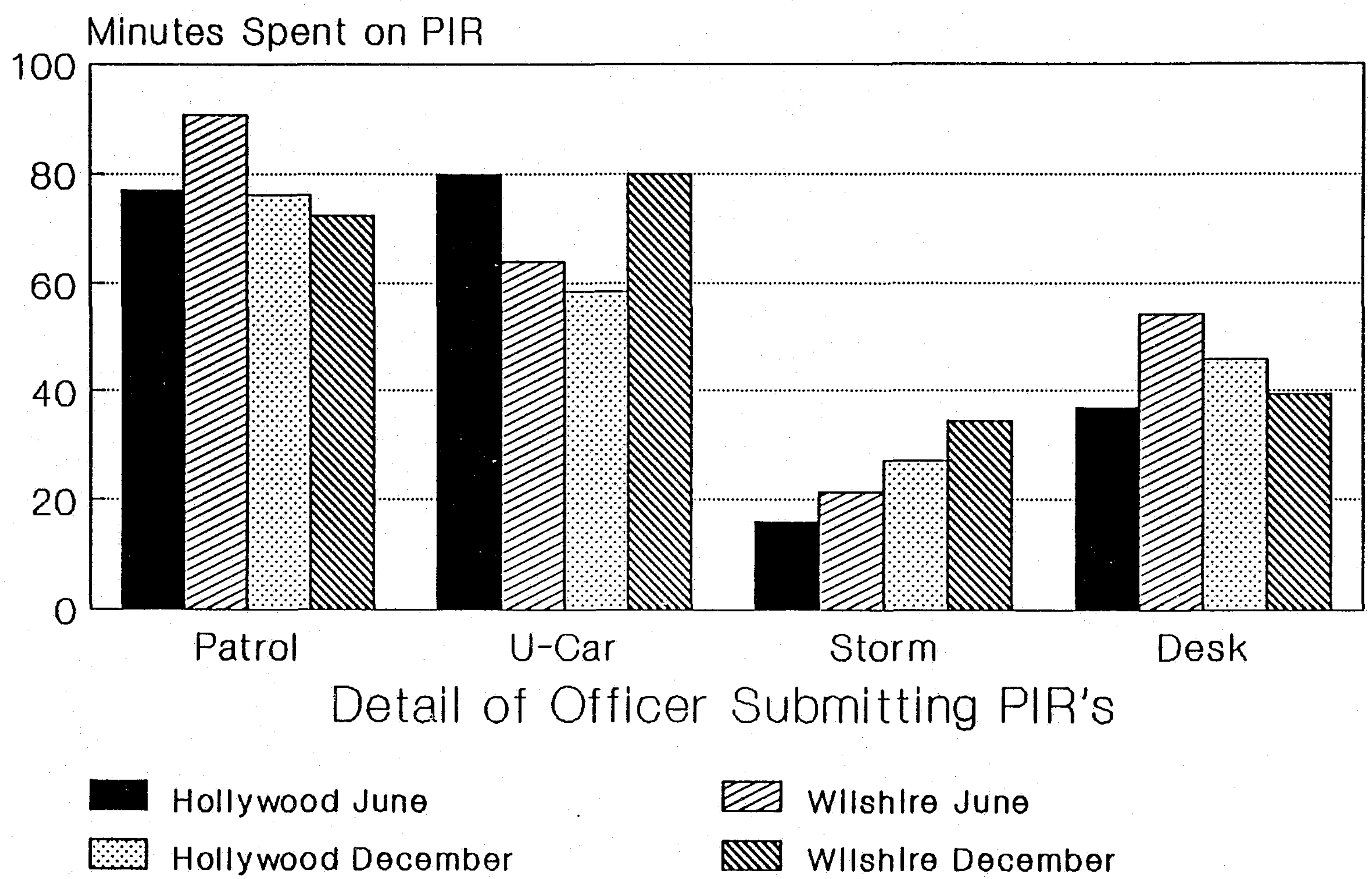
VII. Appendix A

Figures Showing Computer Use on PIR Writing Time and Errors

Figure A1: Average Officer Total Time

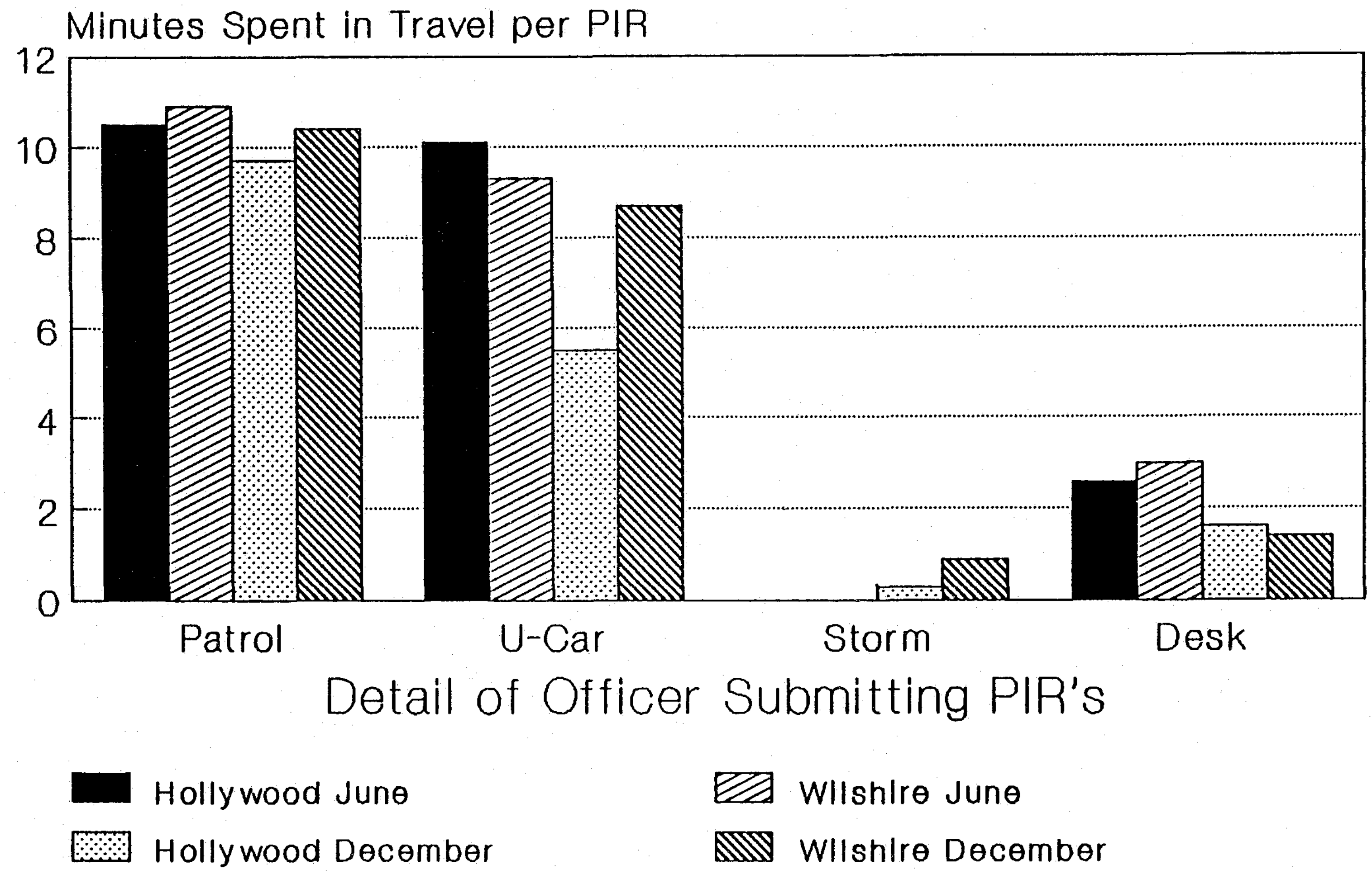
Division and Detail Differences



Detail Main Effect $p < .001$ $N = 103$

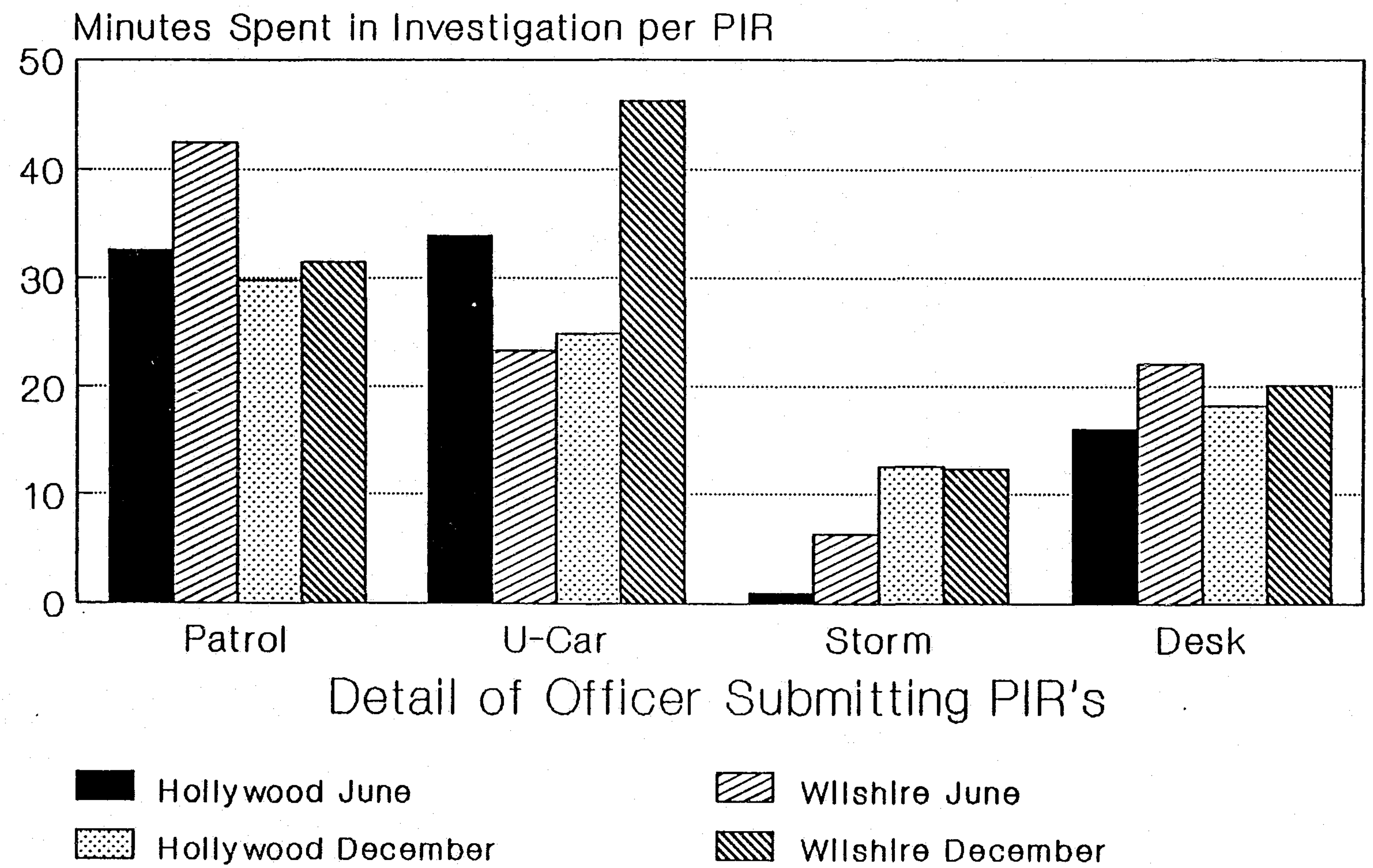
Figure A2: Average Officer Travel Time

Division and Detail Differences



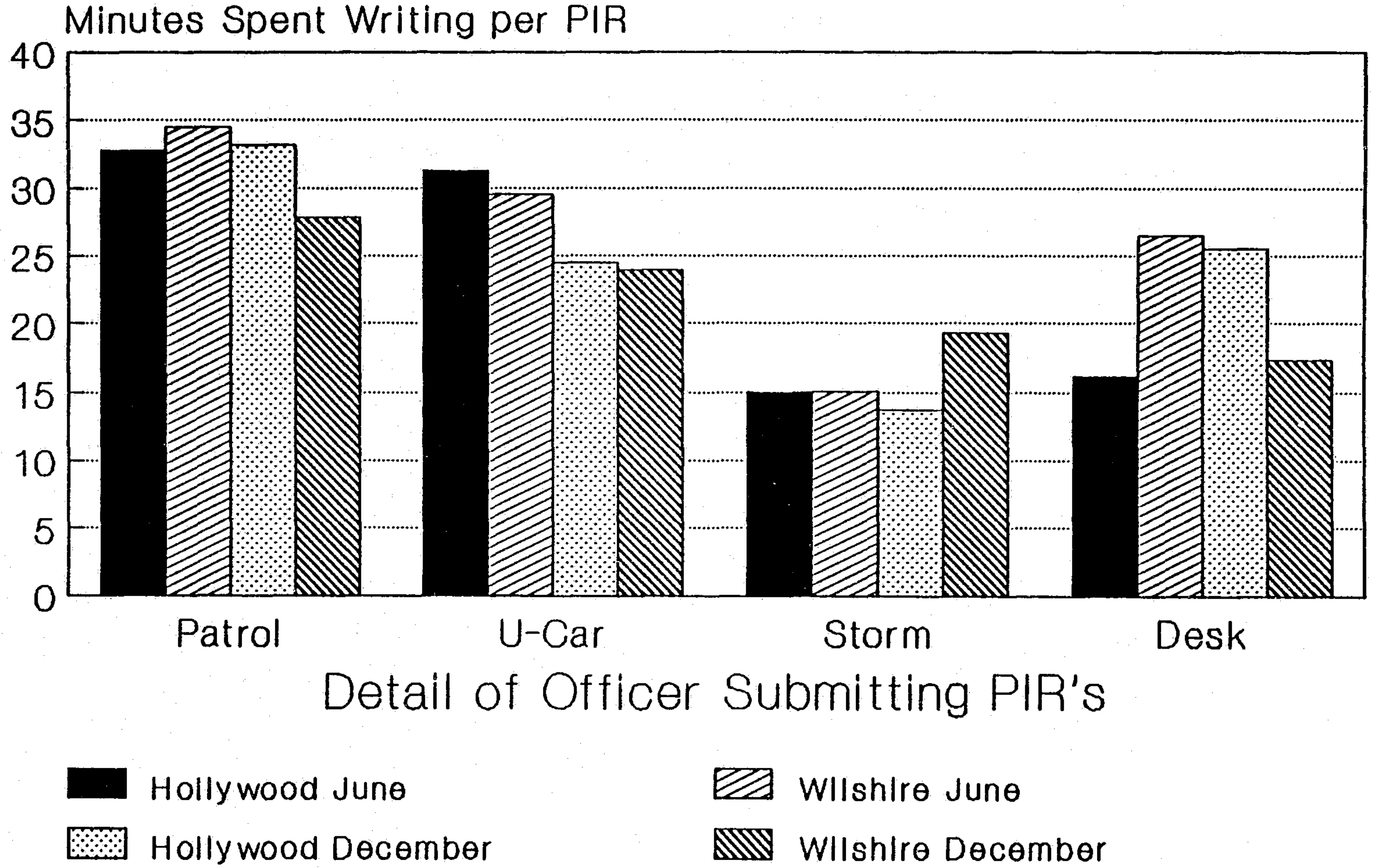
Detail Main Effect $p < .001$ N = 103

Figure A3: Average Investigation Time
Division and Detail Differences



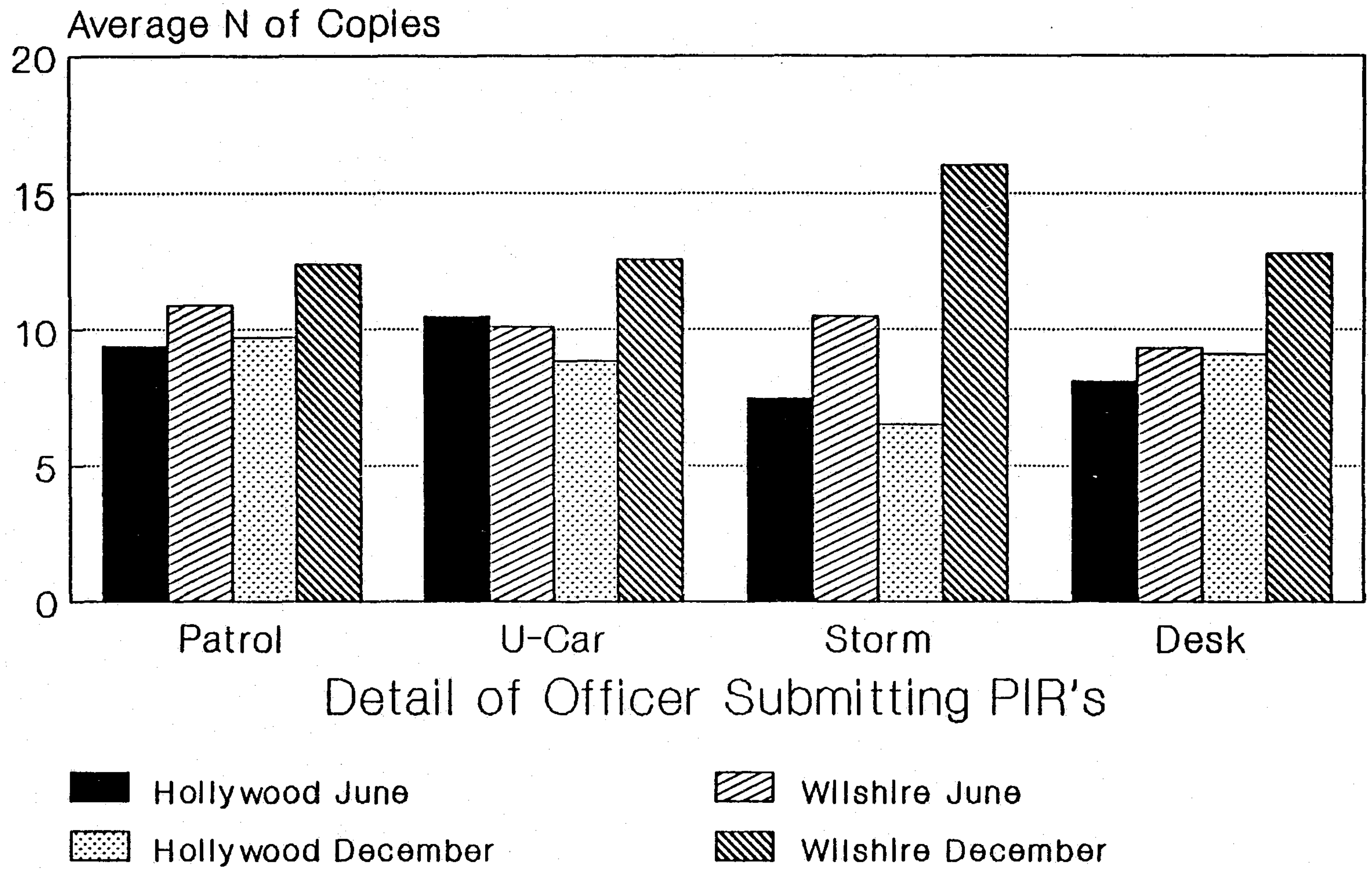
Detail Main Effect $p < .02$ N = 103

Figure A4: Average Officer Writing Time
Division and Detail Differences



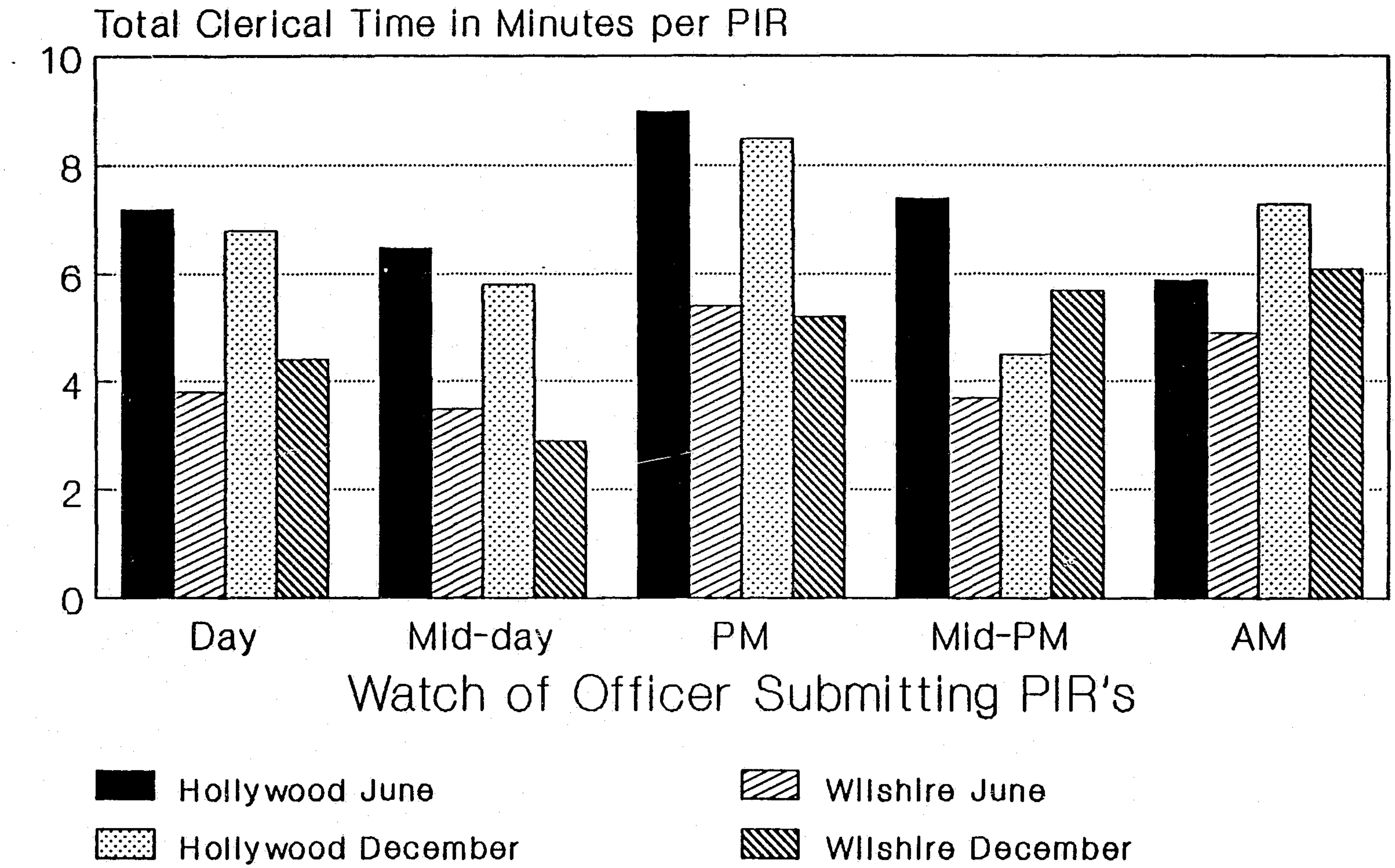
Detail Main Effect $p < .01$ N = 103

Figure A5: Average Number of Copies
Division and Detail Differences



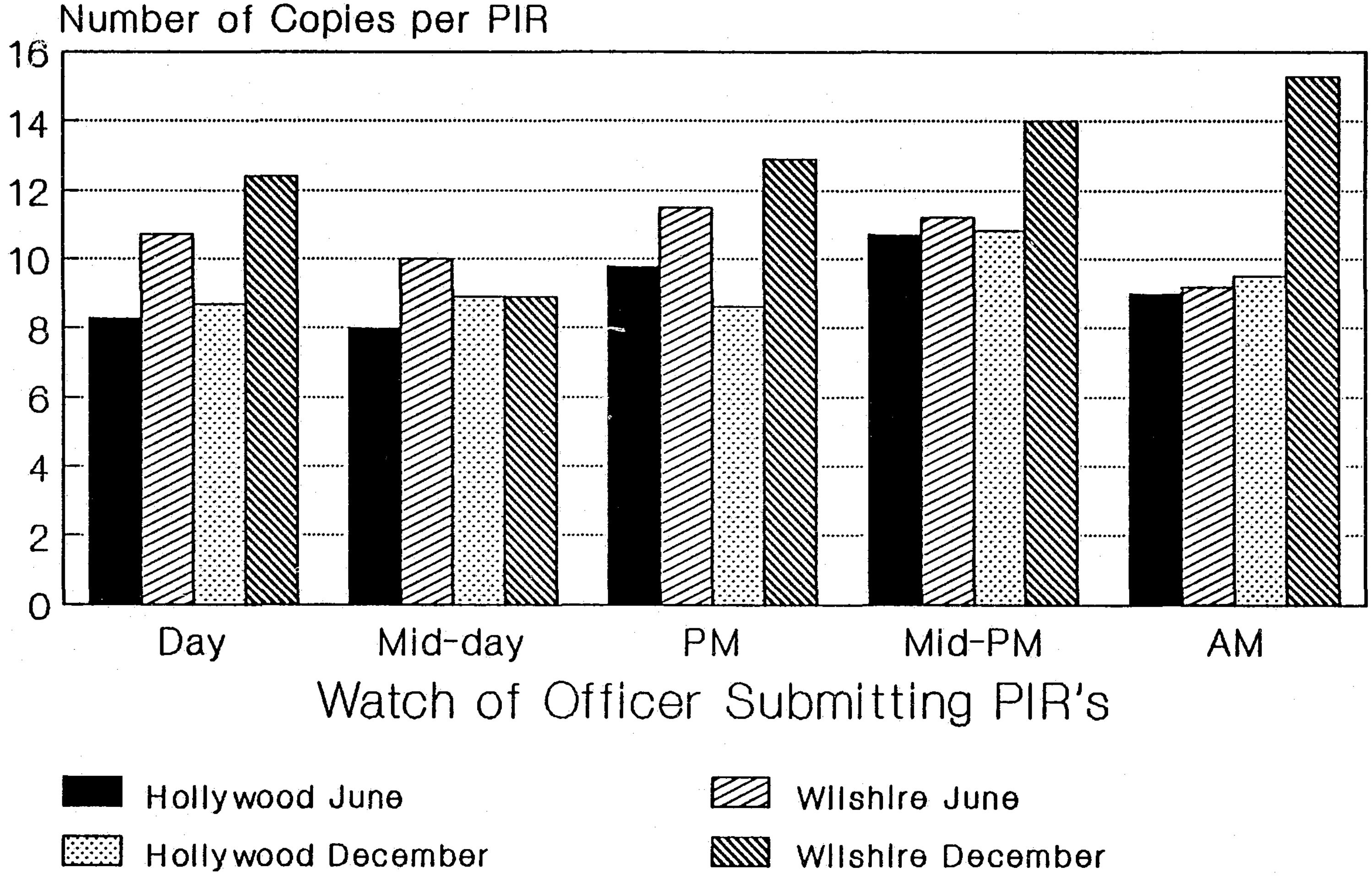
Interaction Effect p < .03   N = 58

Figure A6: Average Total Clerical Time
Division and Watch Differences



Experimental Effect $p < .002$ N = 101

Figure A7: Average Number of PIR Copies
Division and Watch Differences



Experimental Effect $p < .001$ N = 58

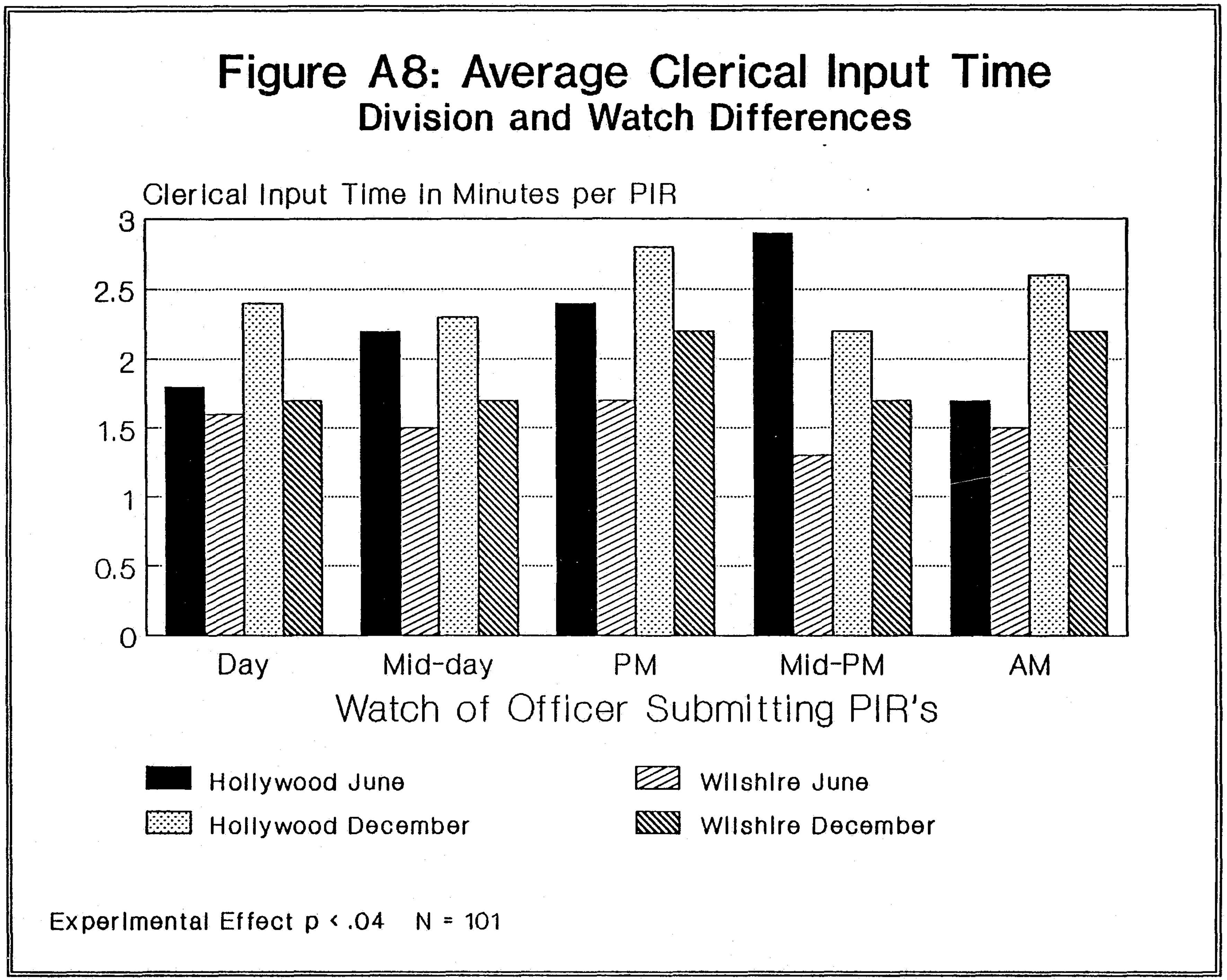
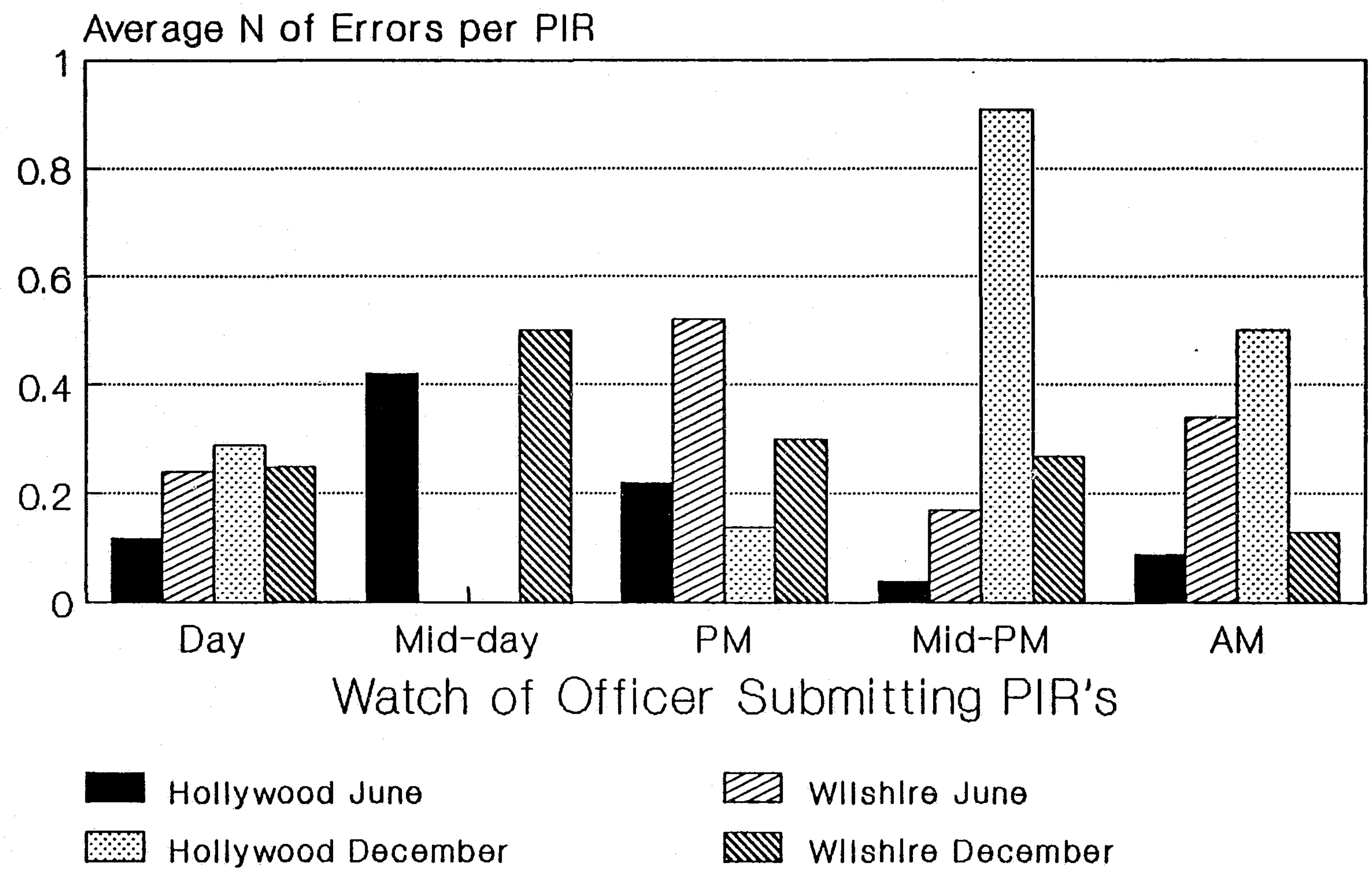


Figure A8: Average Clerical Input Time
Division and Watch Differences
Clerical Input Time in Minutes per PIR
3
2.5
2
1.5
1
0.5
0
Day
Mid-day
PM
Mid-PM
AM
Watch of Officer Submitting PIR's
Hollywood June
Wilshire June
Hollywood December
Wilshire December
Experimental Effect p < .04 N = 101

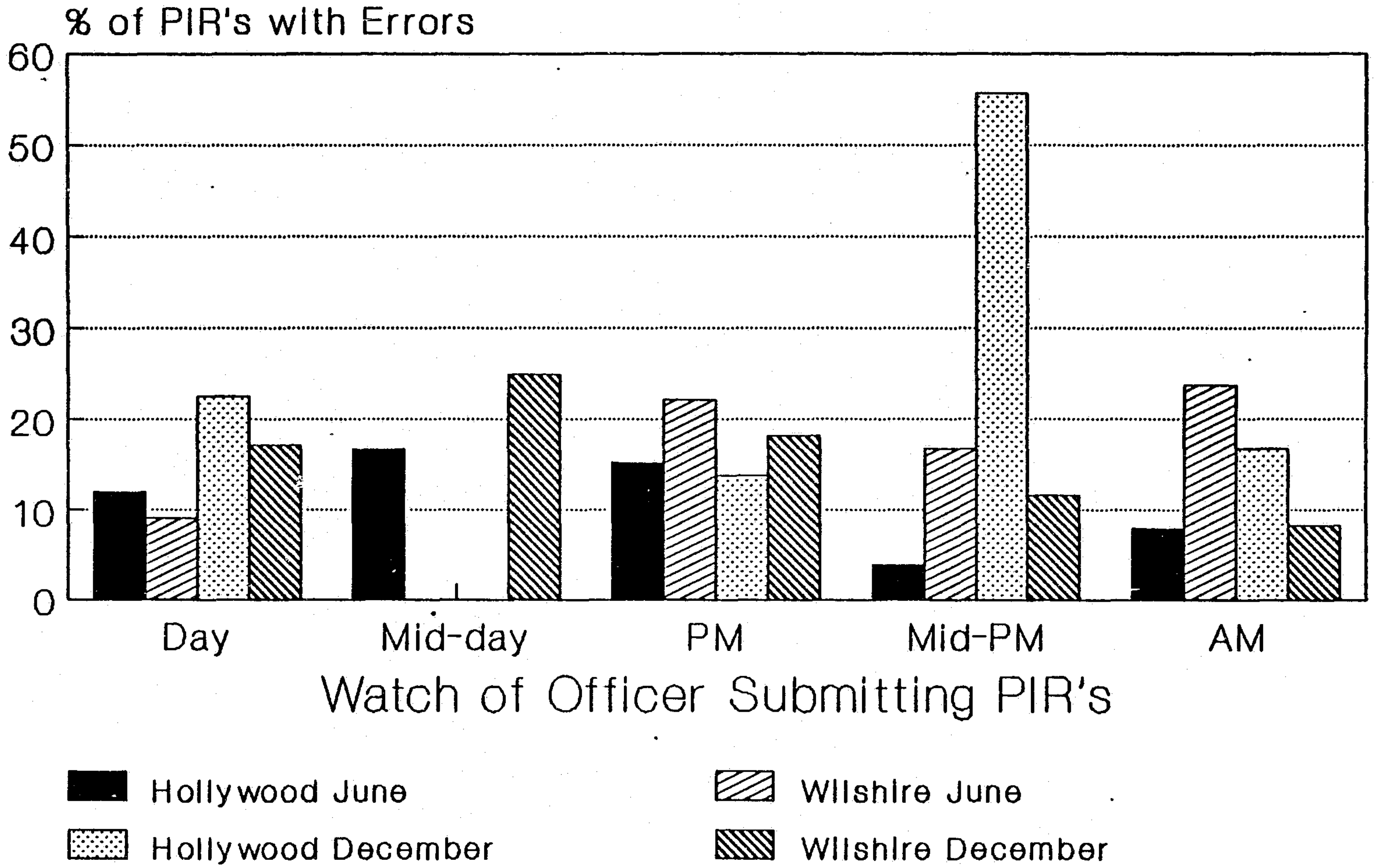
Figure A9: Average Total PIR Errors
Division and Watch Differences



Interaction p < .03 N = 99

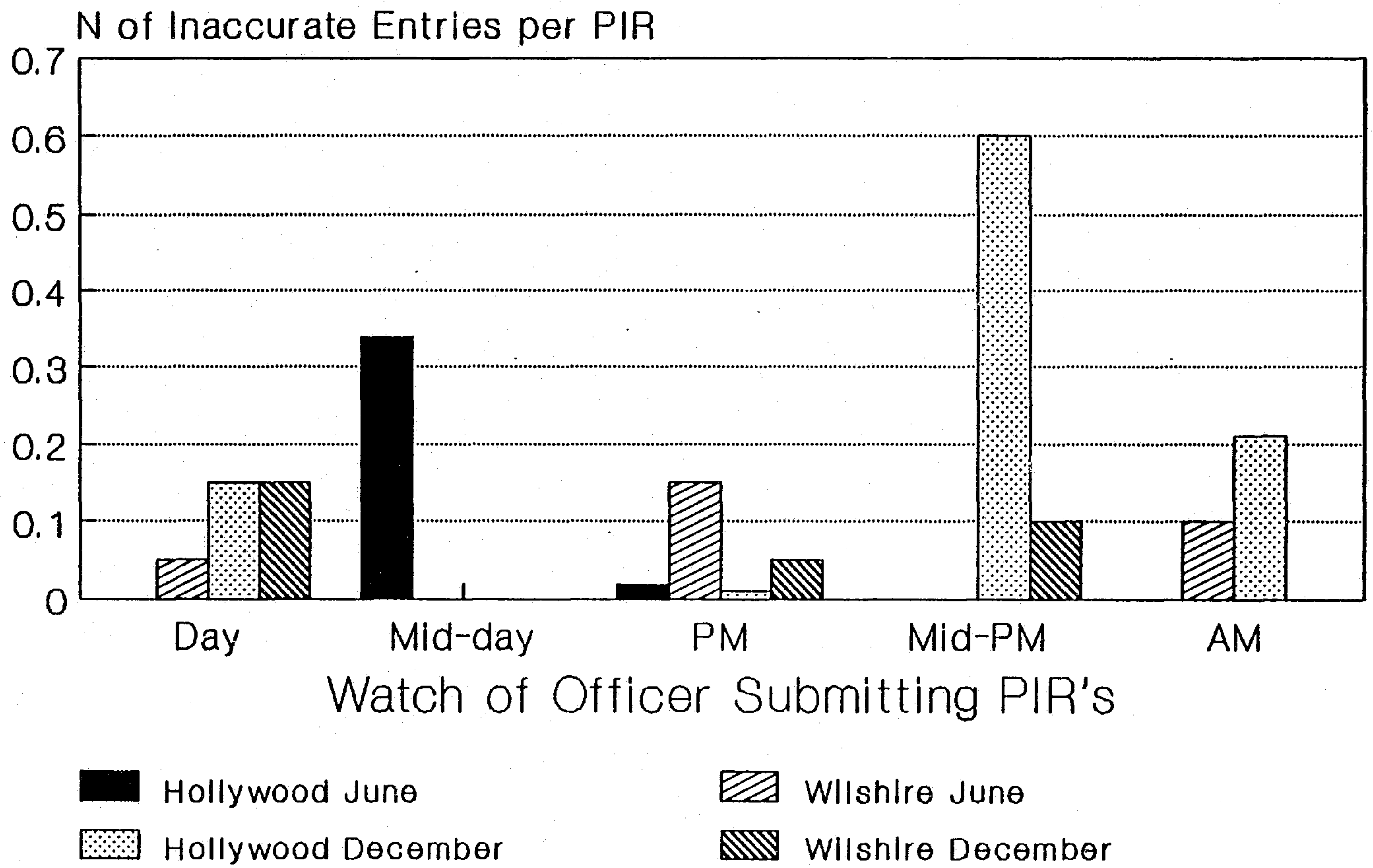
Figure A10: Percent of PIR's with Errors

Division and Watch Differences



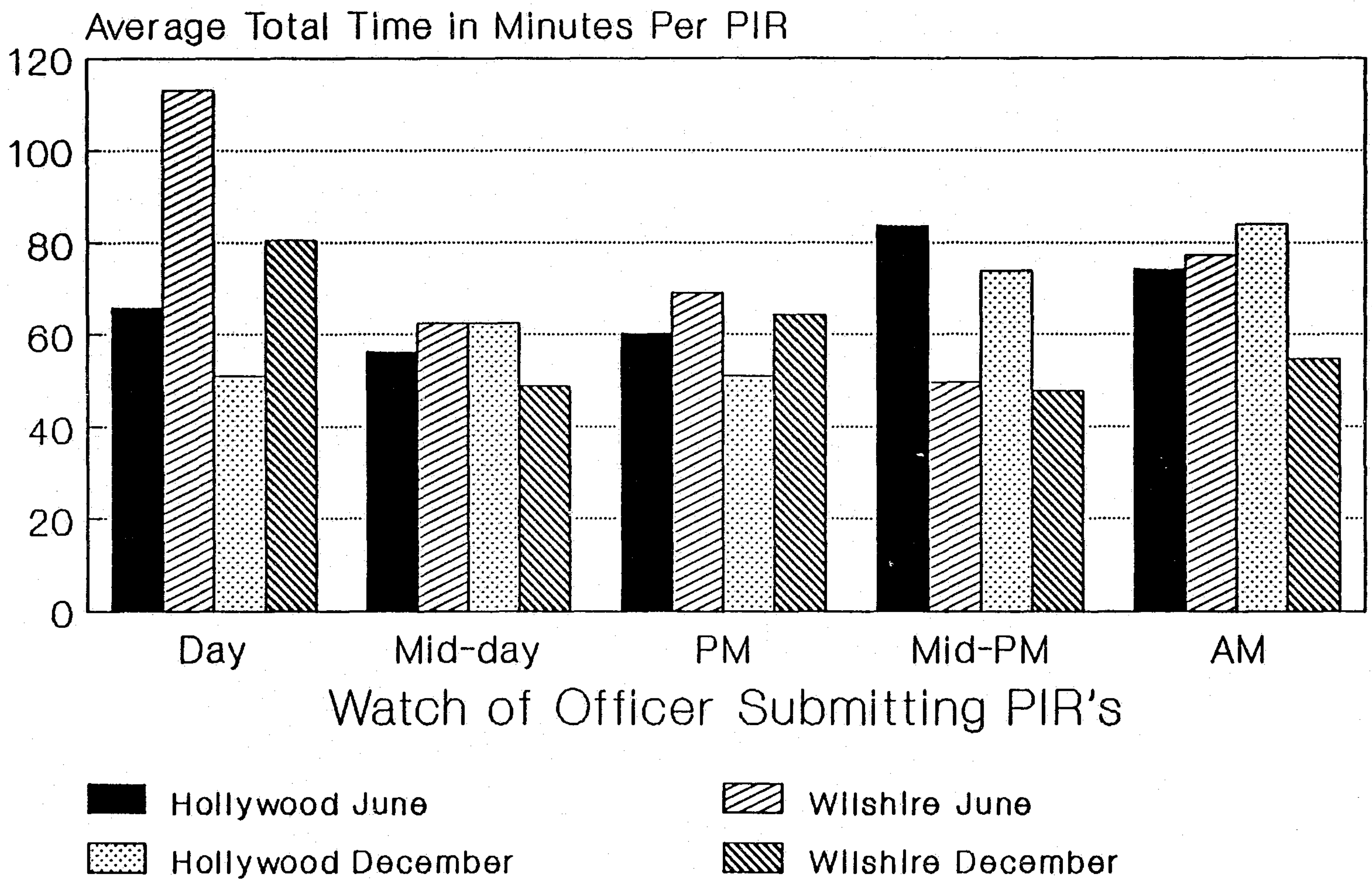
Interaction p < .065 N = 99

Figure A11: Number of Inaccurate Entries
Division and Watch Differences



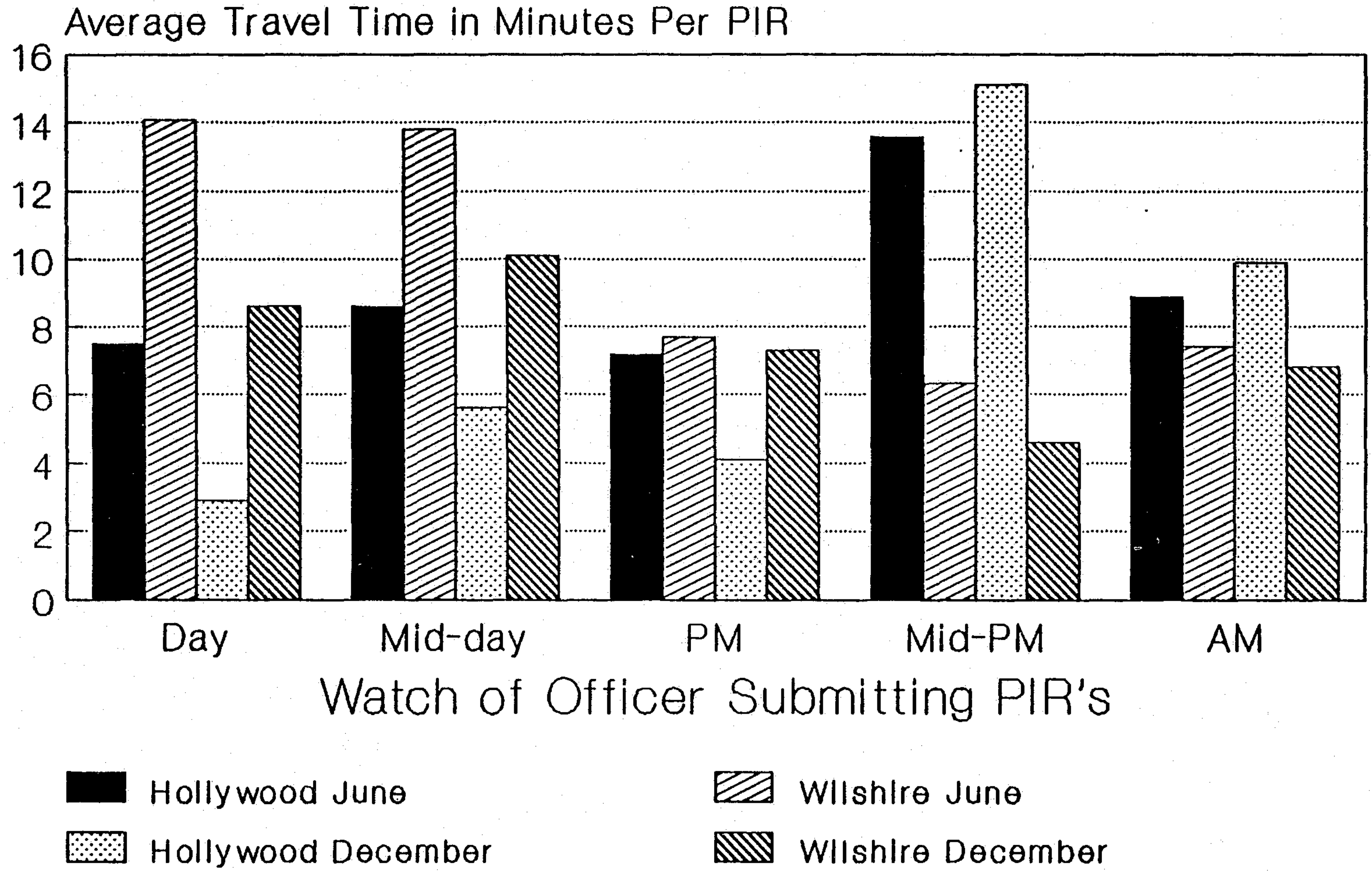
Interaction p < .09 N = 99

Figure A12: Average Officer Total Time
Division and Watch Differences



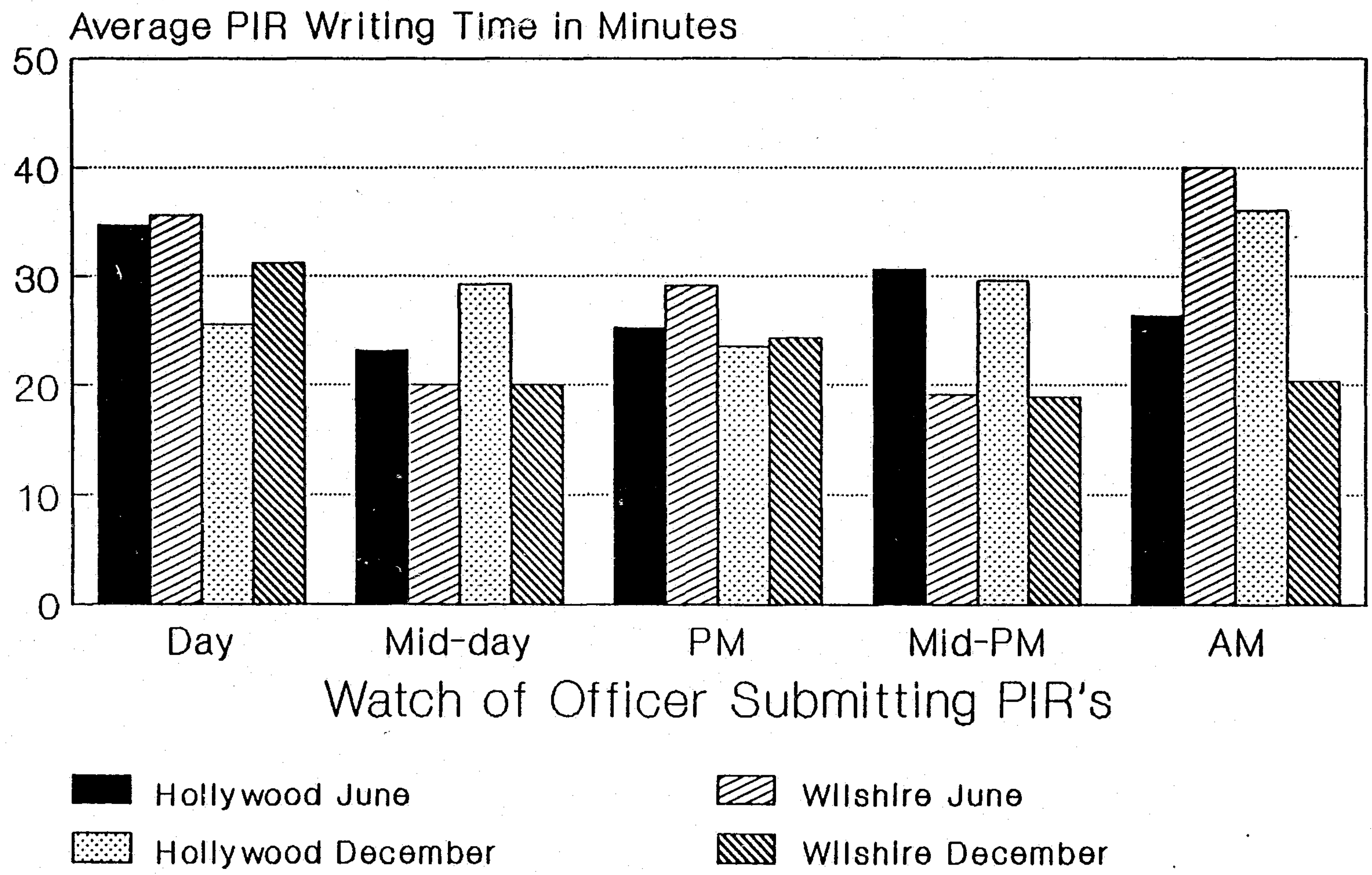
Interaction $p < .055$ $N = 103$

Figure A13: Average Travel Time
Division and Watch Differences



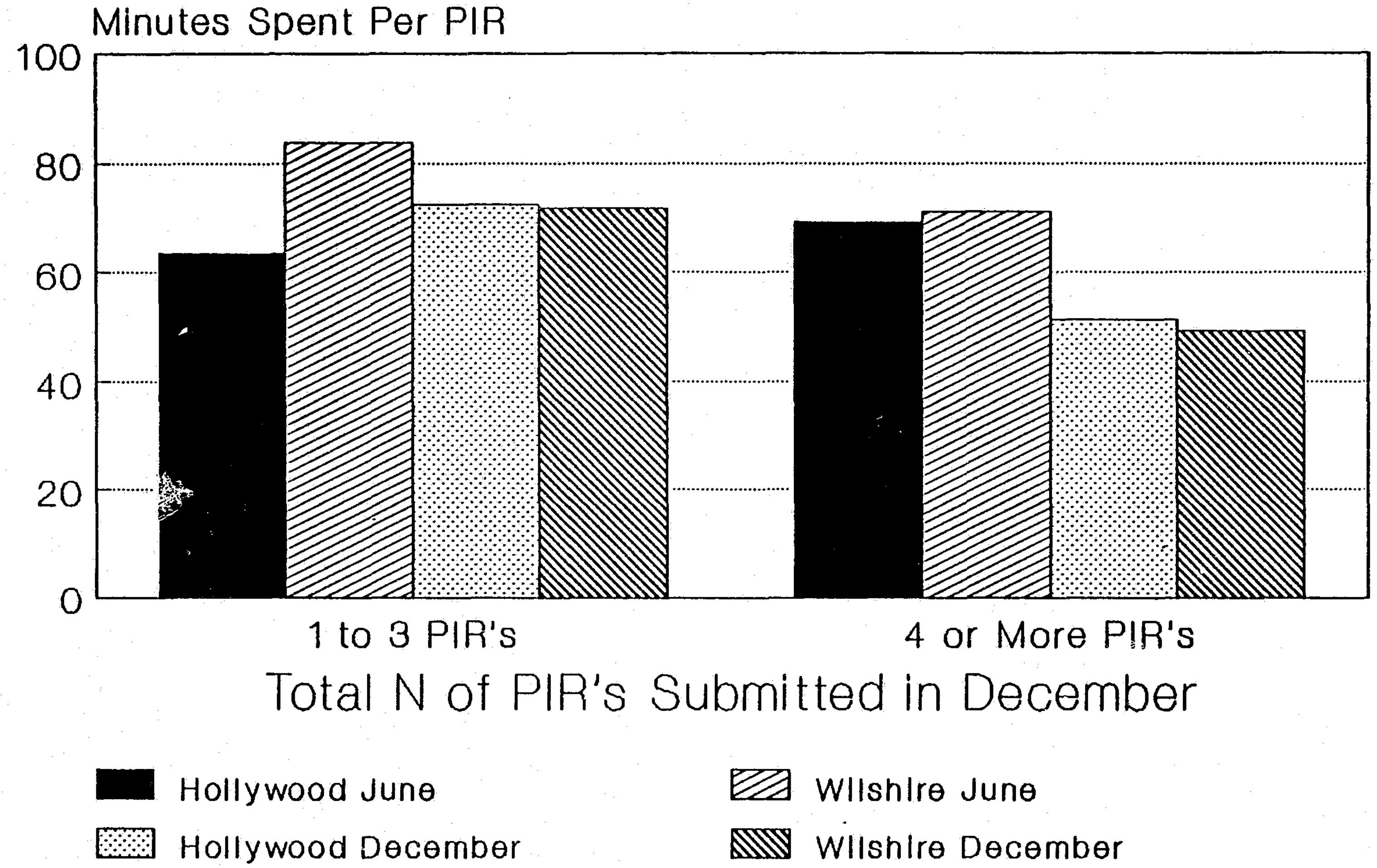
Interaction p < .02   N = 103

Figure A14: Average PIR Writing Time
Division and Watch Differences



Interaction $p < .05$ N = 103

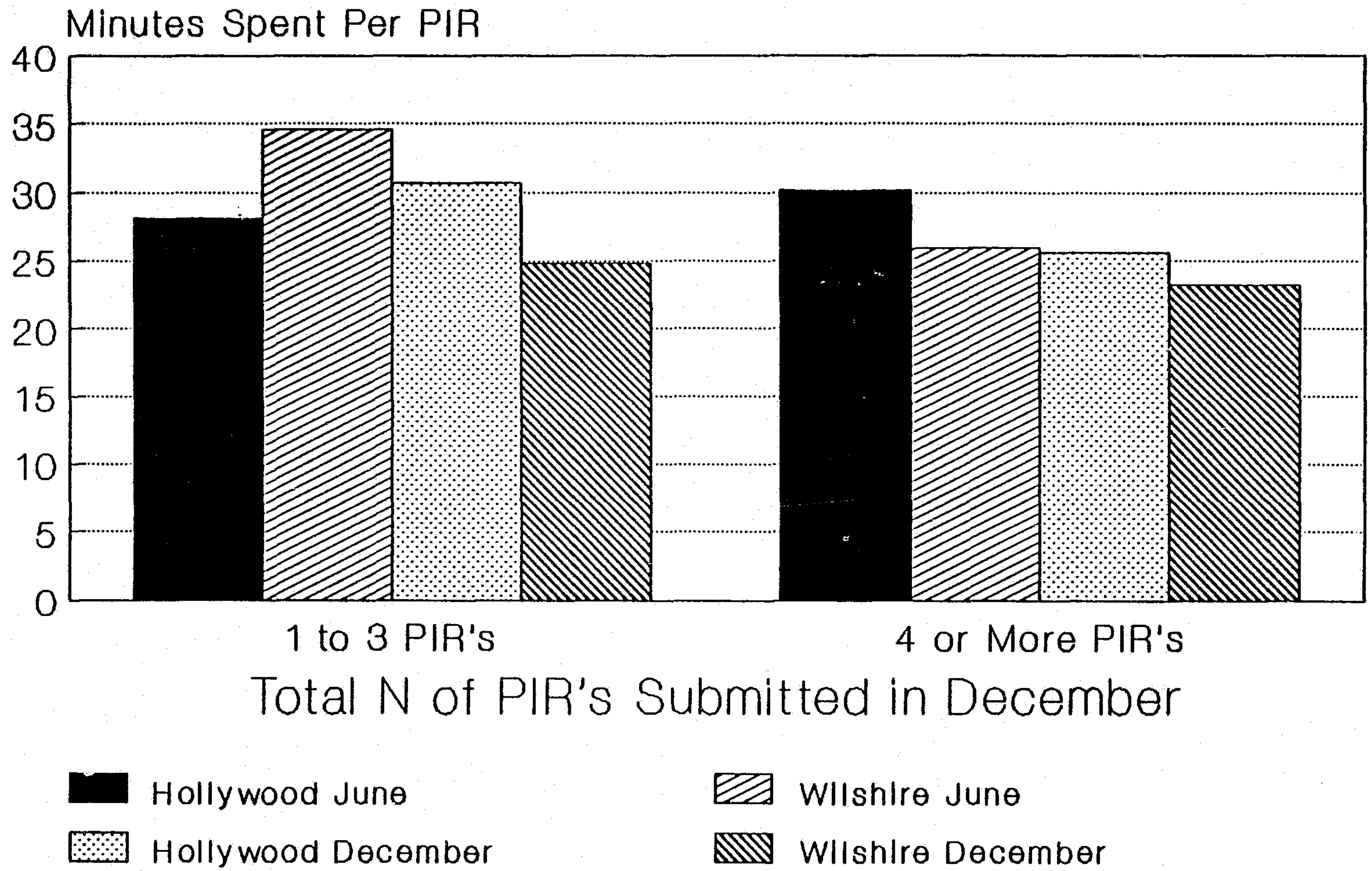
Figure A15: Average Total Time
Division and Number of PIR Effects



N PIR Effect $p < .08$ $N = 103$

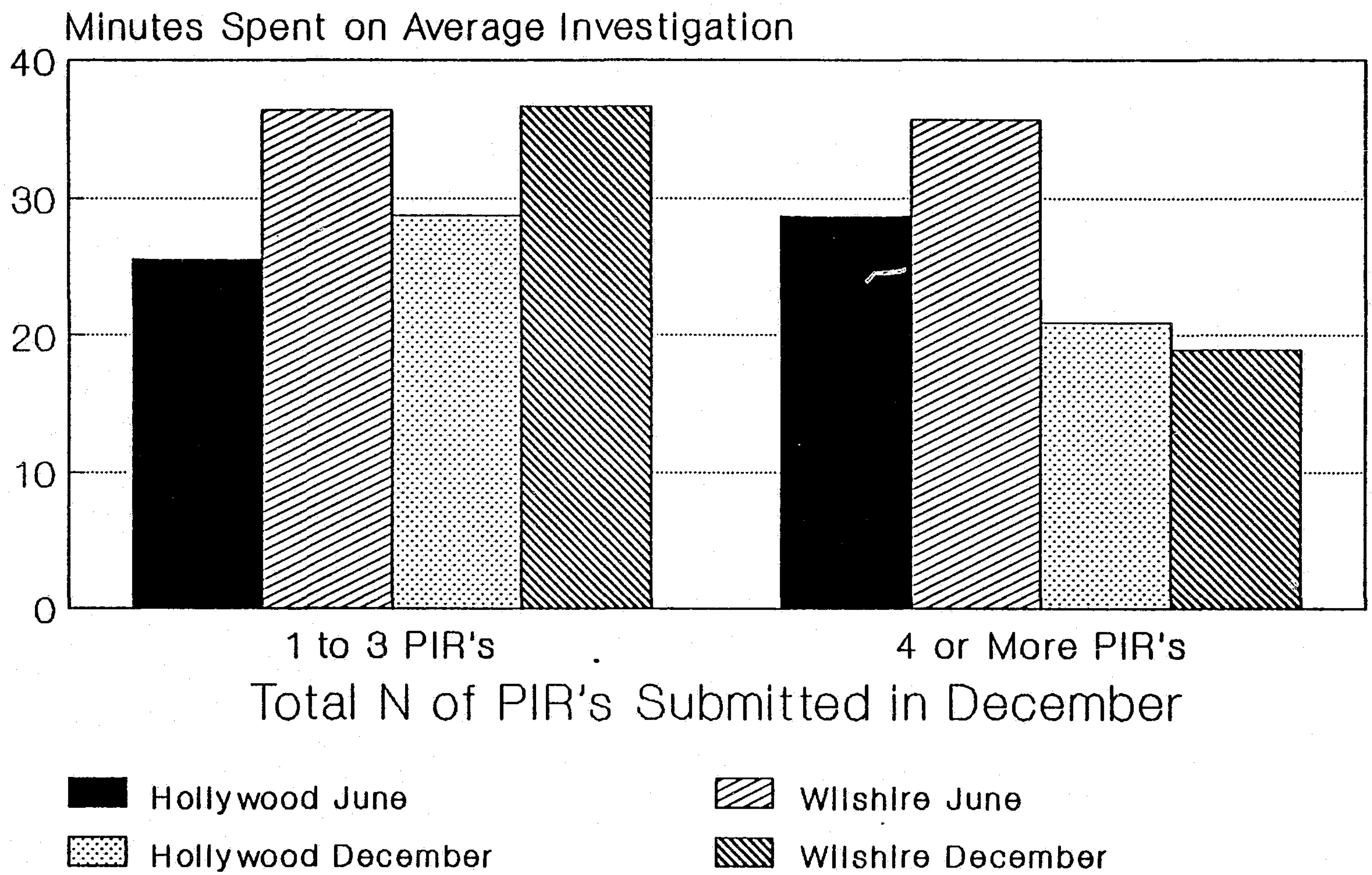
Figure A16: Average Writing Time

Division and Number of PIR Effects



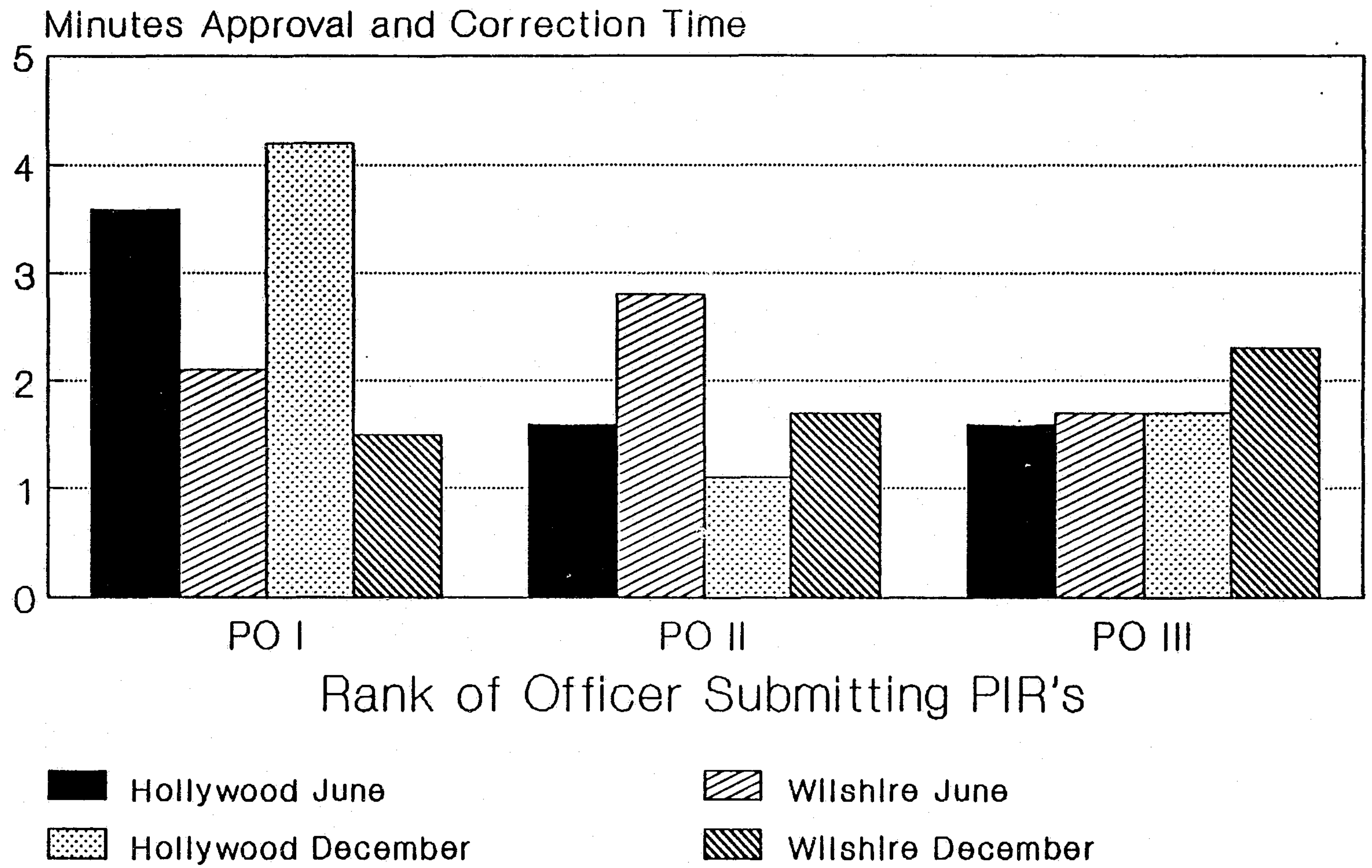
Experimental Effect $p < .06$ $N = 103$

Figure A17: Average Investigation Time
Division and Number of PIR Effects



Interaction $p < .05$ N = 103

Figure A18: Approval and Correction Time
Division and Rank Differences

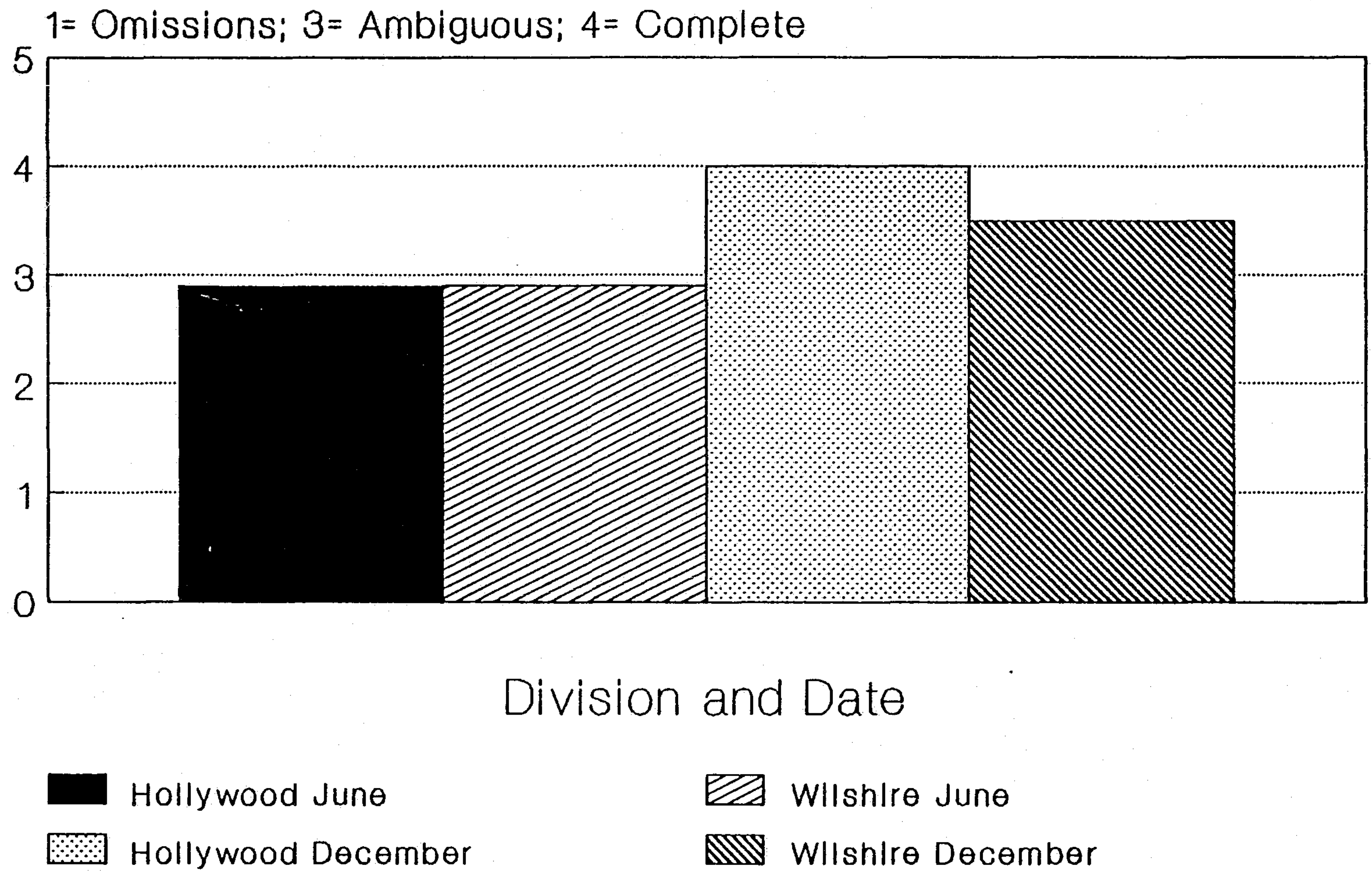


Interaction p < .06   N = 103

VIII. Appendix B

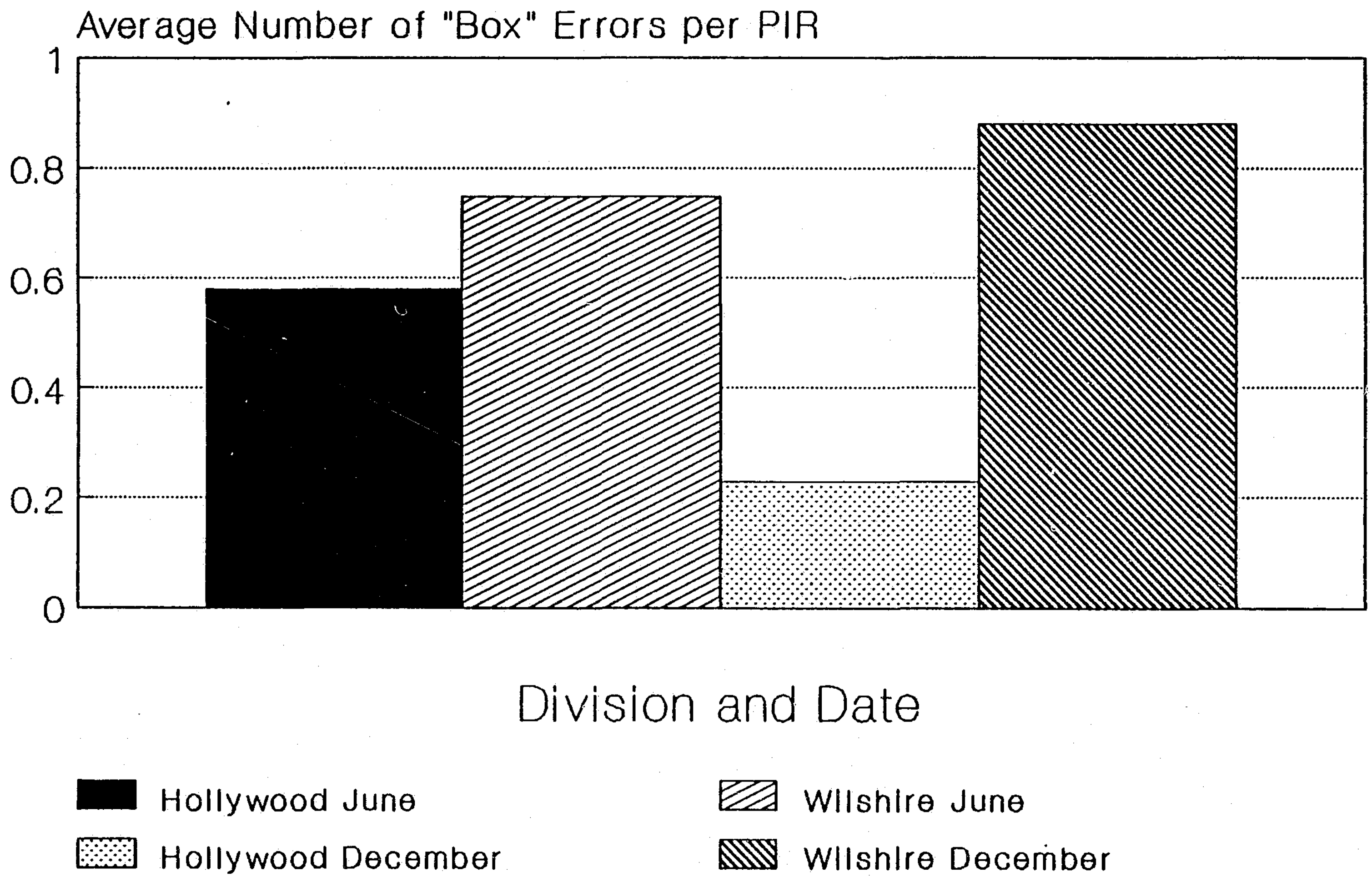
Figures Showing Computer Effects on PIR Quality

Figure B1: Effect on Observation Quality
Division Effects



Experimental Effect p < .10 N = 22

Figure B2: Effect on "Box" Errors
Division Effects



Experimental Effect p < .002 N = 63

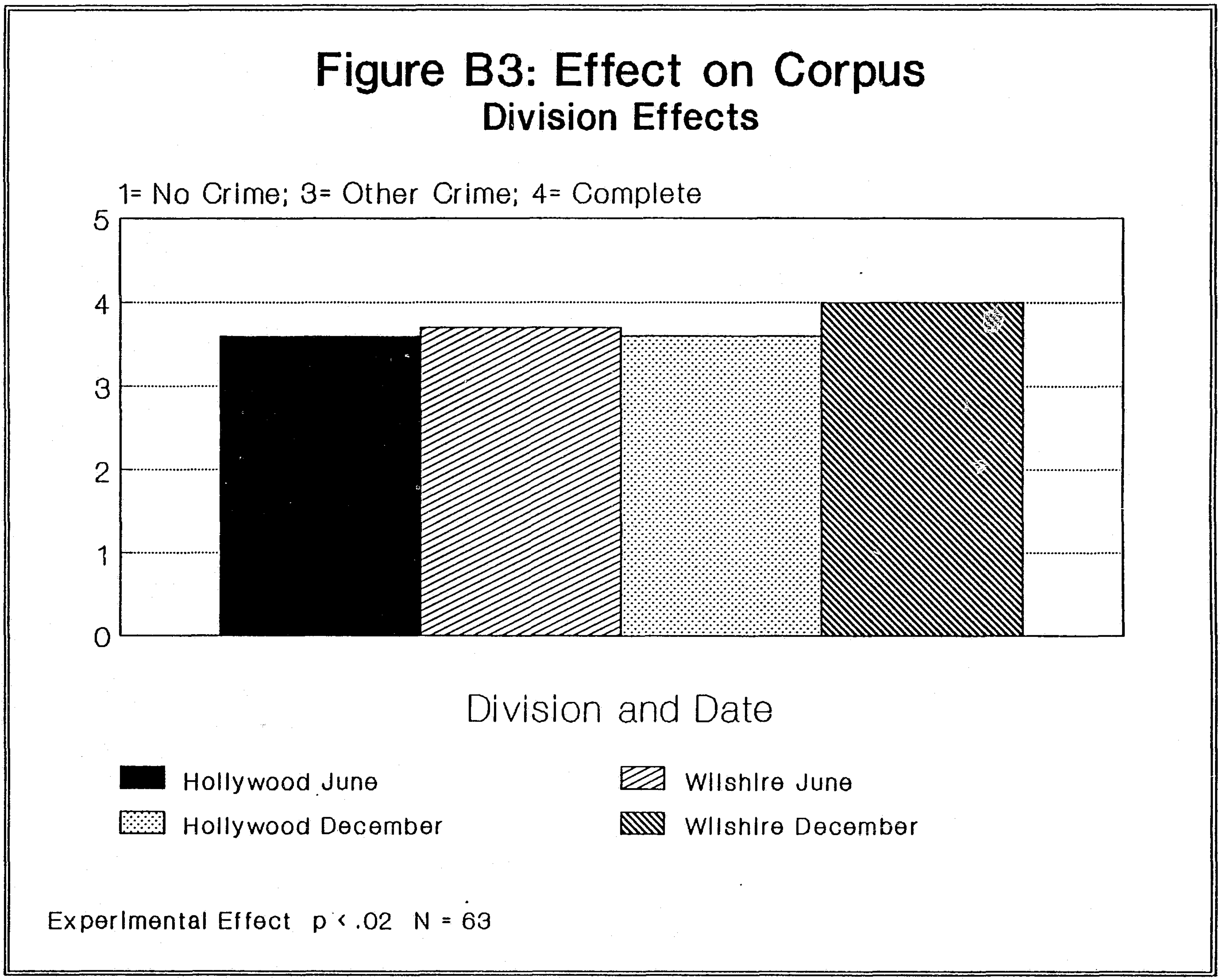
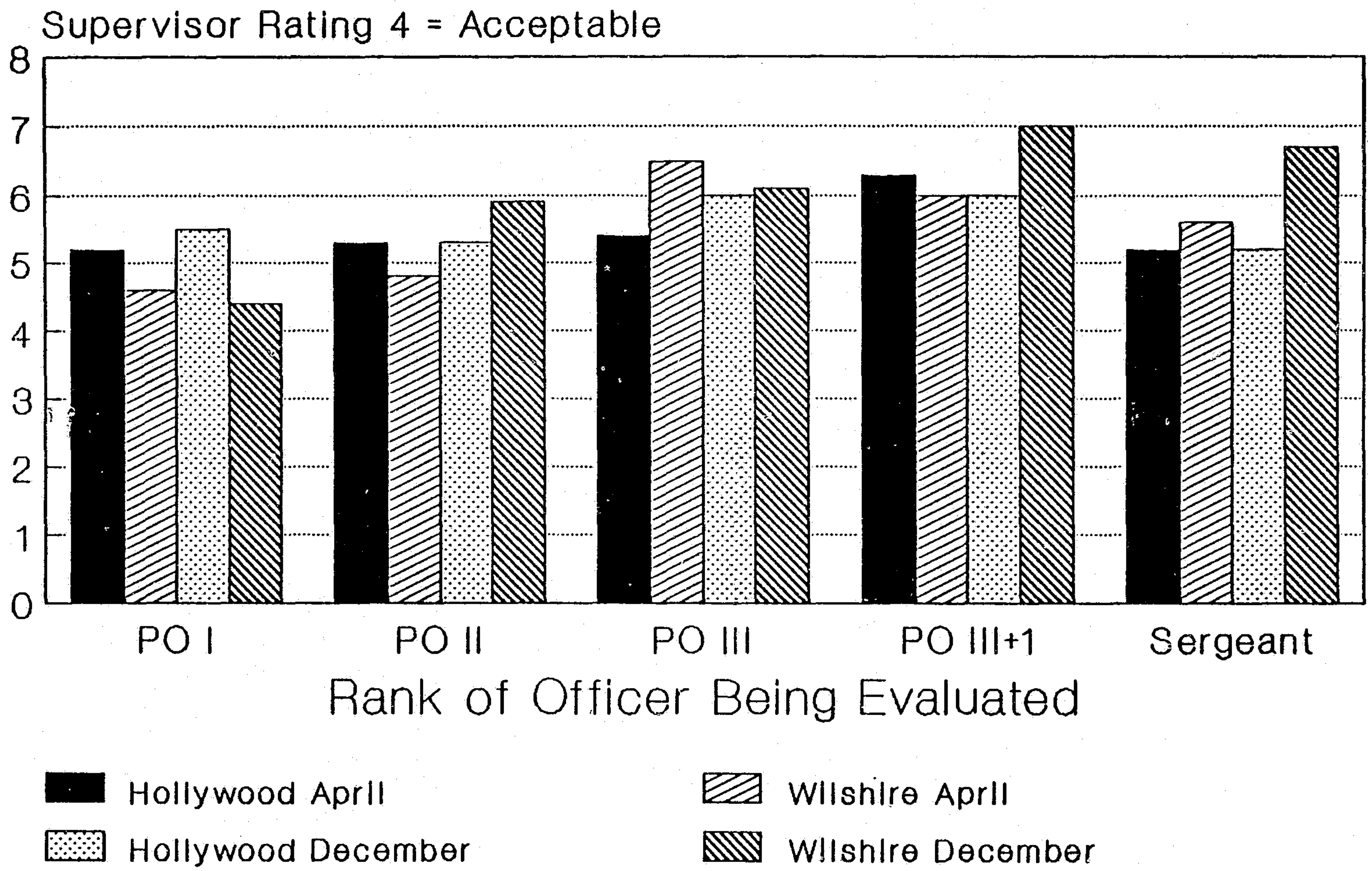


Figure B3: Effect on Corpus
Division Effects
1= No Crime; 3= Other Crime; 4= Complete
5
4
3
2
1
0
Division and Date
Hollywood June
Wilshire June
Hollywood December
Wilshire December
Experimental Effect p < .02 N = 63

IX. Appendix C

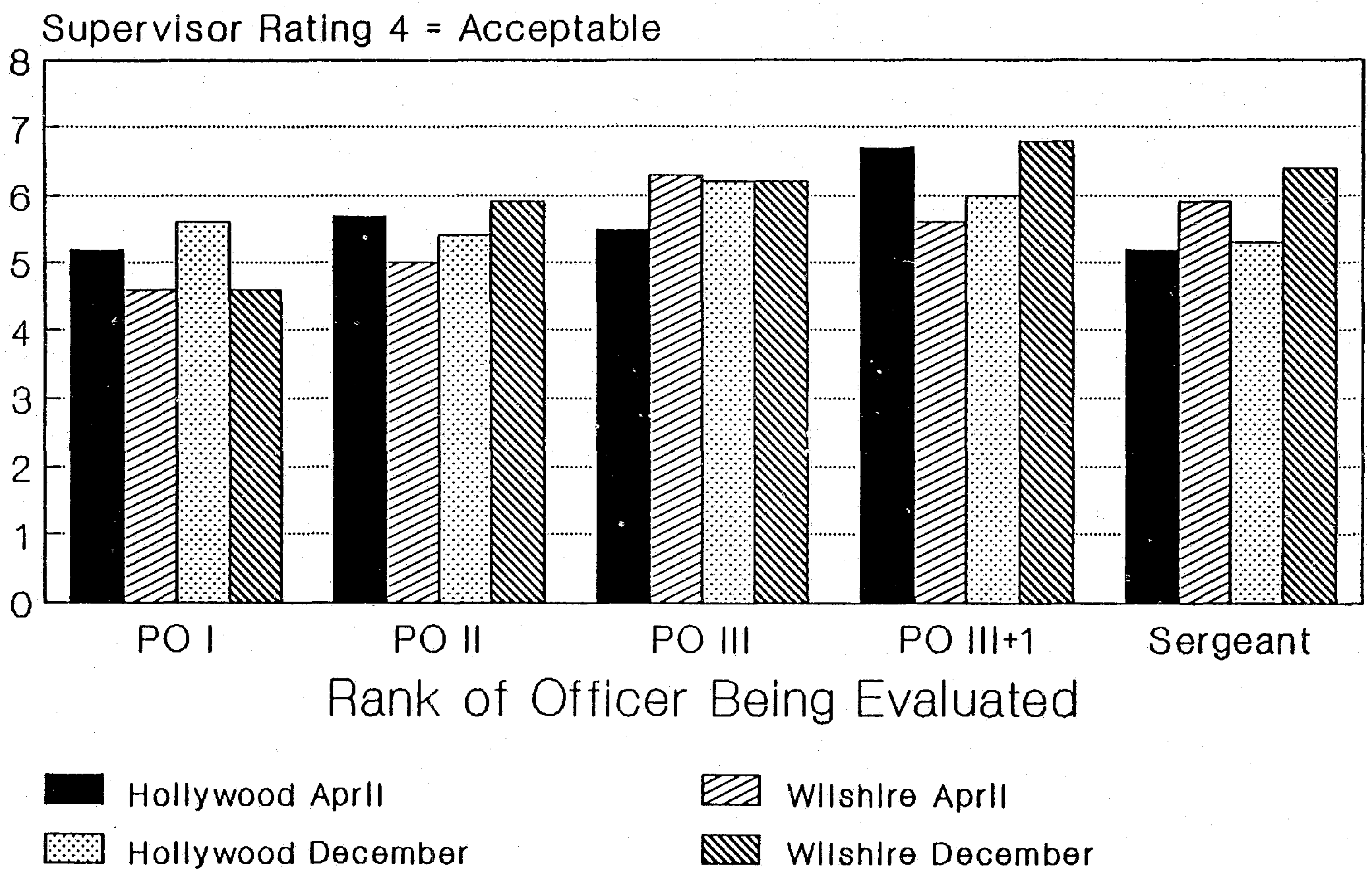
Figures Showing Computer Effects on Officer Job Performance

Figure C1: Officer Initiative
Division and Rank Differences



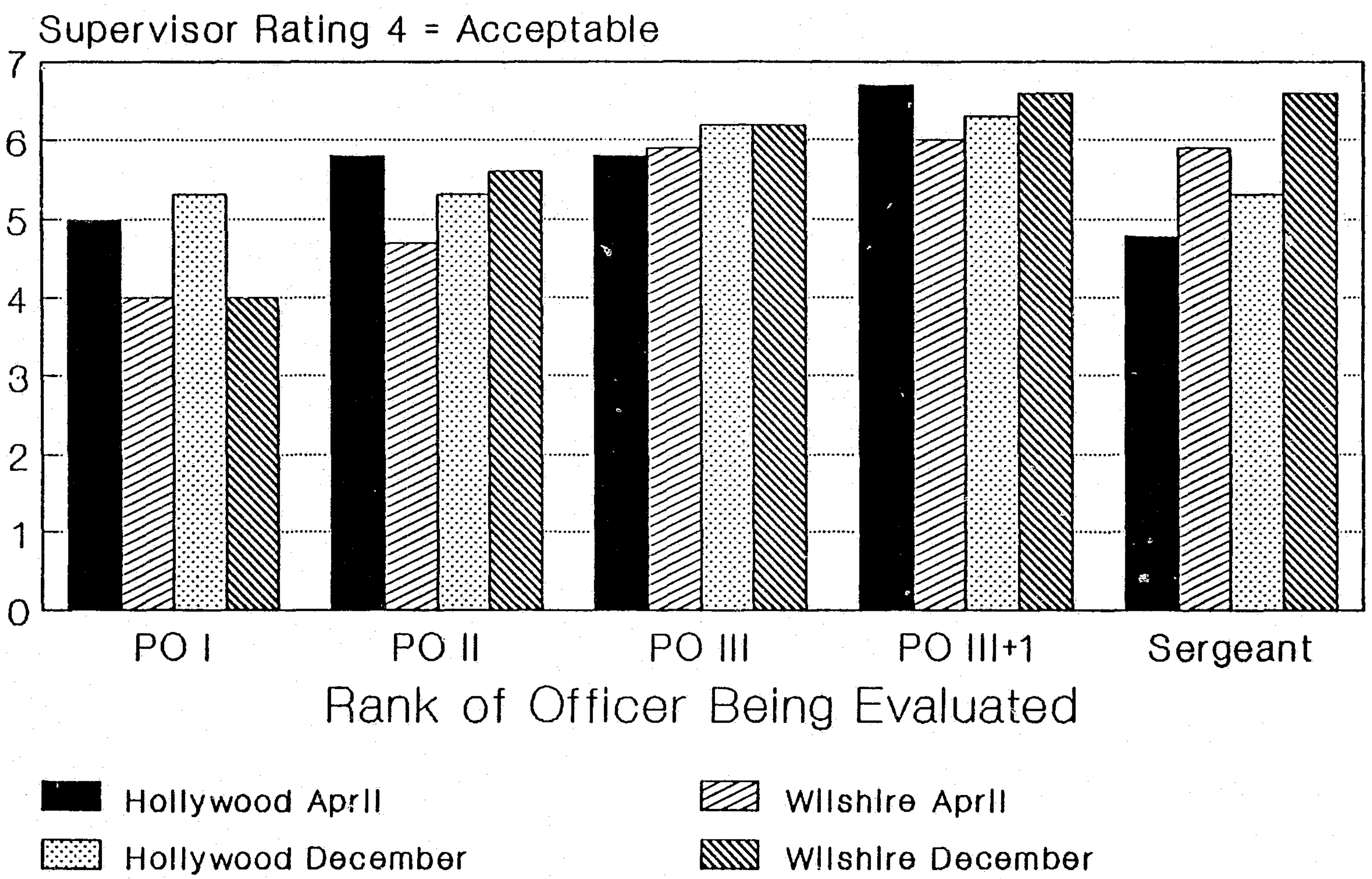
Interaction $p < .005$ N = 98

Figure C2: Officer Effort
Division and Rank Differences



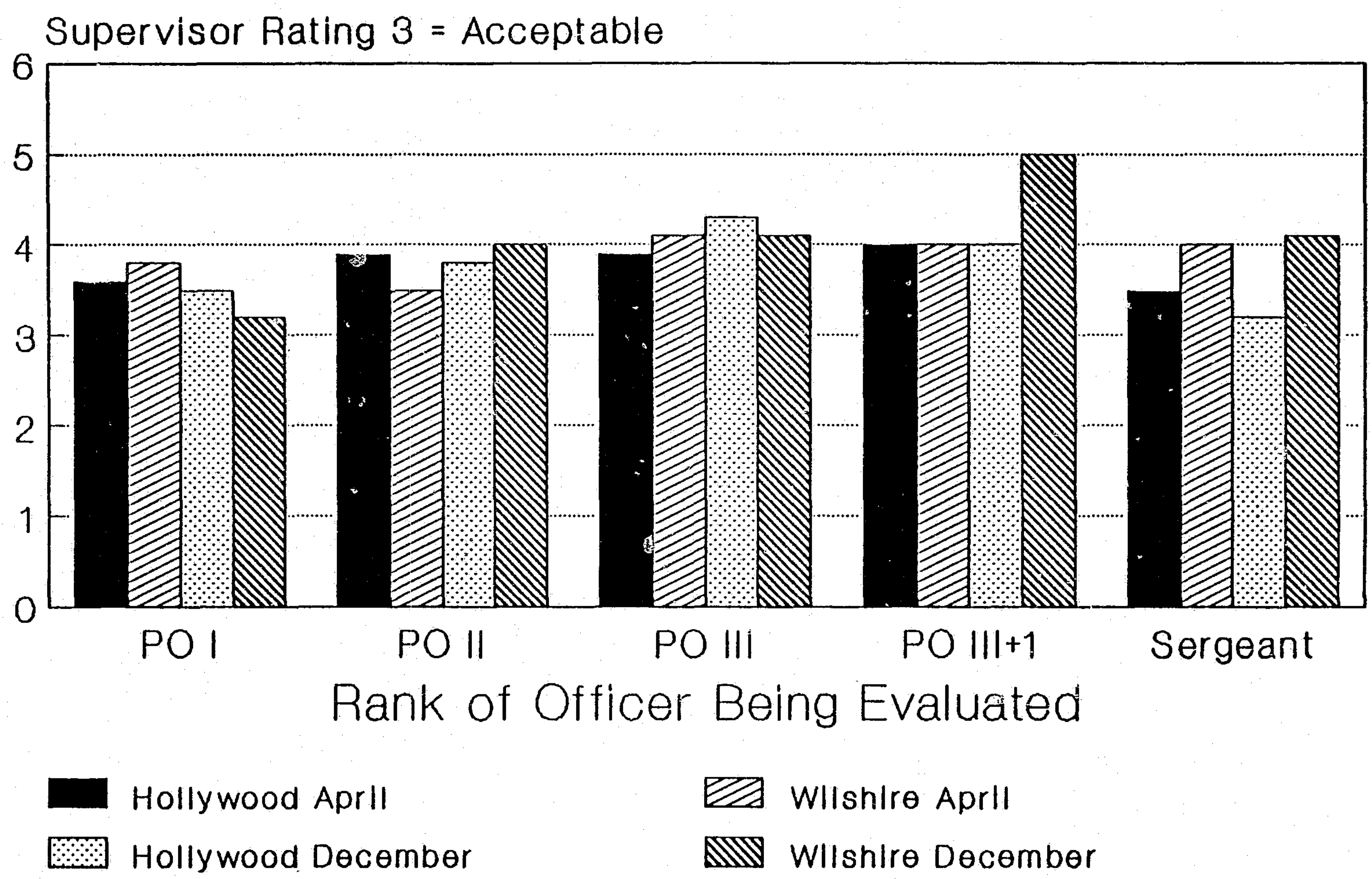
Interaction $p < .04$ N = 98

Figure C3: Officer Work Quality
Division and Rank Differences



Interaction $p < .03$ $N = 98$

Figure C4: Officer Time Use
Division and Rank Differences



Interaction p < .03 N = 98

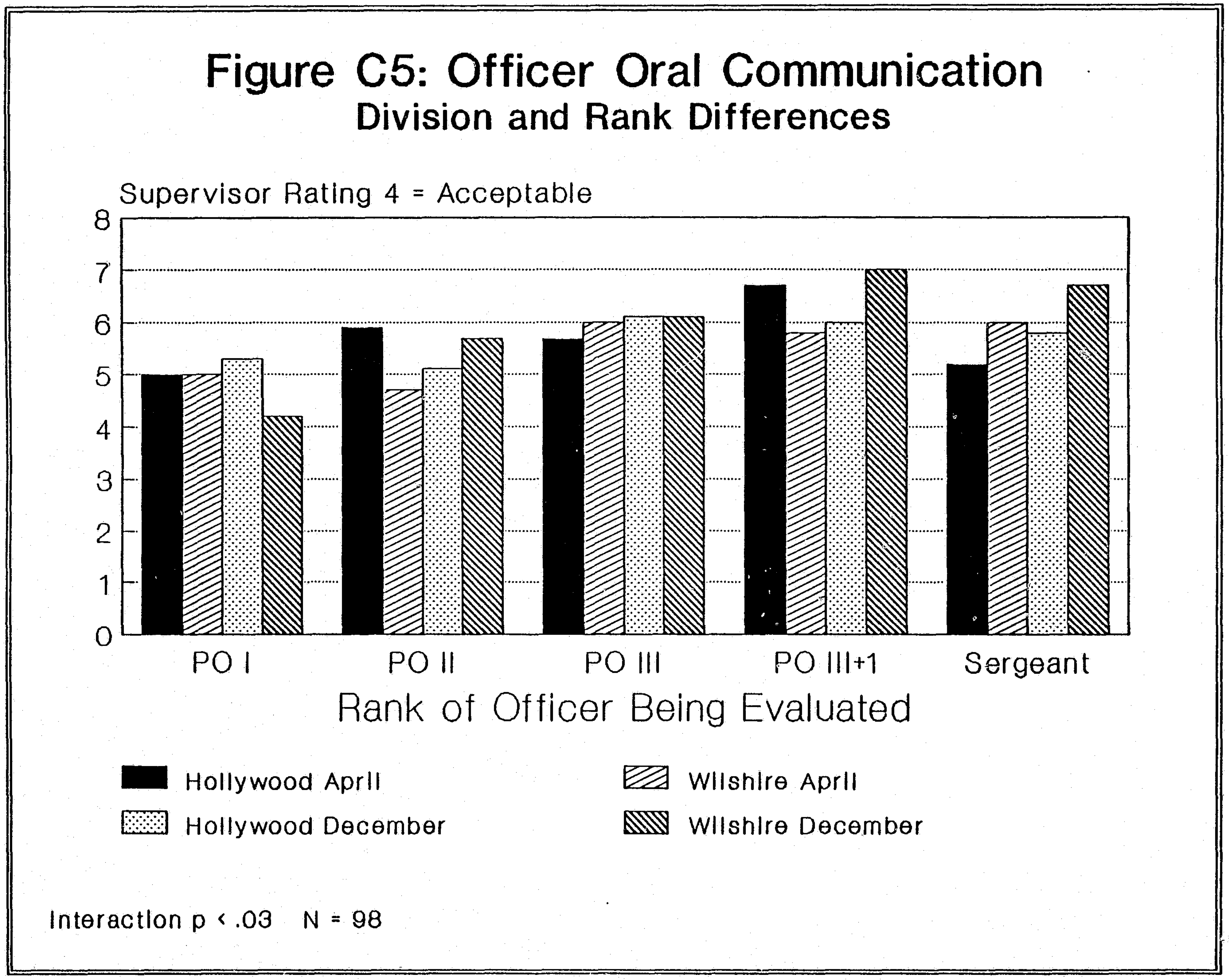
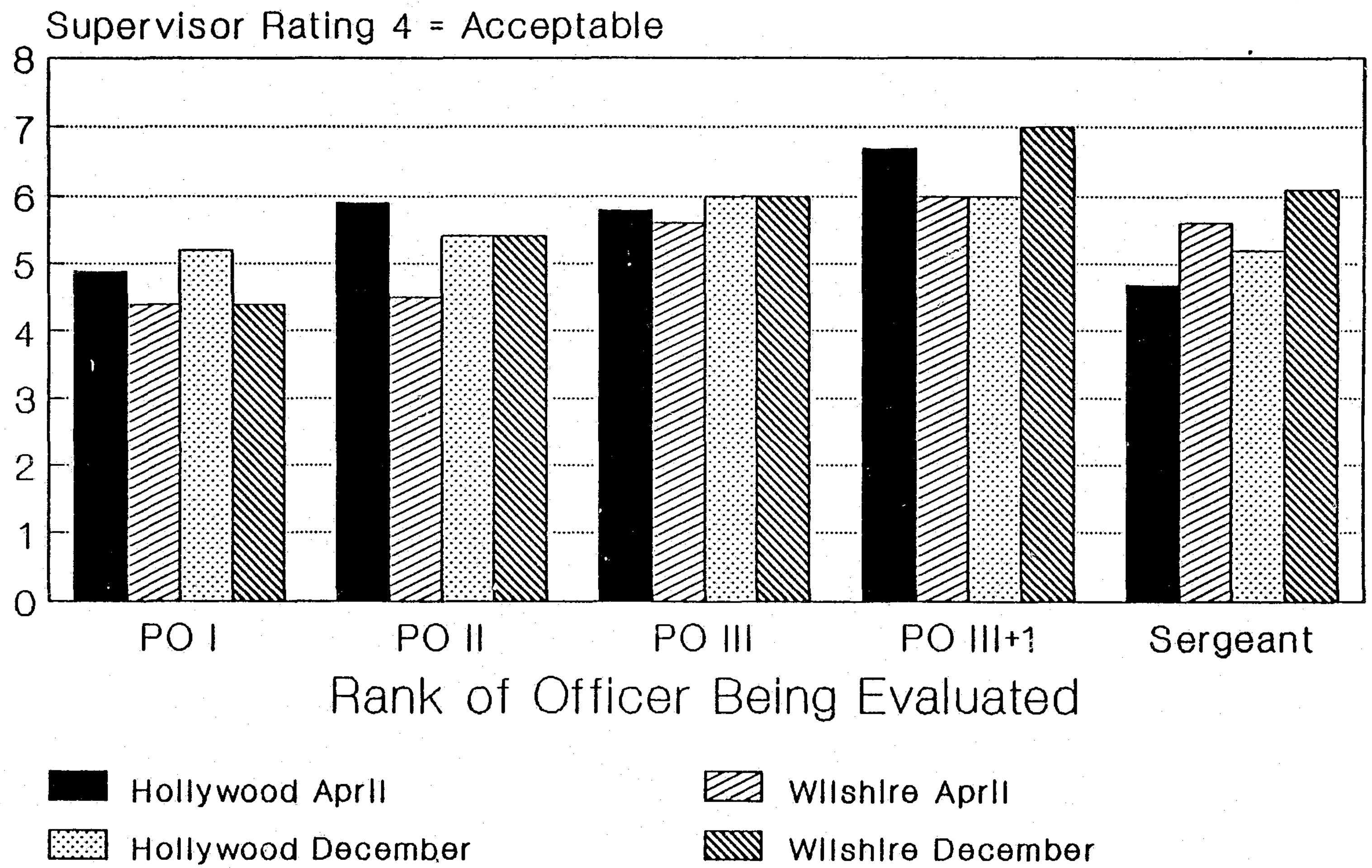


Figure C5: Officer Oral Communication
Division and Rank Differences
Supervisor Rating 4 = Acceptable
8
7
6
5
4
3
2
1
0
PO I
PO II
PO III
PO III+1
Sergeant
Rank of Officer Being Evaluated
Hollywood April
Wilshire April
Hollywood December
Wilshire December
Interaction p < .03 N = 98

Figure C6: Officer Writing Skill
Division and Rank Differences

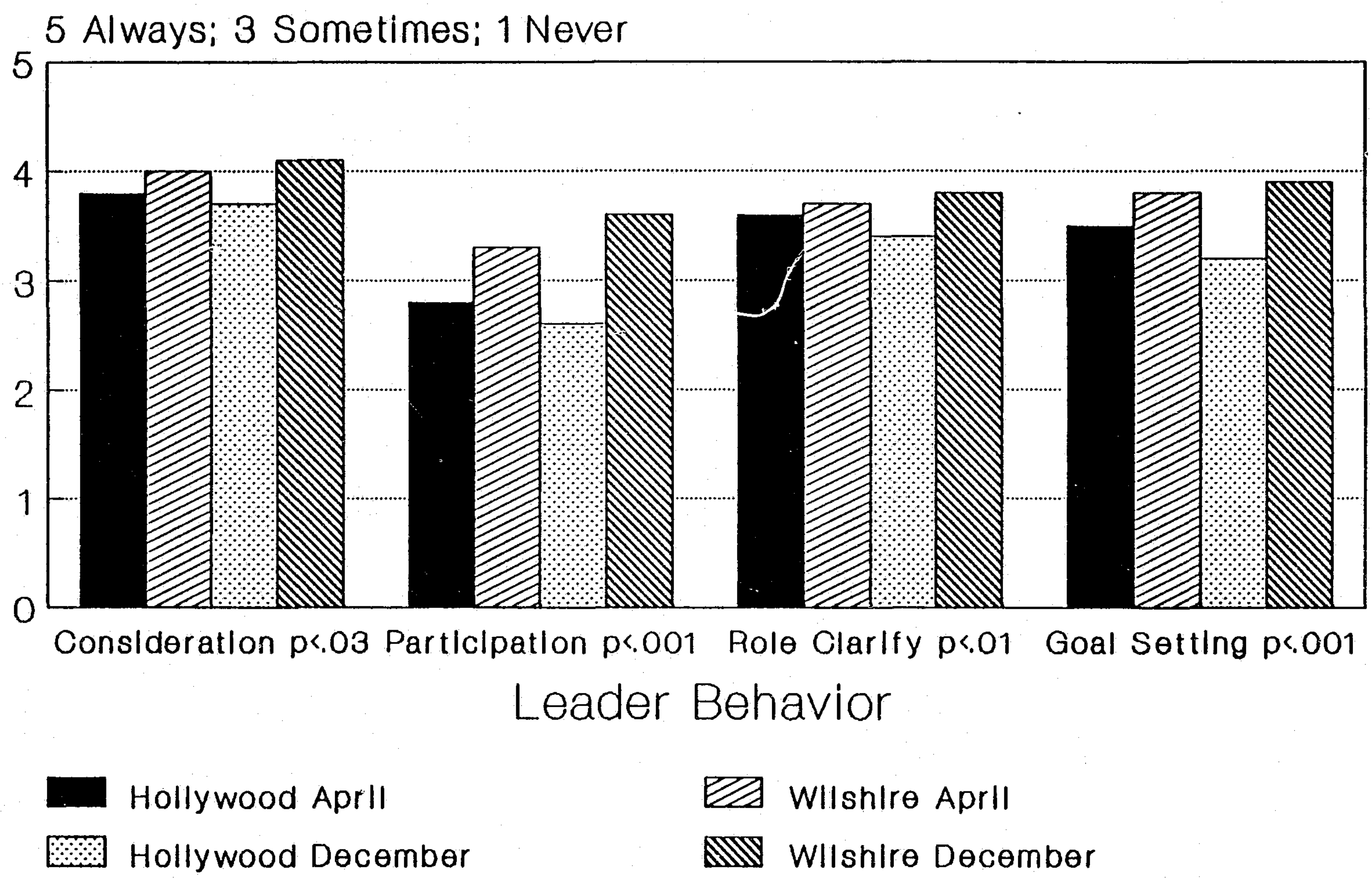


Interaction p < .11 N = 98

X. Appendix D

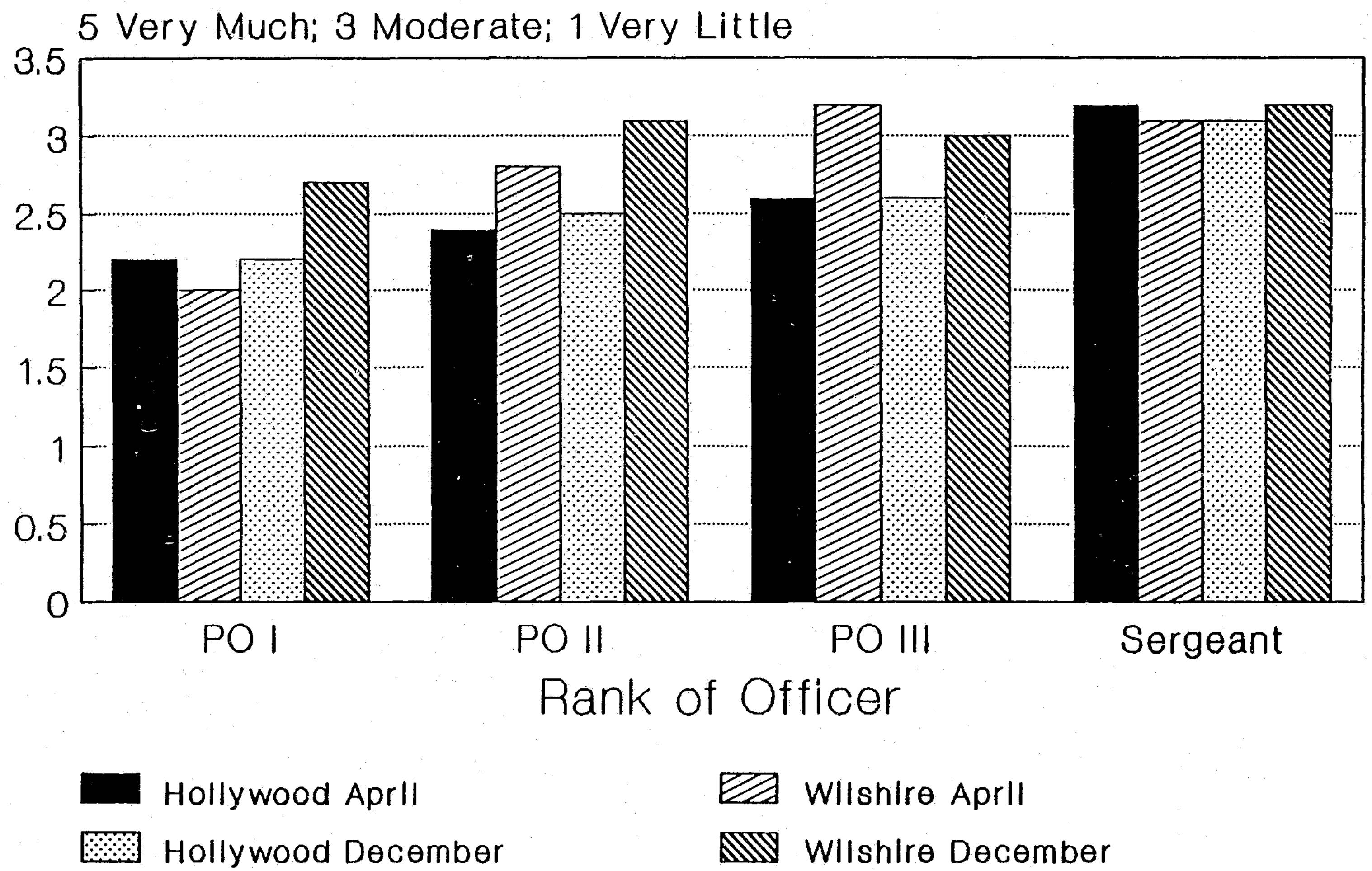
Figures Showing Computer Effects on Attitudes and Perceptions

Figure D1: Leader Behavior
Division Differences



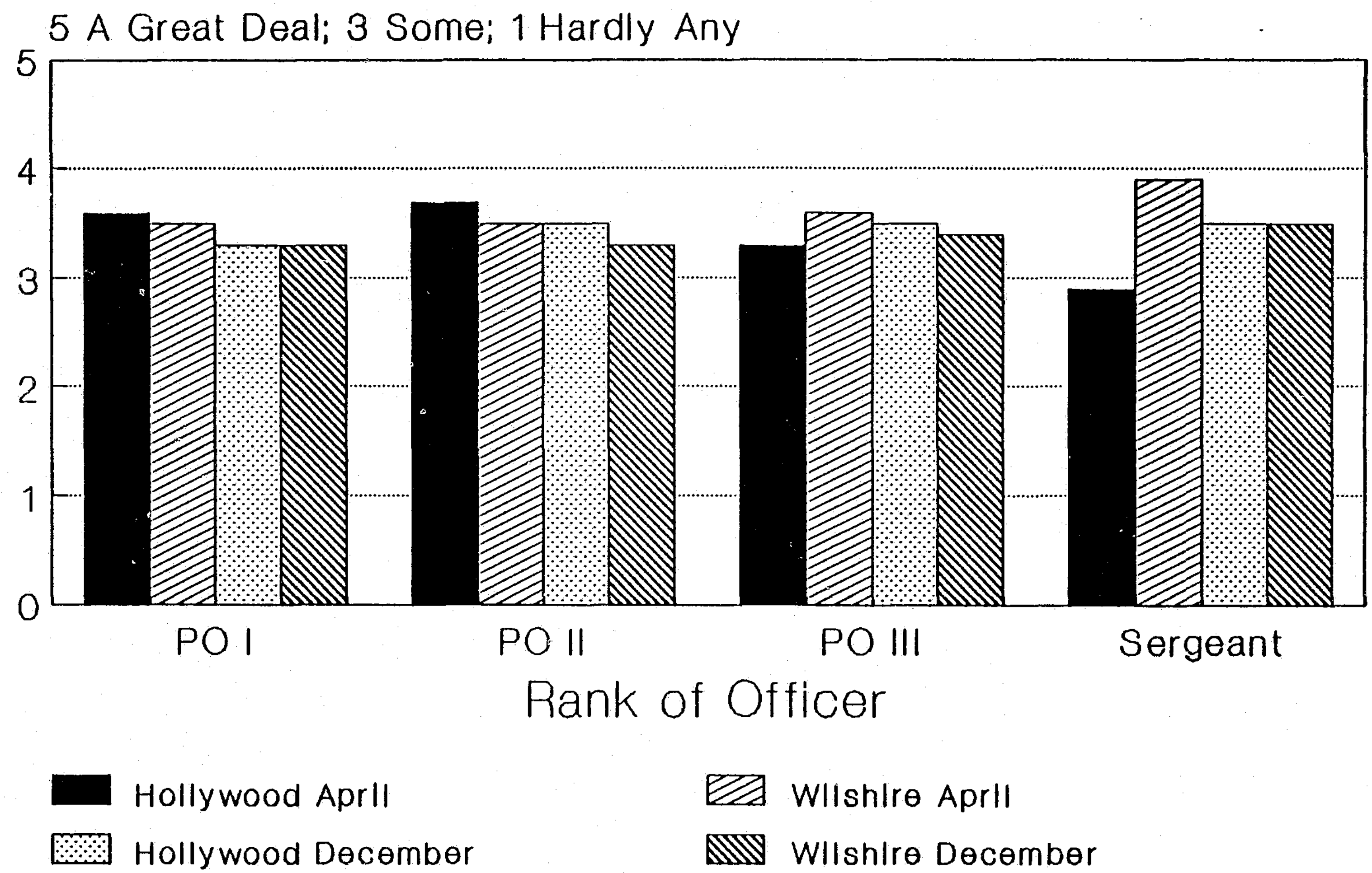
Experimental Effect N = 56 to 68

Figure D2: Experienced Control
Division and Rank Differences



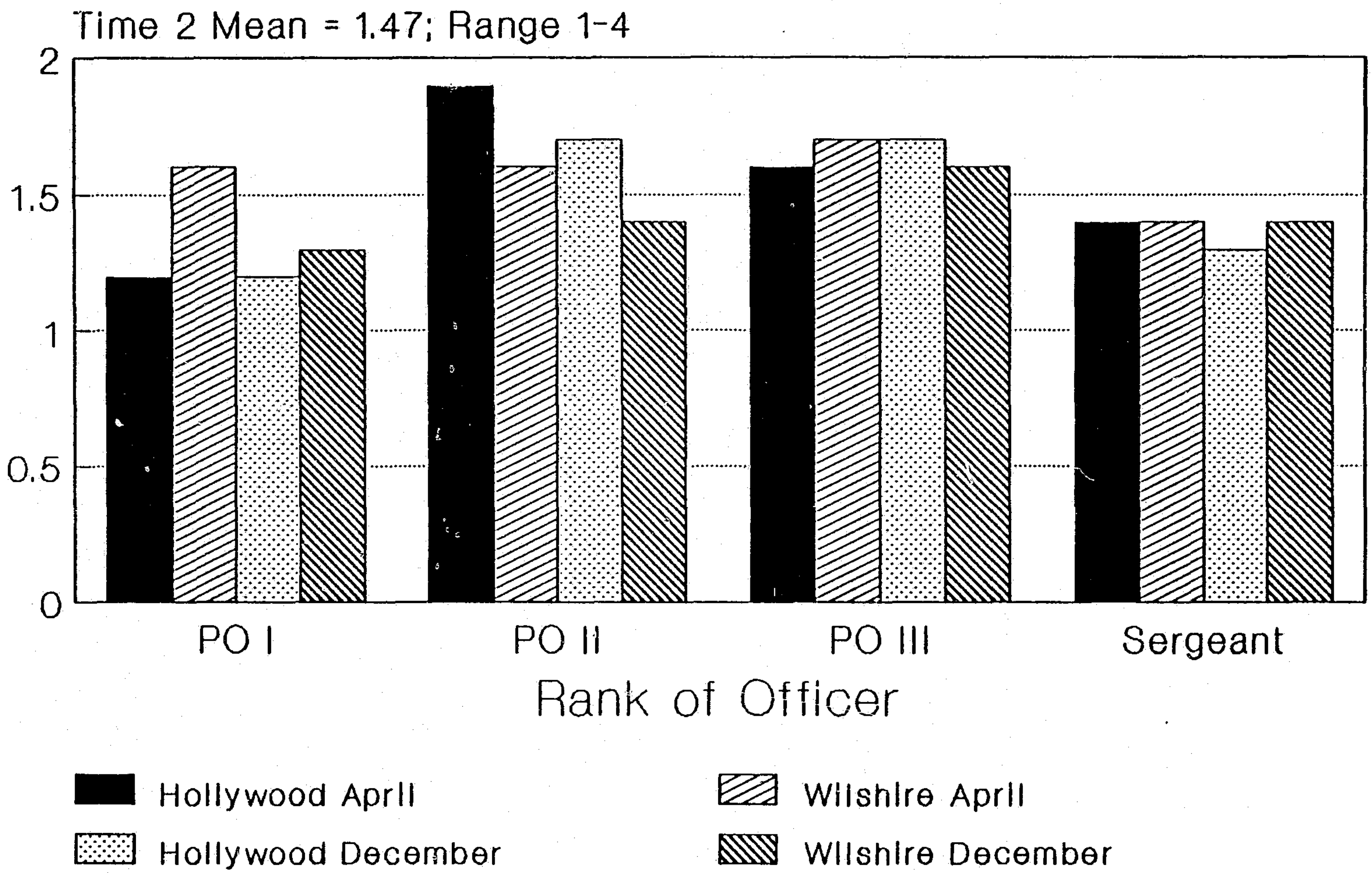
Experimental Effect p < .09   N = 76

Figure D3: Quantitative Workload
Division and Rank Differences



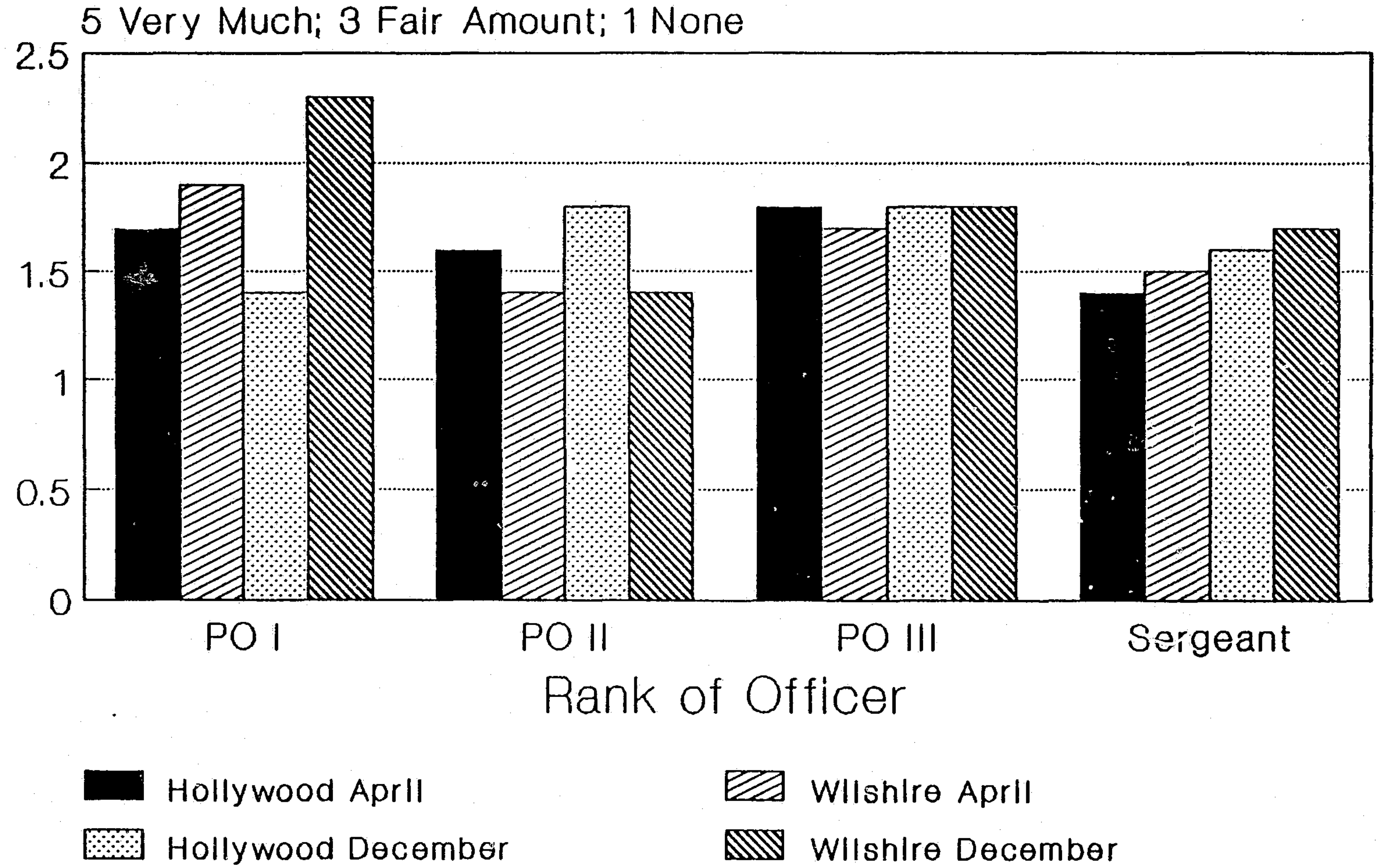
Experiment $p < .06$ N = 73

Figure D4: Depression
Division and Rank Differences



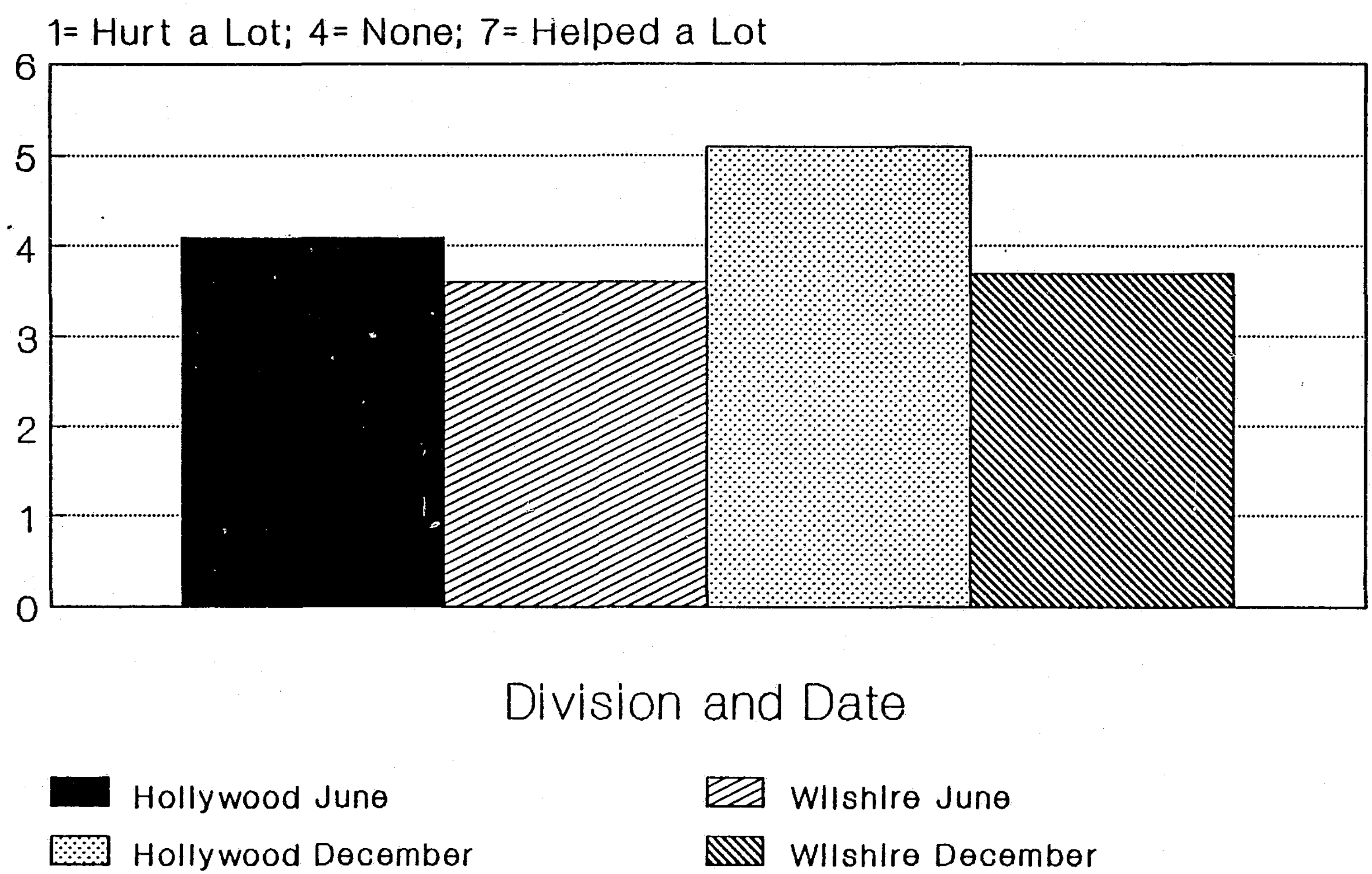
Rank Effect p < .05 N = 74

Figure D5: Computer Anxiety
Division and Rank Differences



Interaction p < .07   N = 75

Figure E4: Effect on Report Quality
Division Effects



Experimental Effect $p < .0002$ $N = 50$

XII. Appendix F

Tables Showing Hollywood Detective Evaluations of Automated Reporting System

TABLE F1

HOLLYWOOD DETECTIVE EVALUATION OF AUTOMATED REPORTING SYSTEM

QUESTIONNAIRE ITEMS	STRONGLY DISAGREE	DISAGREE	NEUTRAL OR N/A	AGREE	STRONGLY AGREE
REPORT FORMAT IS SUITABLE	3	5	3	18	6
REPORT PRINT SHOULD BE LARGER			3	9	23
SPELL CHECK- WOULD IMPROVE QUALITY	1	1	3	8	22
CLEARANCE & FILING NOT IMPROVED		1	18	10	6
STOP LAPTOP OK BY ME	8	13	4	7	3
AUTOMATE ALL, CLR. & FILE IMPROVE	6	10	15	3	1
ARS REPORTS ARE AN IMPROVEMENT	2	2	3	17	11
WOULD SUPPORT DEPT. WIDE ARS	2	3	2	18	10
COMPUTER REPT OK FOR TESTIFYING	1	3	3	18	9
ARSTF GAVE ENOUGH SUPPORT & FDBK	2	2	4	7	20
ARS REPORTS ARE LESS COMPLETE	6	15	7	5	2
ARS REPORTS HAVE FEWER ERRORS	1	10	11	11	2
ARS REPORTS ARE EASIER TO READ	4	1	3	11	16

Table F2

Detectives' Evaluation of the Automated Report System

	% Agree*	Mean	s.d.
The laptop computer's report format is suitable for my needs.	68.5	3.54	1.20
The automated system reports would be easier to use if the print was larger.	91.4	4.57	.66
A spell-check feature in the ARS computers would improve the quality of reports.	85.8	4.40	.98
The automated reports I received during the pilot project did not improve my crime clearance and filing rate.	45.7	3.60	.81
If the Department wanted to discontinue the use of laptop computers and go back to hand-written reports, it would be OK with me.	28.6	2.54	1.29
If all of my paperwork was automated, my crime clearance and filing rate would improve.	11.5	2.51	.98
Reports generated by the automated system are an improvement over hand-written reports.	80.0	3.94	1.08
I would support a department-wide ARS.	80.0	3.89	1.11
I would be comfortable using a computer generated report to testify in court.	79.4	3.92	1.00
The ARS Task Force provided adequate support and feedback throughout this pilot project.	77.1	4.17	1.20
Automated system reports were less complete than hand-written reports.	20.0	2.49	1.12
Automated system reports had fewer errors than hand-written reports.	37.1	3.09	.98
I find the automated system reports easier to read than hand-written reports.	77.1	3.97	1.32

* Agreement consists of those who "agree" or "strongly agree" with the item.

XIII. Appendix G

Tables Showing Hollywood Officer Evaluations of Automated Reporting System

TABLE G1

HOLLYWOOD OFFICER EVALUATION
AUTOMATED REPORTING SYSTEM

QUESTIONNAIRE ITEMS	STRONGLY DISAGREE	DISAGREE	NEUTRAL OR N/A	AGREE	STRONGLY AGREE
LAPTOP TROUBLESOME TO CARRY	27	33	25	19	12
REPORT FORMAT IS SUITABLE	5	19	18	57	17
COULD TYPE BEFORE LAPTOP	20	18	17	39	22
WRITTEN REPORTS NOT A CHORE	5	23	23	41	24
OK TO GO BACK TO HAND WRITTEN PIR	18	27	21	28	19
CONCERN FOR DAMAGE OR THEFT	16	30	28	28	11
COMPUTER REPORTS MORE TIME TO CORRECT	22	33	17	27	14
PROBLEMS XFER RPTS VIA DISK	33	45	16	12	7
LAPTOP EASIER FOR GOOD REPORT	6	15	34	37	21
MY TYPING IS GOOD ENOUGH	5	8	15	52	33
OTHERS WANT TO RETURN TO OLD WAY	11	23	38	27	14
I LOST INFORMATION IN COMPUTER	21	34	16	32	10
MORE RPTS RETURNED FOR CORRECTION	29	38	34	8	4
SCREEN EASY TO READ	2	3	9	68	31
I HAD DOUBT LAPTOPS AN IMPROVEMENT	5	21	49	29	9

TABLE G1
(CONTINUED)

HOLLYWOOD OFFICER EVALUATION
AUTOMATED REPORTING SYSTEM

QUESTIONNAIRE ITEMS	STRONGLY DISAGREE	DISAGREE	NEUTRAL OR N/A	AGREE	STRONGLY AGREE
LEARNED TO USE LAPTOP QUICKLY	1	6	13	60	33
PREFER HAND WRITTEN REPORTS	26	34	23	18	12
PHONE EASIER THAN DISK TRANSFER	5	8	95	2	1
LAPTOP MORE CONVENEINT THAN NOTEBOOK & REPORTS	23	28	24	24	14
PUT IN MUCH EFFORT TO IMPROVE TYPING SKILLS	28	57	19	7	2
NEVER USED COMPUTER BEFORE	28	28	7	29	21
UNCOMFORTABLE W/RESPONSIBILITY FOR LAPTOP	39	46	18	7	3
NOW MORE COMPLETE REPORTS	8	28	37	28	12
KEYBOARD IS AWKWARD TO USE	24	69	15	2	3
SPELL CHECK FEATURE WOULD BE EASIER	3	11	13	32	54
SCREEN DIFFICULT TO READ	29	66	8	10	2
LAPTOPS PROVED TO BE RELIABLE	6	8	23	65	13

TABLE G1
(CONTINUED)

HOLLYWOOD OFFICER EVALUATION
AUTOMATED REPORTING SYSTEM

QUESTIONNAIRE ITEMS	STRONGLY DISAGREE	DISAGREE	NEUTRAL OR N/A	AGREE	STRONGLY AGREE
LAPTOP REPORTS EASIER TO CORRECT	5	18	26	46	20
LONG TIME GETTING USED TO LAPTOP	22	62	23	7	1
DISLIKED WRITING BY HAND	12	36	32	25	10
SCROLL FIELD DIFFICULTY	16	48	31	13	7
TRAINING WAS ADEQUATE	16	25	12	47	15
PRODUCE LONGER NARRATIVE	7	31	51	18	8
TROUBLE W/SLOW TYPING	25	57	15	13	5
MOST OFFICERS LIKE LAPTOPS	8	21	41	37	8
HARD TO STORE IN CAR	32	67	12	2	2
RECEIVED TOO MUCH ARS TRAINING	26	64	20	5	
ON SCREEN HELP ALL I NEED	6	27	25	46	11
MY HANDWRITING HARD TO READ	33	46	11	16	9
EXPERIENCED WITH COMPUTERS BEFORE LAPTOP	17	30	9	39	20
ON SCREEN HELP USEFUL	3	13	22	67	10
REPORTS BETTER ORGANIZED	8	22	35	34	15

TABLE G1
(CONTINUED)

HOLLYWOOD OFFICER EVALUATION
AUTOMATED REPORTING SYSTEM

QUESTIONNAIRE ITEMS	STRONGLY DISAGREE	DISAGREE	NEUTRAL OR N/A	AGREE	STRONGLY AGREE
COMPUTER SAVES TIME	16	25	35	29	9
COMPUTER FILES EASIER TO LOOSE	10	35	29	30	11
LAPTOPS NOT MUCH IMPROVEMENT	16	51	27	11	10
COMPUTER AWKWARD IN FIELD	13	43	21	24	14
POPUP WINDOWS EASY TO USE	4	4	14	80	13
LAPTOPS GIMMICK OR FAD	42	42	28	2	1
SUPPORT FOR DEPT WIDE ARS	8	5	17	43	42
ARS COMFORTABLE IN COURT	5	8	21	54	27
ENTER INFO DIRECTLY-NO NOTES	4	28	25	48	10
ARSTF ENOUGH SUPPORT & FDBK	3	7	30	46	29

TABLE G2

HOLLYWOOD SUPERVISOR EVALUATION
AUTOMATED REPORTING SYSTEM

QUESTIONNAIRE ITEMS	STRONGLY DISAGREE	DISAGREE	NEUTRAL OR N/A	AGREE	STRONGLY AGREE
LAPTOP TROUBLESOME TO CARRY	3	4	8	5	3
REPORT FORMAT IS SUITABLE		6	9	5	3
COULD TYPE BEFORE LAPTOP	3	4	4	8	4
WRITTEN REPORTS NOT A CHORE	2	2	2	10	7
OK TO GO BACK TO HAND WRITTEN PIR	3	6	1	7	6
CONCERN FOR DAMAGE OR THEFT	1	4	5	11	2
COMPUTER REPORTS TAKE MORE TIME TO CORRECT	3	6	2	8	3
PROBLEMS XFER RPTS VIA DISK	4	7	7	3	2
LAPTOP EASIER FOR GOOD REPORT	3	3	8	6	3
MY TYPING IS GOOD ENOUGH		3	5	11	4
OTHERS WANT RETURN TO OLD WAY	1	4	10	5	3
I LOST INFORMATION IN COMPUTER	3	4	8	7	1
MORE RPTS RETURNED FOR CORRECTION	2	8	9	2	2
SCREEN EASY TO READ		3	6	11	3
I HAD DOUBT LAPTOPS AN IMPROVEMENT	2	6	4	10	1

TABLE G2
(CONTINUED)

HOLLYWOOD SUPERVISOR EVALUATION
AUTOMATED REPORTING SYSTEM

QUESTIONNAIRE ITEMS	STRONGLY DISAGREE	DISAGREE	NEUTRAL OR N/A	AGREE	STRONGLY AGREE
LEARNED TO USE LAPTOP QUICKLY	1	2	4	12	4
PREFER HAND WRITTEN REPORTS	4	4	4	6	5
PHONE EASIER THAN DISK TRANSFER	1	3	16	3	
LAPTOP MORE CONVENEINT THAN NOTEBOOK & REPORTS	4	9	3	5	2
PUT IN MUCH EFFORT TO IMPROVE TYPING SKILLS	5	10	6	1	1
NEVER USED COMPUTER BEFORE	5	9	3	5	1
UNCOMFORTABLE W/RESPONSIBILITY FOR LAPTOP	6	11	3	2	1
NOW MORE COMPLETE REPORTS	3	3	9	3	5
KEYBOARD IS AWKWARD TO USE	3	13	5	1	1
SPELL CHECK FEATURE EASIER	1	3	2	8	9
SCREEN DIFFICULT TO READ	3	11	4	3	2
LAPTOPS PROVED TO BE RELIABLE	1	5	9	5	3

TABLE G2
(CONTINUED)

HOLLYWOOD SUPERVISOR EVALUATION
AUTOMATED REPORTING SYSTEM

QUESTIONNAIRE ITEMS	STRONGLY DISAGREE	DISAGREE	NEUTRAL OR N/A	AGREE	STRONGLY AGREE
LAPTOP REPORTS EASIER TO CORRECT	1	7	4	7	4
LONG TIME GETTING USED TO LAPTOP	1	8	11	3	
DISLIKED WRITING BY HAND	2	10	3	4	4
SCROLL FIELD DIFFICULTY		8	8	3	4
TRAINING WAS ADEQUATE	1	6	4	8	4
PRODUCE LONGER NARRATIVE	3	4	10	4	2
TROUBLE W/SLOW TYPING	4	8	8	3	
MOST OFFICERS LIKE LAPTOPS	4	6	2	10	1
HARD TO STORE IN CAR	4	8	8	3	
RECEIVED TOO MUCH ARS TRAINING	2	12	6	1	2
ON SCREEN HELP ALL I NEED	1	8	7	6	1
MY HANDWRITING HARD TO READ	3	11	4	3	2
EXPERIENCED WITH COMPUTERS BEFORE LAPTOP	1	3	3	11	5
ON SCREEN HELP USEFUL		3	9	10	1
REPORTS BETTER ORGANIZED	1	7	6	7	2

TABLE G2
(CONTINUED)

HOLLYWOOD SUPERVISOR EVALUATION
AUTOMATED REPORTING SYSTEM

QUESTIONNAIRE ITEMS	STRONGLY DISAGREE	DISAGREE	NEUTRAL OR N/A	AGREE	STRONGLY AGREE
COMPUTER SAVES TIME	3	5	6	8	1
COMPUTER FILES EASIER TO LOOSE	1	8	2	11	1
LAPTOPS NOT MUCH IMPROVEMENT	3	8	7	3	2
COMPUTER AWKWARD IN FIELD		8	7	5	3
POPUP WINDOWS EASY TO USE	2	1	14	5	1
LAPTOPS GIMMICK OR FAD	6	8	7	1	1
WOULD SUPPORT DEPT. WIDE ARS	3	3	5	5	7
ARS COMFORTABLE IN COURT	3		8	10	2
ENTER INFO DIRECTLY-NO NOTES	1	5	9	7	1
ARSTF ENOUGH SUPPORT & FDBK		2	7	10	4
ARS EASIER TO REVIEW & APPROVE	2	7	3	6	5
ARS REPORTS LESS COMPLETE	3	9	4	5	2
ARS REPORTS FEWER ERRORS		5	10	4	4

Table G3

Factors from 52-Item Post-Hoc Evaluation of Laptops by Hollywood Officers and Supervisors (Numbers in Parentheses are Factor Loadings)

Factor 1: Overall Evaluation of the ARS

17. I would rather write reports by hand (-.72)
4. Hand-writing reports wasn't a chore (-.72)
5. Going back to hand-written reports would be OK (-.64)
45. Laptops are not much improvement over hand-writing reports (-.63)
11. Fellow officers would like to get rid of laptops and just hand-write reports (-.62)
46. Laptops are awkward to use in the field (-.60)
27. Laptops have proven to be reliable pieces of equipment (.54)
42. Computer reports are better organized than those written by hand (.57)
23. I produce a more complete report with the computer (.57)
30. I disliked having to write reports by hand (.60)
49. I support a department-wide automated reporting system (.61)
9. Laptops have made it easier to produce a good report (.64)
35. Most officers like having the laptops (.67)
43. Entering reports by computer saves me time (.67)

Factor 2: Computer Aptitude

10. My typing is good enough to allow me to use laptops easily (-.70)
3. I could type fairly well before we started using laptops (-.63)
40. I had some experience with computers before this project (-.65)
22. Having responsibility for an expensive/delicate computer makes me feel uncomfortable (.40)
21. I have never used computers before this project (.56)
34. I have trouble with laptops because I don't type well (.56)
20. I had to invest a lot of time improving my typing to use laptops (.62)

Factor 3: Utility of Laptop Features

26. The screen on the laptop is difficult to read (-.54)
31. The scrolling fields were difficult to use (-.45)
24. The laptop's keyboard is awkward to use (-.43)
16. It did not take me long to learn to use the laptops (.48)
14. The screen on the laptop is easy to read (.52)
52. The ARS Task Force provided adequate support and feedback (.53)
41. The on-screen help features were useful (.59)
38. On-screen help features provide all the assistance I need (.71)

Factor 4: File Manipulation Ease

44. Computer files are easier to lose than paper documents (.52)
8. I had trouble transferring reports via disk from laptops to the station computer (.55)
12. I have lost information because of laptop computer problems (.57)

Table G4

Analysis of Automated System Evaluation Items
Not Included in the Four Factors

	% Agree*	Mean	s.d.
The laptop computer is troublesome to carry around.	28.3	2.69	1.28
The laptop's report format is suitable for my needs.	60.4	3.01	1.06
I am concerned about laptops being damaged or stolen.	38.1	2.97	1.21
Computer-entered reports take longer to correct.	38.5	2.84	1.34
My reports are returned to me for correction more often than before we used laptop computers.	12.2	2.36	1.07
Before laptops, I doubted whether they would be an improvement over hand-written reports.	34.4	3.10	.98
Telephone transfer of reports to the station system is easier than disk transfer.	4.7	2.88	.57
Laptop is more convenient to carry than a notebook and reports.	33.6	2.81	1.31
A spell-check feature would make it easier for me to write reports.	55.6	4.05	1.13
Computer-entered reports are easier to correct.	56.3	3.47	1.12
It took me a long time to get used to using the laptop.	8.3	2.23	.85
I received enough training in the use of computers.	54.1	3.21	1.29
I produce longer narrative now than before laptops.	23.3	2.92	.99
Difficult to find a place to store laptop in car.	5.3	1.98	.83
Received too much training in the use of computers.	6.0	2.11	.84
I know that my handwriting is hard to read.	21.0	2.35	1.22
The pop-up windows are easy to use.	72.9	3.72	.85
Laptops are gimmick; they won't be around too long.	3.1	1.96	.87
I would be comfortable using a computer report to testify in court.	68.5	3.71	1.06
I often enter information directly into the laptop without taking notes.	49.7	3.27	1.03

* % agreement consists of those who "agree" or "strongly agree" with the item.

XIV. Appendix H

Tables Showing Breakdown of PIR Time Data by Division

TABLE H1

WAVE1 (JUNE) PIR TIME AND ERROR DATA

TIME AND ERROR CATEGORIES	DIVISION OF OFFICER	
	HOLLYWOOD	WILSHIRE
NUMBER OF PIRS SUBMITTED		
Mean	4.00	4.00
Count	132	149
Standard Deviation	5.00	3.00
AVERAGE INVESTIGATION TIME		
Mean	27.59	28.16
Count	132	149
Standard Deviation	19.86	37.47
AVERAGE WRITING TIME		
Mean	25.95	28.92
Count	132	149
Standard Deviation	15.56	18.93
AVERAGE TRAVEL TIME		
Mean	8.55	8.68
Count	132	149
Standard Deviation	10.37	15.21
AVERAGE APPROVAL TIME		
Mean	2.26	2.40
Count	132	149
Standard Deviation	3.61	4.18
AVERAGE SUPERVISOR REVIEW TIME		
Mean	2.93	3.04
Count	132	149
Standard Deviation	1.77	2.04
AVERAGE OFFICER TOTAL TIME		
Mean	64.14	68.97
Count	132	149
Standard Deviation	34.74	63.98
PERCENT OF PIRS WITH ERRORS		
Mean	14.2	14.7
Count	132	149
Standard Deviation	26.7	26.8
AVERAGE MISSING FIELD ERRORS		
Mean	.06	.07
Count	132	149
Standard Deviation	.19	.30

TABLE H1 (CONTINUED)

WAVE1 (JUNE) PIR TIME AND ERROR DATA

TIME AND ERROR CATEGORIES	DIVISION OF OFFICER	
	HOLLYWOOD	WILSHIRE
AVERAGE # INNACCURATE ENTRIES		
Mean	.05	.04
Count	132	149
Standard Deviation	.19	.16
AVERAGE # INCOMPLETE ENTRIES		
Mean	.04	.07
Count	132	149
Standard Deviation	.15	.23
AVERAGE # UNREADABLE ENTRIES		
Mean	.01	.03
Count	132	149
Standard Deviation	.04	.26
AVERAGE # MISSPELLINGS		
Mean	.06	.08
Count	132	149
Standard Deviation	.25	.26
AVERAGE TOTAL # ERRORS		
Mean	.21	.29
Count	132	149
Standard Deviation	.46	.64
AVERAGE CLERK INPUT TIME		
Mean	2.20	1.54
Count	132	149
Standard Deviation	1.29	1.16
AVERAGE CLERK CORRECTION TIME		
Mean	.15	.19
Count	132	149
Standard Deviation	.83	1.65
AVERAGE CLERK COPY TIME		
Mean	3.92	2.79
Count	132	149
Standard Deviation	3.13	3.96
AVERAGE CLERK FILING TIME		
Mean	1.52	.04
Count	132	149
Standard Deviation	.86	.14

TABLE H1 (CONTINUED)

WAVE1 (JUNE) PIR TIME AND ERROR DATA

TIME AND ERROR CATEGORIES	DIVISION OF OFFICER	
	HOLLYWOOD	WILSHIRE
AVERAGE PACMIS REVERIFICATION TIME		
Mean	.00	.00
Count	132	149
Standard Deviation	.02	.00
AVERAGE NUMBER OF COPIES MADE		
Mean	9.10	10.67
Count	132	149
Standard Deviation	2.05	1.84
AVERAGE TOTAL CLERK TIME		
Mean	7.78	4.58
Count	132	149
Standard Deviation	3.67	4.22

TABLE H2

WAVE2 (DECEMBER) PIR TIME AND ERROR DATA

TIME AND ERROR CATEGORIES	T2 DIVISION OF OFFICER	
	HOLLYWOOD	WILSHIRE
T2 NUMBER OF PIRS SUBMITTED		
Mean	5.00	4.00
Count	92	152
Standard Deviation	6.00	3.00
T2 AVERAGE INVESTIGATION TIME		
Mean	27.57	29.54
Count	92	152
Standard Deviation	21.54	23.76
T2 AVERAGE WRITING TIME		
Mean	28.77	25.99
Count	92	152
Standard Deviation	17.72	13.70
T2 AVERAGE TRAVEL TIME		
Mean	6.55	8.23
Count	92	152
Standard Deviation	8.40	7.98
T2 AVERAGE APPROVAL TIME		
Mean	2.89	2.03
Count	92	152
Standard Deviation	6.34	3.12
T2 AVERAGE SUPERVISOR REVIEW TIME		
Mean	3.89	3.91
Count	92	152
Standard Deviation	2.24	2.56
T2 AVERAGE OFFICER TOTAL TIME		
Mean	65.45	65.78
Count	92	152
Standard Deviation	38.04	38.05
T2 PERCENT OF PIRS WITH ERRORS		
Mean	20.0	19.7
Count	92	152
Standard Deviation	30.2	30.0
T2 AVERAGE MISSING FIELD ERRORS		
Mean	.05	.08
Count	92	152
Standard Deviation	.17	.26

TABLE H2 (CONTINUED)

WAVE2 (DECEMBER) PIR TIME AND ERROR DATA

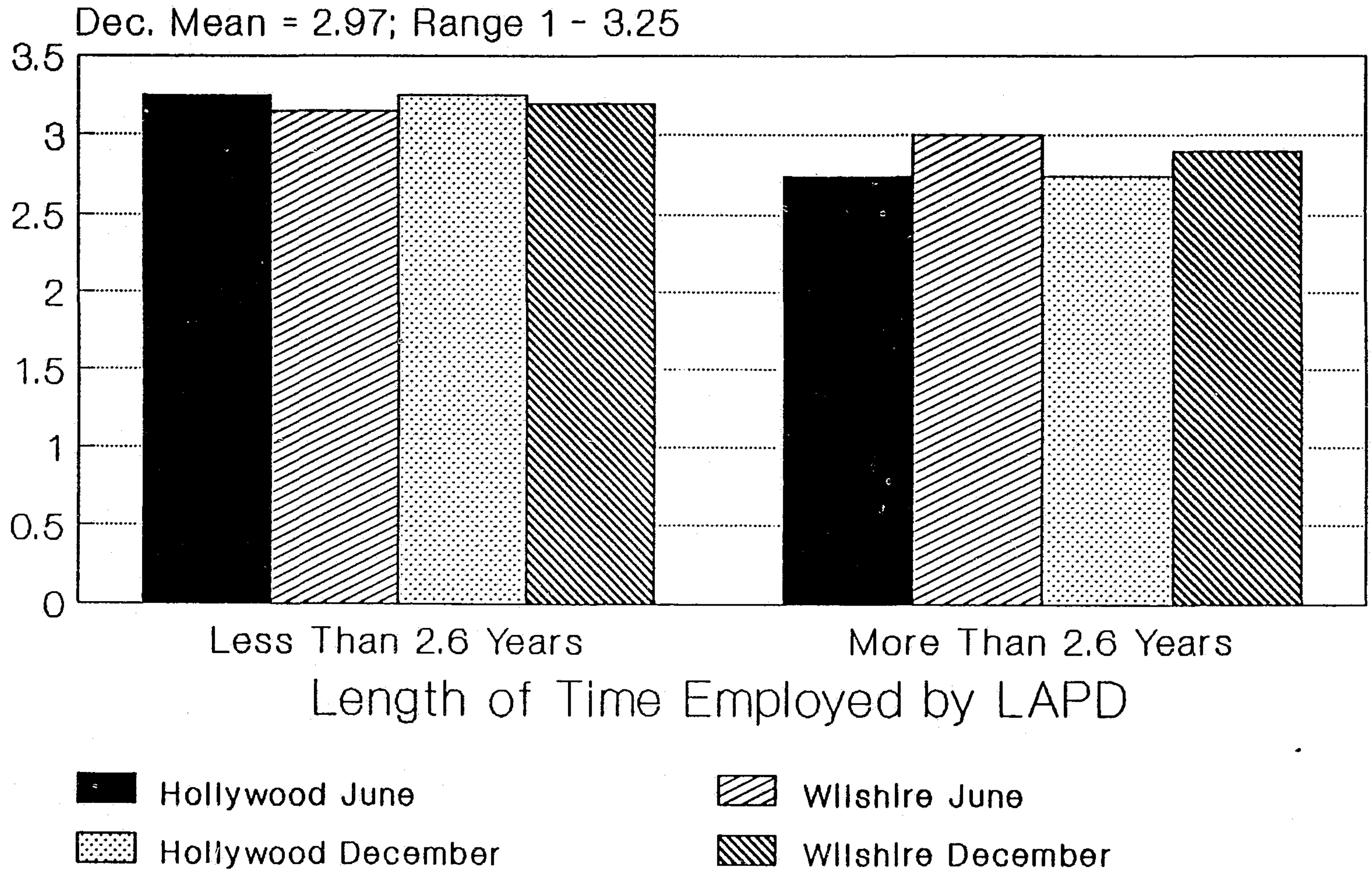
TIME AND ERROR CATEGORIES	T2 DIVISION OF OFFICER	
	HOLLYWOOD	WILSHIRE
T2 AVERAGE # INNACCURATE ENTRIES		
Mean	.13	.07
Count	92	152
Standard Deviation	.34	.23
T2 AVERAGE # INCOMPLETE ENTRIES		
Mean	.06	.06
Count	92	152
Standard Deviation	.19	.20
T2 AVERAGE # UNREADABLE ENTRIES		
Mean	.02	.01
Count	92	152
Standard Deviation	.08	.05
T2 AVERAGE # MISSPELLINGS		
Mean	.07	.06
Count	92	152
Standard Deviation	.20	.22
T2 AVERAGE TOTAL # ERRORS		
Mean	.33	.29
Count	92	152
Standard Deviation	.52	.45
T2 AVERAGE CLERK INPUT TIME		
Mean	2.42	2.02
Count	92	152
Standard Deviation	1.31	1.31
T2 AVERAGE CLERK CORRECTION TIME		
Mean	.08	.06
Count	92	152
Standard Deviation	.29	.29
T2 AVERAGE CLERK COPY TIME		
Mean	2.60	1.85
Count	92	152
Standard Deviation	1.83	1.72
T2 AVERAGE CLERK FILING TIME		
Mean	1.94	.99
Count	92	152
Standard Deviation	1.22	1.43

TABLE H2 (CONTINUED)

WAVE2 (DECEMBER) PIR TIME AND ERROR DATA

TIME AND ERROR CATEGORIES	T2 DIVISION OF OFFICER	
	HOLLYWOOD	WILSHIRE
T2 AVERAGE PACMIS REVERIFICATION TIME		
Mean	.01	.00
Count	92	152
Standard Deviation	.14	.01
T2 AVERAGE NUMBER OF COPIES MADE		
Mean	9.70	12.84
Count	92	152
Standard Deviation	2.20	2.99
T2 AVERAGE TOTAL CLERK TIME		
Mean	7.03	4.94
Count	92	152
Standard Deviation	3.00	2.91

Figure D9: Job Satisfaction
Division and Organization Tenure Effects



Interaction p < .03 N = 29

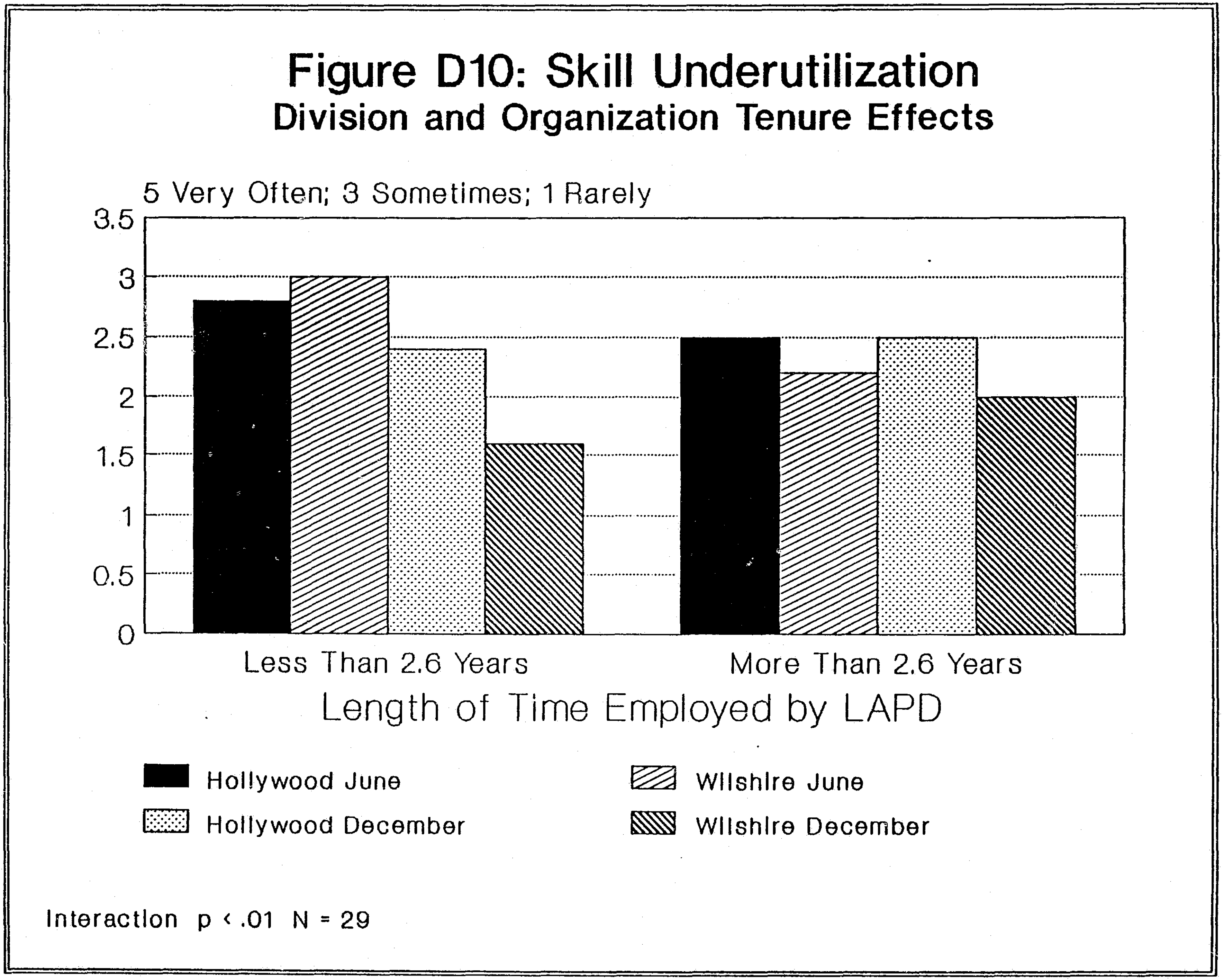
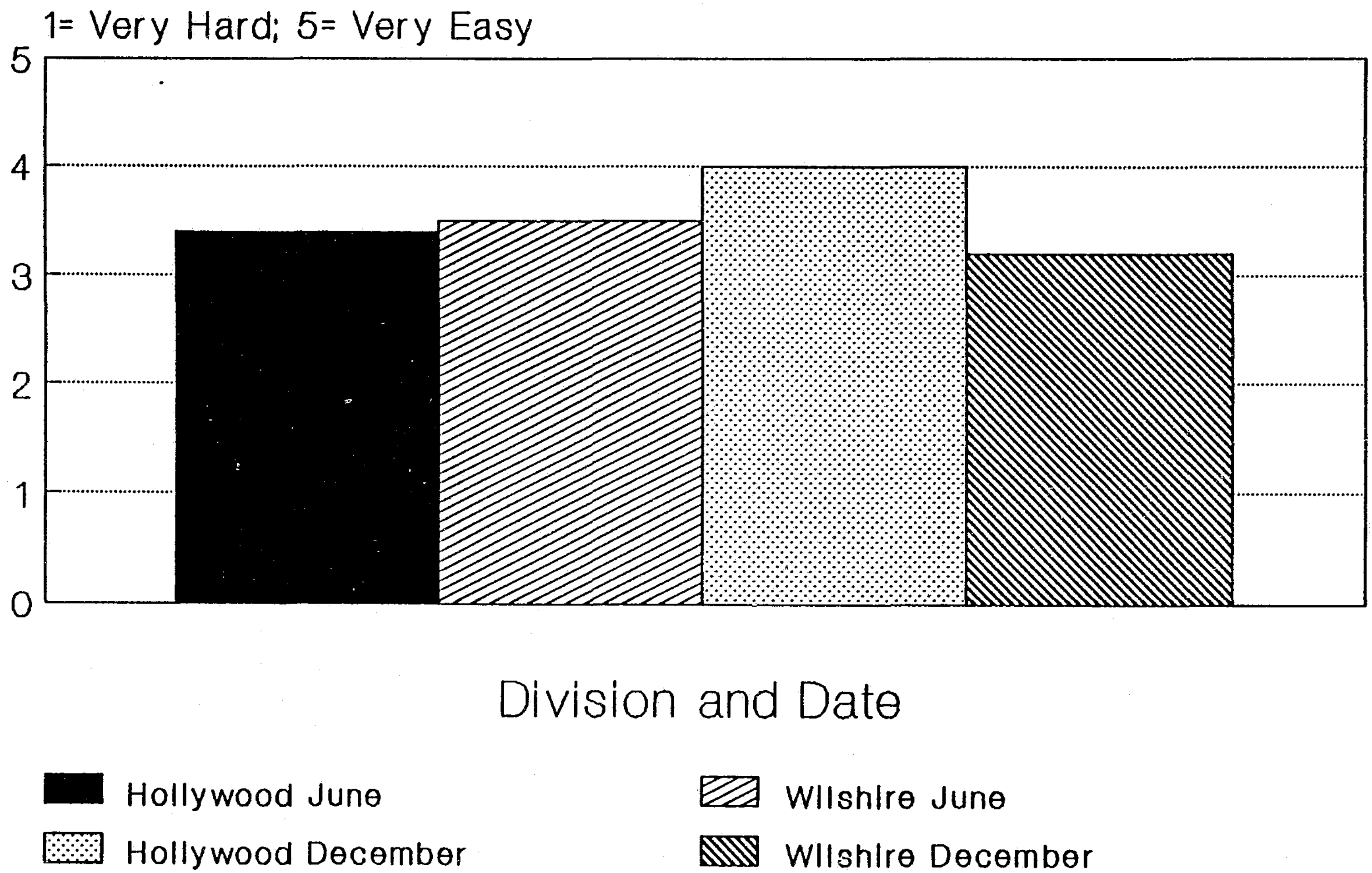


Figure D10: Skill Underutilization
Division and Organization Tenure Effects
5 Very Often; 3 Sometimes; 1 Rarely
3.5
3
2.5
2
1.5
1
0.5
0
Less Than 2.6 Years
More Than 2.6 Years
Length of Time Employed by LAPD
Hollywood June
Wilshire June
Hollywood December
Wilshire December
Interaction p < .01 N = 29

XI. Appendix E

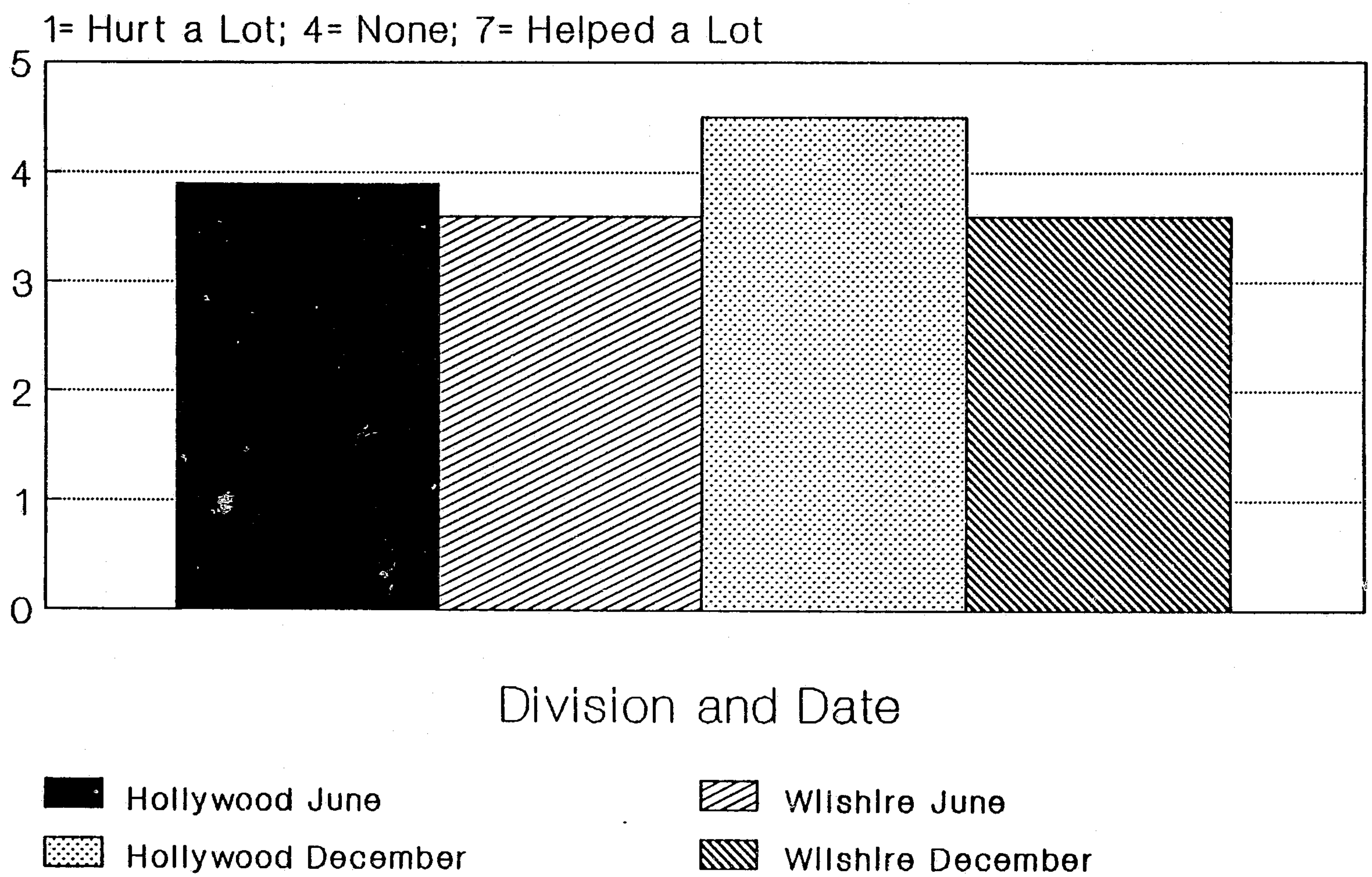
Figures Showing Officer Evaluations of Both Reporting Systems

Figure E1: Correction Ease
Division Effects



Experimental Effect $p < .008$ $N = 50$

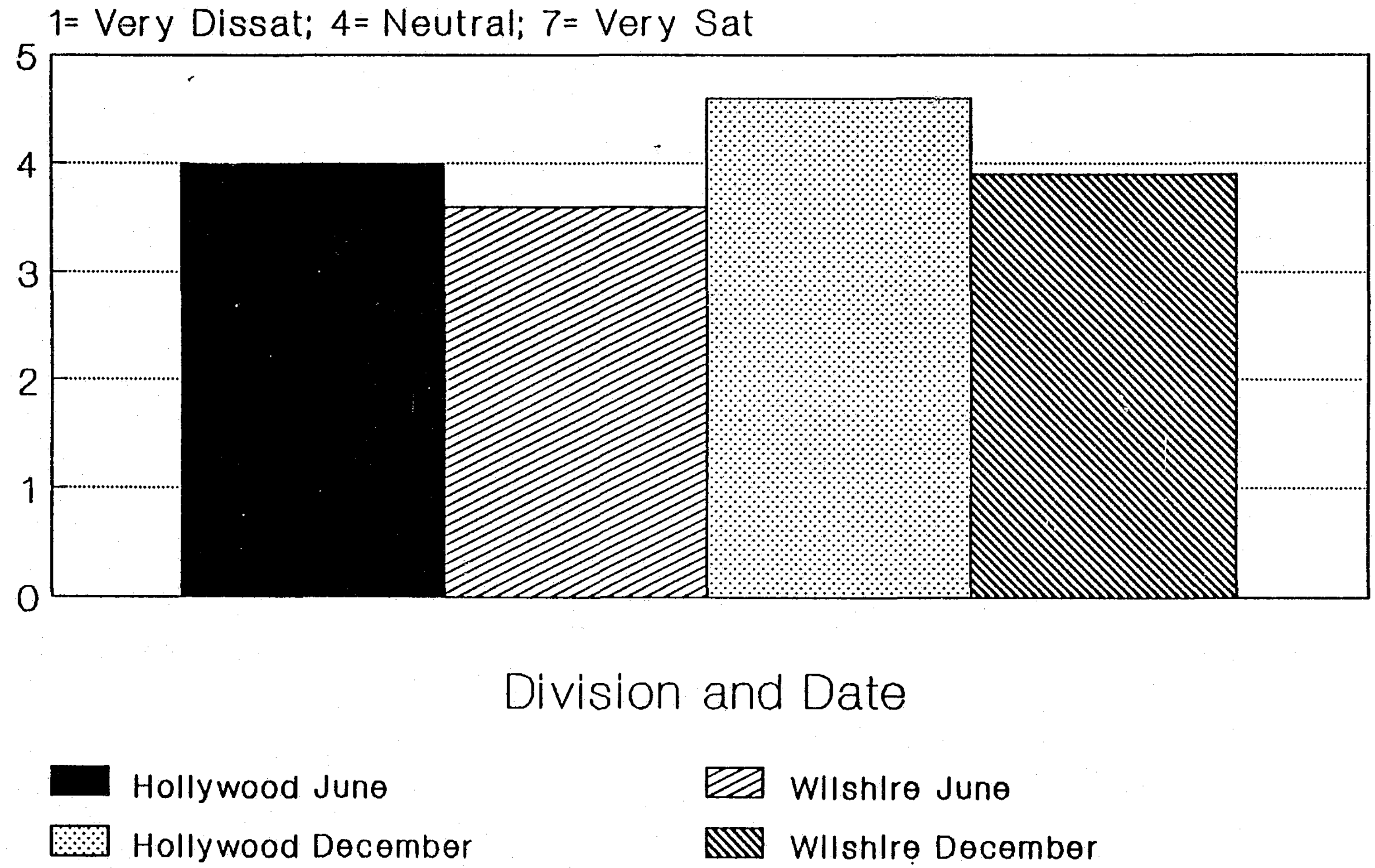
Figure E2: Effect on Job Performance
Division Effects



Experimental Effect $p < .03$ $N = 50$

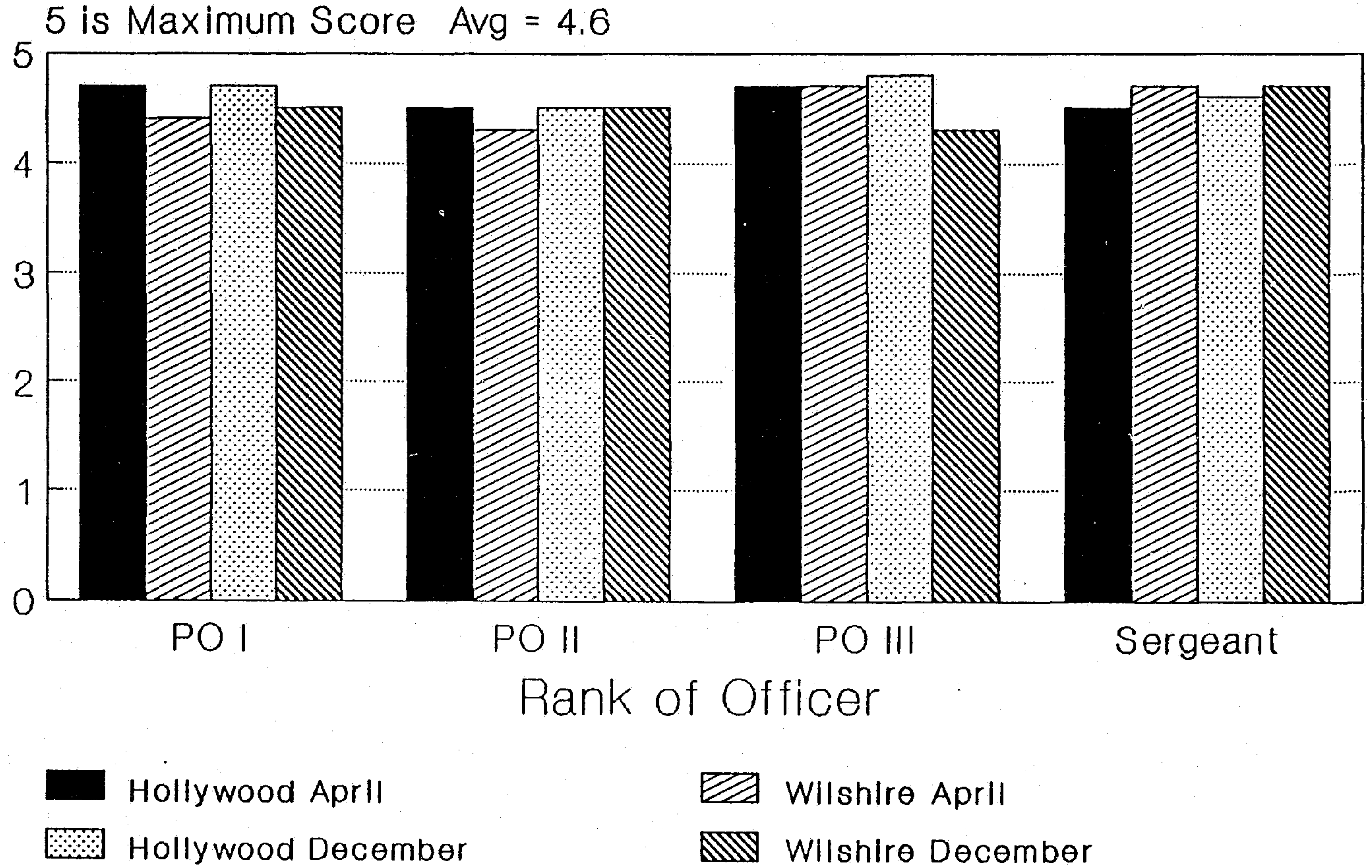
Figure E3: Satisfaction w/ Rptg. System

Division Effects



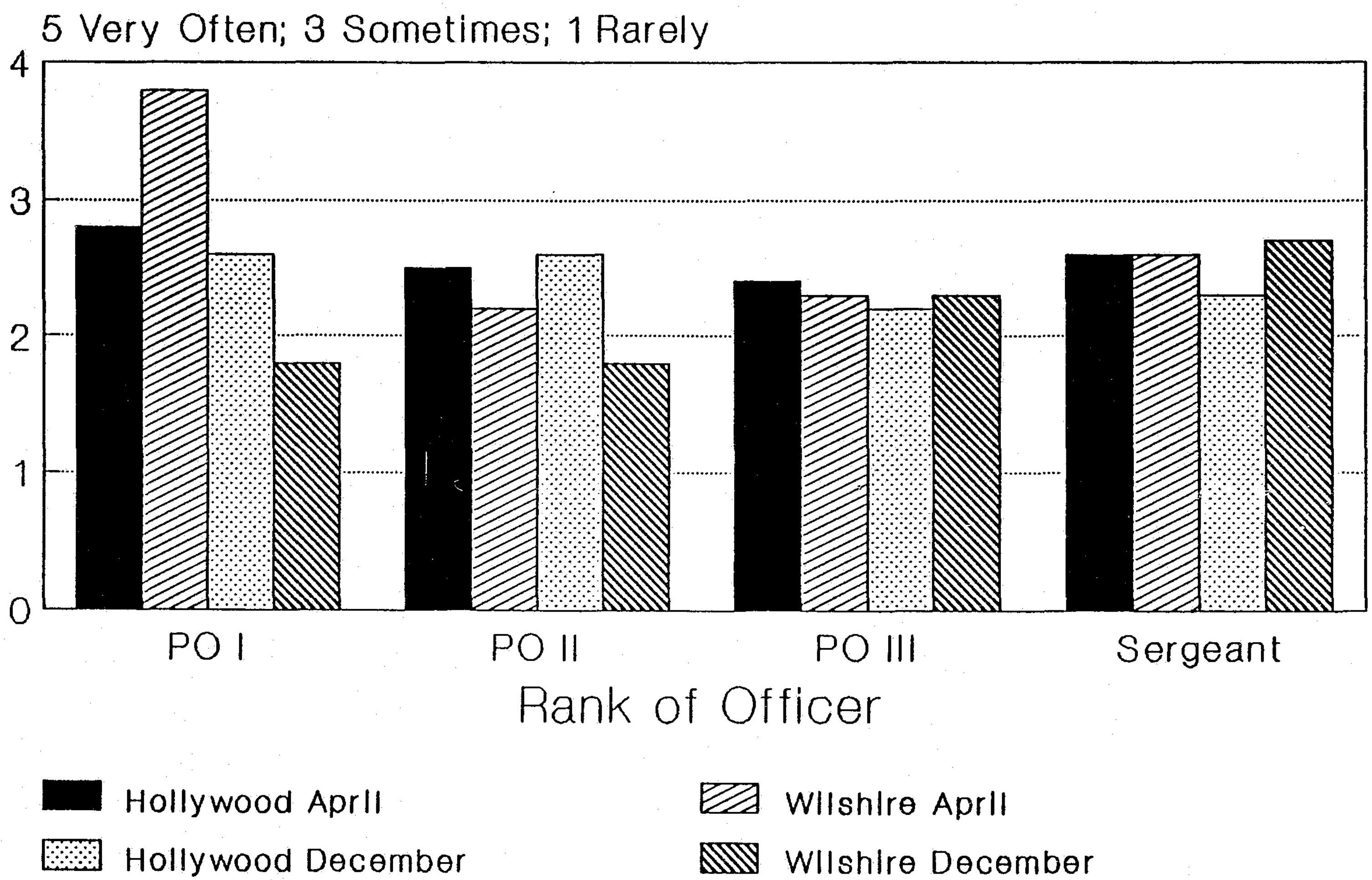
Experimental Effect p < .03 N = 51

Figure D6: Self Esteem
Division and Rank Differences



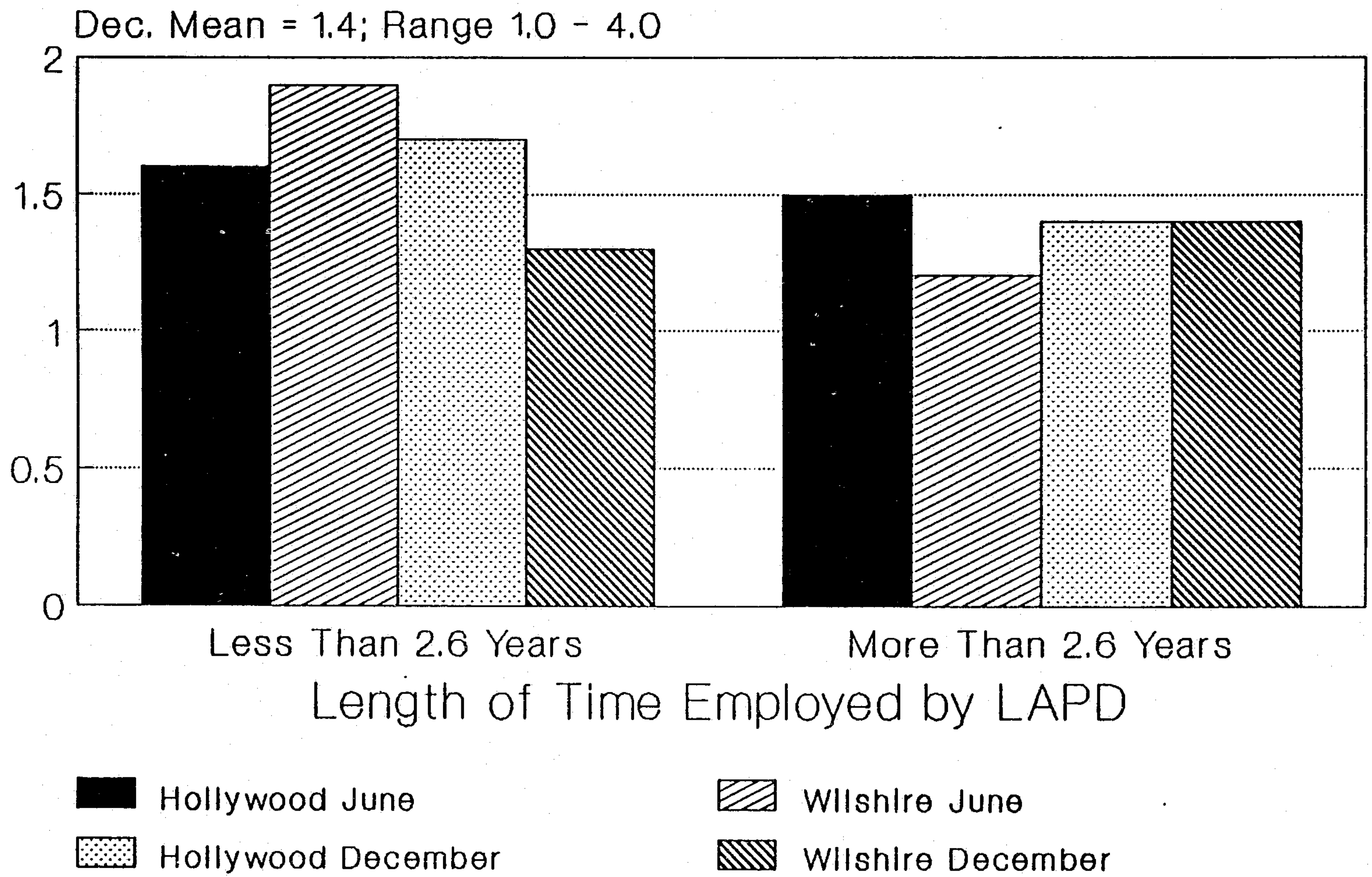
Interaction p < .02 N = 71

Figure D7: Skill Underutilization
Division and Rank Differences



Interaction $p < .008$ N = 76

Figure D8: Anxiety
Division and Organization Tenure Effects



Interaction p < .08 N = 29

XV. Appendix I

Hollywood Officers' Written Comments about the Automated Reporting System

Open-Ended Comments from PIR Evaluation Form

001 I started out hating the system, but as a typer, I grew to like it.

I still don't like using it in the field for safety reasons. You are more in tune to the screen and what field you are typing in versus your surroundings.

I don't like the idea that if another person begins a report on a computer that you are signed on to, that they must complete it in your name. The report then reflects you name on a report you did not write.

I found much frustration in losing reports and then trying to find them or having to rewrite them.

I also did not like to wait for a supervisor to get around to approving reports before I could get a DR# to book evidence, required alpo, etc. They respond much more quickly when you hand a hard copy to them to approve versus telling them you have one in the system to approve.

I do like how quickly I can write my narratives.

I have difficulty reading and finding specific information on the final hard copy. Perhaps because once the report is put in the system, we rarely have reason to see the hard copy and are not familiar with its format.

002 The modem transfer system from the field to the station was never up. This greatly influenced my negative feelings.

Armed robberies require immediate supervisor approval and cidywide teletype. I work the weekends of Hollywood. We experience several robberies a night. For (the Melrose District) every occurrence, I must return to the station. This means other Hollywood units assigned other parts of the division must leave their patrol areas to handle calls in my area while I'm out to the station completing my robbery report.

003 The formats were too difficult to learn. Why do we have to become hackers to utilize this technology. Why couldn't it have been closer to plain English, Linear thought, and common sense. Anybody that wants to play with computers can do so at home.

I think that the system's benefits were in neatness and uniformity, and elimination of errors.

Open-Ended Comments from PIR Evaluation Form (Continued)

I believe that these things make computer reporting desirable with all the power available, why can't the formats be simple?

004 The help info on the screen isn't very helpful when your report narrative is accidentally scrambled up. Could you make the scrolling feature a little easier to use? My biggest complaint is in the narrative completion function.

005 It doubled the amount of time spent completing a crime report. There are too many "picklists" and "screens" the way the system is presently designed. It would work well if the entire program is somehow streamlined.

006 Moving property from one slot to another and same information for one victim or p/r won't print the business' name, if the victim & p/r both work at same location.

007 I like the typed narrative. The other type in suspects, victims, etc. take sooo much time it makes the whole thing a pain. Definitely need change in the format. I can type, I'm lucky!

Stand by for officers who don't type well--it's very traumatic for them & me. As I will always do the report just to get it done faster. I hate the amount of time the thing takes. Waste! It used to be so east to take a quick PIR--nothing fast about it now!!

008 Loses PIRs when uploading. Happened three times.

009 Need fewer key strokes to review reports.

010 Battery life!!! Please correct this problem. I lost my reports when battery went low.

011 Lost a couple of reports--only retrieved by computer analysts.

012 At this point, the system does not have a back-up storage system to store report other than the archived system that we have. If the current system goes down, there is a potential to have all of our reports lost. This was a probelm for a short period of time. And, consequently, it caused a loss of productive time for other officers and our department who had to re-complete another report. We should have master storage disks that are maintained within the station so officers can go to those disks and pull up the reports. These reports should be filed by the name of the victim and the report number.

Open-Ended Comments from PIR Evaluation Form
(Continued)

If we ever go to a complete and upgraded system, the laptop format for the officers use should be one simplified format. If this is not obtainable, I believe the system could be programmed with a "page up/page down" system for easy page turning. This will allow the officers to turn the pages of the report for easy memory refreshment. The current system primarily takes one back to the main screen. This then allows for the individual file to be selected. We do have an "action window key" for easy access to all involved persons, however, officers do forget that this particular key exists.

As a trainer of the current laptop system, I have found it to be very easy to the user. Other officers have told me as well as my own opinion, "I (they) do not want to go back to the paper system (handwritten reports)."

013 Took longer to type reports than to write them.

014 Type is too small. Machine too bulky to carry around. They break--a piece of paper does not. Once you learn to use it, it is fairly easy but does not seem to save time.

NoSN# The automated system caused a great deal of problems mainly due to the fact that patrol officers could not work as a team while writing reports. Usually in (for example) a lengthy burglary report with multiple items stolen, one officer will write the property taken list and the other officer writes the narrative. In the automatic system one officer must write the entire report while the other just sits around wasting time.

Additional problems arive because citizens feel better when they have something that shows that they made a report (like the yellow copy from our PIR that includes the victim's identification).

There is also a constant worry that the finished report will get "lost in the system" somewhere or erased totally (which has happened).

Completing an entire report in a person's/victim's home is out of the question. Apparently this automated system was supposed to be completed at the victim's residence or crime scene--then sent over the telephone lines. Most officers do <u>not</u> want to spend that much time in a victim's residence which is usually dirty and noisy, therefore we take notes then go bact to the station to complete the report which sort of eliminates the purpose of the laptop "quick reporting" idea.

Open-Ended Comments from PIR Evaluation Form
(Continued)

015 Too much auditing on this program. Don't overwork the controls or limits placed upon your department. Go forward with the program and see it through. More time should be spent discovering where the funds will come from to implement this program. Without financial backing, this program will be obsolete within 12 months.

016 I think the system is great, but needs to be expanded for officers' use. A page for bicycle info should be included to save officers' time. I love the system.

017 I've only been out of the academy for 2 weeks. I've used the laptop system only a couple of times, so from my limited point of view I liked it.

018 A few changes need to be made but once you became familiar with the system it was a nice set up. Definitely a lot neater.

019 Need to access word processor for arrest reports, etc. (since we use the PIR narrative anyway).

020 I like the system. Need a word processor on a stand alone system to do arrest reports, etc.

021 I think the system is a great idea, however it needs some major modifications to be useful. It should be free form, as it is, you must access blanks and spaces you don't need. It takes me 25-30 minutes to do a report I used to do in 15 minutes.

022 Very helpful system.

023 For simple reports, such as BFMV-TFMV, this system takes much longer to complete the report than to do on an actual PIR.

024 The automated PIR system has a need to kill. Unfortunately, officers are kept busy with writing/typing numerous unnecessary items. Maybe a short form format could be developed. I am an experienced officer with 17 years field experience. I can hand write a routine report (short form type) and it takes a maximum of ten minutes (per report). The shortest I can take an automated report is twenty minutes--I'm talking short report. A long report adds approximately 20 minutes longer to complete.

Open-Ended Comments from PIR Evaluation Form
(Continued)

I am computer literate. I personally own a Tandy 1400 HD laptop and a Northgate 286/12 desktop. The automated PIR is not difficult to complete but for a person that cannot type a ten minute report becomes 45 minutes and a 45 minute report takes excessive amount of time to complete.

The automated PIR was not created for the field officer, but for the benefits of people that process and evaluate automated info. As the system now stands, the persons that the PIR benefit are not field officers. If they want to create more field patrol time the powers to be will make the automated PIR more flexable and let automated computer info be entered into databases by the clerks that can do it more efficiently.

025 I had no major problems except I wasn't trained on it. I had to learn on my own.

026 Outstanding, hope to continue with the laptop.

027 Many valuable hours were spent in the station, taking units out of the field. Response time was up per call and areas went unpatrolled. Victims were not given even a preliminary copy and were not pleased with this. Signatures should also be mandatory if citizens file false reports.

028 I had a problem with a BO disk and ended up losing two valuable reports. This was very frustrating for me.

029 Good system if used throughout the department.

030 Please incorporate all other report forms into the system, e.g., missing persons, vehicle reports, . . .

031 It takes at least twice as long to complete a PIR with this system. It is however easier to make corrections with this system.

032 Would like to use laptop vehicle reports and arrests reports. Help key does not help. What's needed is an info booklet.

033 I think the laptop is better than writing on a regular PIR sheet because it is easier for the detectives to read the narratives.

034 Automatic archiving of reports after printing should be eliminated as a number of times the reports didn't print. Or allow the person printing the option of archiving or not.

035 Too many pages. Make suspect info standout more.

Open-Ended Comments from PIR Evaluation Form
(Continued)

036 Once I learned the system, I liked it.

037 It takes longer to fill in the boxes, but the narrative is easier to write and correct. I like the fact that you can move things around.

038 It is difficult to remove info from the evidence section. There should be a spelling correction section.

039 We have problems downloading reports from laptop. The report is lost in the system at times.

040 Laptop main frame ate three reports through various times. This is unsatisfactory! Other than that, the system is easy to use. The system should be expanded to narrative for arrest reports.

041 Lost reports--twice. Couldn't sign reports--once. Stuck in system with a runtime error--three or four times. It took over an hour of my and city time to correct these problems. I'd rather write it out.

042 The system is good. It's not hard to learn. It takes some time to get the hang of it, however, overall I feel it is the future in report writing. Spelling check would be nice.

043 When investigating a 211/GTA, you need a DR# prior to entry of the vehicle into stolen system. Approximately 20-30 minutes are lost waiting for the laptop to give you a DR#. I would like to have a "short form". When a gun is involved, and suspects are driving around in a non-reported SIV, it leaves the blue suit at a disadvantage.

044 Excellent system!

045 The main problem was the inability to solve a problem with the system when it came up, i.e., when a report was lost, unable to find it & recover it.

046 I had very good experiences with the laptop. Going back to hand writing reports would be very difficult since using the laptop.

047 If this system is kept I hope all reports are put on the computer. This system makes it alot easier to correct reports, add or remove data. It needs more options to add info instead of a pick list and nothing else.

048 I like to concept--needs more work to streamlining, etc.--but we need <u>something</u>.

Open-Ended Comments from PIR Evaluation Form
(Continued)

049 Some reports get lost on damaged disks. Also the format could be simplified dramatically by having one screen instead of turning back a page to find info. We also need a DR# to be issued to a report for PACMIS purposes, not just to file.

On reports in which we need a DR# to notify VIPU, such as on a stolen vehicle police report, we need the report approved before we can call it in, and a supervisor isn't able to approve it until he sees the VIPU's operator number in the report (Catch 22).

Need more screen space for misc. physical description, i.e., dreadlocks.

Also, need code for hot prowl.

050 There needs to be more user options for correcting and editing the reports. Overall the system worked great. Every system needs to get the bugs worked out in the beginning. The ARS staff did a great job supporting the challenges and correcting the problems.

The floppy discs need to be eliminated and a direct feed to the main frame needs to be implemented for transferring the reports.

XVI. Appendix J

Data Collection Instruments

LOS ANGELES POLICE DEPARTMENT
TIME STUDY OF THE AUTOMATED PIR REPORTING SYSTEM

OFFICER'S FUNCTIONS AND FORM COMPLETION REQUIREMENTS

PURPOSES OF STUDY: To determine the amount of time spent by officers during each function of writing an automated PIR.

OFFICER'S FUNCTIONS

A. **INVESTIGATION TIME:** Time used to interview the person reporting (PR) and other involved persons, collect crime information and evidence (if any), and take notes. Investigation time begins at the time information is first obtained from any involved person, and stops when writing on the PIR begins.

B. **WRITING AND EDITING TIME:** The time used to acutally enter all information on the laptop computer regarding a PIR. This includes any time needed to refer to guides such as the Department Manual, Report Writing, Reporting District Code Book, Notebook Dividers, etc..

C. **TRAVEL TIME:** Travel time to the station or to a meeting with a supervisor in the field for the sole purpose of report writing, approval, or corrections (does not apply to STORM, or desk).

D. **APPROVAL AND CORRECTION TIME:** The time used to get approval from a supervisor and make corrections if automated report is kicked back. This time block starts at the moment an officer turns in a report to a supervisor and stops when an officer completes correcting errors.

REQUIREMENTS FOR FORM COMPLETION

1. Record the start and stop time while you are completing the PIR. Do not wait, as you may not remember the exact time. (Note: Only two start and stop times can be entered. Therefore, if you are interrupted more than once you must consolidate the time spent after the first interruption into the 24nd block).

2. If investigation and writing the PIR occur at the same time, fill out B ONLY, plus C and D if required.

3. Do NOT write in shaded areas of the form.

4. Complete the OFFICERS block ONLY.

5. Use the twenty-four hour clock (military time) for start/stop. State time in ONE MINUTE INCREMENTS.

6. Write in victim's last name, and crime title.

7. Write in the computer report number. (i.e. 00038)

8. Write any comments on the back of the form.

9. Place the form in the assistant watch commander's in box loading the PIR to the station system.

LOS ANGELES POLICE DEPARTMENT
TIME STUDY OF THE AUTOMATED PIR REPORTING SYSTEM

SUPERVISOR'S FUNCTIONS AND FORM COMPLETION REQUIREMENTS

PURPOSE OF STUDY: To determine the amount of time spent by supervisors reviewing and approving automated PIRs. (Including time spent making any corrections.)

SUPERVISOR'S FUNCTIONS

REVIEW AND APPROVAL TIME: The time required to review and approve an automated PIR. It is recognized that supervisors review reports of varying complexity and length, completed by officers with varying expereince, therefore they cannot control the time necessary for review. This time also includes corrections made by a supervisor, time for notifying the officer, and explaining any corrections to be made or other concerns regarding the report.

REQUIREMENTS FOR FORM COMPLETION

1. Record the start and stop time while reviewing the PIR (Note: Only two start and stop times can be entered. Therefore, if you are interrupted more than once you must consolidate the time spent after the first interruption into the 2nd block.)

2. Do NOT write in shaded areas.

3. Complete the SUPERVISORS block ONLY.

4. Use the twenty-four hour clock (military time) for start/stop. State time in ONE MINUTE INCREMENTS.

5. Note the types of errors and record the number of each type in the blank spaces provided (missing entry, inaccurate entry, incomplete entry, unreadable/illegible entry, spelling errors).

6. Write any comments on the back of the form.

7. Attach the form to the printout of the PIR and turn both in to records (Out basket).

LOS ANGELES POLICE DEPARTMENT
TIME STUDY OF THE AUTOMATED PIR REPORT SYSTEM

RECORDS UNIT FUNCTIONS AND FORM COMPLETION REQUIREMENTS

PURPOSE OF STUDY: To determine the amount of time spent by records personnel during each PIR processing function.

RECORDS PERSONNEL FUNCTIONS

A. **DATA INPUT TIME:** The time to input data into all necessary fields, look up MO and other codes in the PACMIS code book, write DR #, message #, (✓) on the original PIR, and verification of data input.

B. **CORRECTION TIME:** The time to get PIRs corrected. This includes time by records personnel to locate the supervisor to get the report corrected.

C. **PHOTOCOPY AND DISTRIBUTION TIME:** The time it takes to photocopy PIRs and distribute copies to various entities. This includes time for checking the PIR Distribution Guide, stamping and initialing the back of the records file copy, stamping the front of the PIR to indicate RECORDS COPY, and placing this copy in a file box.

D. **FILING TIME:** The time it takes to file area records copies, including the completion of the folders themselves.

E. **PACMIS REVERIFICATION TIME:** The time it takes to retrieve a PIR from the area file, audit the PIR data against PACMIS data, and time to correct any errors discovered.

REQUIREMENTS FOR FORM COMPLETION

1. Write the DR # of the PIR in the DR # box in the top right corner of the form and complete the RECORDS UNIT block.

2. Do NOT write in shaded areas.

3. Record the start and stop times while performing each function. (Note: Only two start and stop times can be entered. Therefore, if you are interrupted more than once you must consolidate the time spent after the first interruption into the 2nd block).

4. Use the twenty-four hour clock only (military time) for start/stop. State time in ONE MINUTE INCREMENTS.

5. Check the types of errors and record the number of each error type in the spaces provided (Missing entry, Incorrect Code, Incomplete, Other).

6. Record the number of copies you made.

7. Write any comments on the back of the form.

8. Place the form and a Xerox copy of the automated report in a box the Automated Reporting System Task Force.

TIME STUDY SHEET OF THE AUTOMATED PIR REPORTING SYSTEM

LOS ANGELES POLICE DEPARTMENT, HOLLYWOOD DIVISION	DR #:
PLEASE WRITE YOUR COMMENTS, IF ANY, ON THE REVERSE SIDE.	COMPUTER REPORT #

VICTIM LAST NAME: CRIME TITLE:

OFFICERS

CIRCLE DETAIL: PATROL U-CAR STORM DESK

SERIAL #:

WATCH:

DATE:

OFFICER FUNCTIONS	START	STOP	FOR ARSTF ONLY
A. INVESTIGATION TIME			
B. WRITING AND EDITING TIME			
C. TRAVEL TIME			
D. APPROVAL AND CORRECTION TIME			

SUPERVISORS

SUPERVISOR FUNCTION	START	STOP	FOR ARSTF ONLY
REVIEW AND APPROVAL TIME			

SERIAL #:

WATCH:

DATE:

ERRORS IN THE PIR? NO YES
(Circle)

OF ERRORS BY TYPE:
(Put numbers in spaces)

----- Missing Entry (Field left blank)

-----Inaccurate Entry (Wrong#, code, name, etc.

-----Incomplete Entry (Some elements missing)

-----Unreadable/Illegible Entry

-----Spelling Errors

OF CORRECTIONS YOU MADE ---------

RECORDS UNIT

RECORDS FUNCTIONS	START	STOP	FOR ARSTF ONLY
A. DATA INPUT TIME			
B. CORRECTION TIME			
C. PHOTOCOPY AND DISTRIBUTION TIME			
D. FILING TIME			
E. *PACMIS* REVERIFICATION TIME			

SERIAL #:

WATCH:

DATE:

NUMBER OF COPIES MADE FOR DISTRIBUTION AND STORAGE: ____________

ERRORS IN *PACMIS* DATA DURING REVERIFICATION? NO YES
(Circle)

NUMBER & TYPE :
(Put # in blank)

----- Missing Entry

-----Incorrect Code

-----Incomplete (Some element (s) missing)

-----Other

NUMBER OF ERRORS____________

EVALUATION OF THE AUTOMATED PIR SYSTEM

Serial#__________
Division__________
Date__________

Your Serial Number will only be used by the research team at California State University, Fullerton, to match your responses to other questionnaires. By law and contract, no one in the LAPD will see your survey.

Think back on the reports you have written with the laptop computer during this PIR collection period. Circle a number next to each question to indicate your opinion of the automated PIR reporting system.

1. How easy was the system to use?	Very easy 1	2	3	4	Very difficult 5		
2. How much frustration or irritation did the system cause you?	None 1	2	3	4	A great deal 5		
3. How much productive time was lost dealing with reporting system problems?	None 1	2	3	4	A great deal 5		
4. How error prone is this reporting system?	Not at all 1	2	3	4	Very much 5		
5. How easy is it to make corrections to reports written with this system?	Very hard 1	2	3	4	Very easy 5		
6. How much did this system help or hurt your job performance?	Hurt a lot 1	2	3	No effect 4	5	6	Helped a lot 7
7. Overall, how satisfied are you with this crime reporting system?	Very dissatisfied 1	2	3	Neutral 4	5	6	Very satisfied 7
8. What effect did this system have on the quality of your reports?	Hurt a lot 1	2	3	No effect 4	5	6	Helped a lot 7

9. How many minutes each day do you usually spend writing and correcting your PIR's? (Fill in the blank) ________ Min./Day

10. Report any problems you had with the automated PIR reporting system:

__ Check here and write your comments or suggestions on the reverse.

LOS ANGELES POLICE DEPARTMENT
TIME STUDY OF THE EXISTING PIR REPORTING SYSTEM

OFFICER'S FUNCTIONS AND FORM COMPLETION REQUIREMENTS

PURPOSE OF STUDY: To determine the amount of time spent by officers during each function of writing the PIR.

OFFICER'S FUNCTIONS

A. **INVESTIGATION TIME:** Time used to interview the person reporting (PR) and other involved persons, collect crime information and evidence (if any), and take notes. Investigation time begins at the time information is first obtained from any involved person, and stops when writing on the PIR begins.

B. **WRITING AND EDITING TIME:** The time used to actually write down all information on the PIR. This includes any time needed to refer to guides such as the Department Manual, Report Writing Manual, Reporting District Code Book, Notebook Dividers, etc..

C. **TRAVEL TIME:** Travel time to the station or to a meeting with a supervisor in the field for the sole purpose of report writing, approval, or corrections (does not apply to STORM, or desk).

D. **APPROVAL AND CORRECTION TIME:** The time used to get approval from a supervisor and make corrections if report is kicked back. This time block starts at the moment an officer turns in a report to a supervisor and stops when an officer completes correcting errors.

REQUIREMENTS FOR FORM COMPLETION

1. Record the start and stop time while you are completing the PIR. Do not wait, as you may not remember the exact time. (Note: Only two start and stop times can be entered. Therefore, if you are interrupted more than once you must consolidate the time spent after the first interruption into the 2nd block).

2. If investigation and writing the PIR occur at the same time, fill out B ONLY, plus C and D if required.

3. Do NOT write in shaded areas of the form.

4. Complete the OFFICERS block ONLY.

5. Use the twenty-four hour clock (military time) for start/stop. State time in ONE MINUTE INCREMENTS.

6. Write any comments on the back of the form.

7. Attach form to PIR and turn both in to a supervisor upon completion.

LOS ANGELES POLICE DEPARTMENT
TIME STUDY OF THE EXISTING PIR REPORTING SYSTEM

SUPERVISOR'S FUNCTIONS AND FORM COMPLETION REQUIREMENTS

PURPOSE OF STUDY: To determine the amount of time spent by supervisors reviewing and approving PIRs. (This includes time spent making any corrections.)

SUPERVISOR'S FUNCTIONS

REVIEW AND APPROVAL TIME: The time required to review and approve a PIR. It is recognized that supervisors review reports of varying complexity and length, completed by officers with varying experience, therefore they cannot control the time necessary for review. This time also includes corrections made by a supervisor, time for notifying the officer, and explaining any corrections to be made or other concerns regarding the report.

REQUIREMENTS FOR FORM COMPLETION

1. Record the start and stop time while reviewing the PIR (Note: Only two start and stop times can be entered. Therefore, if you are interrupted more than once you must consolidate the time spent after the first interruption into the 2nd block.)

2. Do NOT write in shaded areas.

3. Complete the SUPERVISORS block ONLY.

4. Use the twenty-four hour clock (military time) for start/stop.
   State time in ONE MINUTE INCREMENTS.

5. Note the types of errors and record the number of each type in the blank spaces provided (missing entry, inaccurate entry, incomplete entry, unreadable/illegible entry, spelling errors).

6. Write any comments on the back of the form.

7. Attach form to PIR and turn both in to records (Out basket).

LOS ANGELES POLICE DEPARTMENT
TIME STUDY OF THE EXISTING PIR REPORT SYSTEM

RECORDS UNIT FUNCTIONS AND FORM COMPLETION REQUIREMENTS

PURPOSE OF STUDY: To determine the amount of time spent by records personnel during each PIR processing function.

RECORDS PERSONNEL FUNCTIONS

A. **DATA INPUT TIME:** The time to input data into all necessary fields, look up MO and other codes in the PACMIS code book, write DR #, message #, (✓) on the original PIR, and verification of data input.

B. **CORRECTION TIME:** The time to get PIRs corrected. This includes time by records personnel to locate the supervisor to get the report corrected.

C. **PHOTOCOPY AND DISTRIBUTION TIME:** The time it takes to photocopy PIRs and distribute copies to various entities. This includes time for checking the PIR Distribution Guide, stamping and initialing the back of the records file copy, stamping the front of the PIR to indicate RECORDS COPY, and placing this copy in a file box.

D. **FILING TIME:** The time it takes to file area records copies, including the completion of the folders themselves.

E. **PACMIS REVERIFICATION TIME:** The time it takes to retrieve a PIR from the area file, audit the PIR data against PACMIS data, and time to correct any errors discovered.

REQUIREMENTS FOR FORM COMPLETION

1. Write the DR# of the PIR in the DR # box in the top right corner of the form and complete the RECORDS UNIT block.

2. Do NOT write in shaded areas.

3. Record the start and stop times while performing each function. (Note: Only two start and stop times can be entered. Therefore, if you are interrupted more than once you must consolidate the time spent after the first interruption into the 2nd block).

4. Use the twenty-four hour clock only (military time) for start/stop. State time in ONE MINUTE INCREMENTS.

5. Check the types of errors and record the number of each error type in the spaces provided (Missing entry, Incorrect Code, Incomplete, Other).

6. Record the number of copies you made.

7. Write any comments on the back of the form.

TIME STUDY SHEET OF THE EXISTING PIR REPORTING SYSTEM

LOS ANGELES POLICE DEPARTMENT, WILSHIRE DIVISION — DR #:

PLEASE WRITE YOUR COMMENTS, IF ANY, ON THE REVERSE SIDE.

OFFICERS

CIRCLE DETAIL: PATROL U-CAR STORM DESK

OFFICER FUNCTIONS	START	STOP	FOR ARSTF ONLY
A. INVESTIGATION TIME			
B. WRITING AND EDITING TIME			
C. TRAVEL TIME			
D. APPROVAL AND CORRECTION TIME			

SERIAL #:

WATCH:

DATE:

SUPERVISORS

SUPERVISOR FUNCTION	START	STOP	FOR ARSTF ONLY
REVIEW AND APPROVAL TIME			

SERIAL #:

WATCH:

DATE:

ERRORS IN THE PIR? NO YES
(Circle)

\# OF ERRORS BY TYPE:
(Put numbers in spaces)
----- Missing Entry (Field left blank)
-----Inaccurate Entry (Wrong#, code, name, etc.
-----Incomplete Entry (Some elements missing)
-----Unreadable/Illegible Entry
-----Spelling Errors

\# OF CORRECTIONS <u>YOU</u> MADE --------

RECORDS UNIT

RECORDS FUNCTIONS	START	STOP	FOR ARSTF ONLY
A. DATA INPUT TIME			
B. CORRECTION TIME			
C. PHOTOCOPY AND DISTRIBUTION TIME			
D. FILING TIME			
E. *PACMIS* REVERIFICATION TIME			

SERIAL #:

WATCH:

DATE:

NUMBER OF COPIES MADE FOR DISTRIBUTION AND STORAGE: ____________

ERRORS IN *PACMIS* DATA DURING REVERIFICATION? NO YES
(Circle)

NUMBER & TYPE :
(Put # in blank)
---- Missing Entry
----Incorrect Code
----Incomplete (Some element (s) missing)
----Other

NUMBER OF ERRORS____________

EVALUATION OF THE EXISTING PIR SYSTEM

Serial#____________
Division____________
Date____________

Your Serial Number will only be used by the research team at California State University, Fullerton, to match your responses to other questionnaires. By law and contract, no one in the LAPD will see your survey.

Think back on the reports you have written during this PIR collection period. Circle a number next to each question to indicate your opinion of the current PIR reporting system.

1. How easy was the system to use?	Very easy 1	2	3	4	Very difficult 5
2. How much frustration or irritation did the system cause you?	None 1	2	3	4	A great deal 5
3. How much productive time was lost dealing with reporting system problems?	None 1	2	3	4	A great deal 5
4. How error prone is this reporting system?	Not at all 1	2	3	4	Very much 5
5. How easy is it to make corrections to reports written with this system?	Very hard 1	2	3	4	Very easy 5

6. How much did this system help or hurt your job performance?	Hurt a lot 1	2	3	No effect 4	5	6	Helped a lot 7
7. Overall, how satisfied are you with this crime reporting system?	Very dissatisfied 1	2	3	Neutral 4	5	6	Very satisfied 7
8. What effect did this system have on the quality of your reports?	Hurt a lot 1	2	3	No effect 4	5	6	Helped a lot 7

9. How many minutes each day do you usually spend writing and correcting your PIR's? (Fill in the blank) ________ Min./Day

10. Report any problems you had with the PIR reporting system:

__ Check here and write your comments or suggestions on the reverse.

Los Angeles Police Department

Crime Reporting System Study 1990

General Information Questionnaire

LOS ANGELES POLICE DEPARTMENT DATE:________
EMPLOYEE SURVEY

INSTRUCTIONS

With the support of a federal research grant the LAPD is evaluating portions of its crime reporting system. The purpose of this research is to determine how the Preliminary Investigation Report (PIR) system can be improved. Your division has been selected to participate in this study and you are being asked to provide several kinds of information concerning your reactions to the police environment as you see it. <u>No-one in the LAPD will be given access to your information in a raw form that will allow you to be identified as the source</u>. Your responses to questions will be grouped with those of other division employees to provide an overall picture of various police job features that may be related to the reporting system in use.

Over the next few months you will be approached by researchers from California State University, Fullerton, to obtain various kinds of information related to this project. In order to allow them to match your responses across time, you will be asked to put your Serial Number on the data collection forms. This Serial Number will be used only for research purposes and it will never be disclosed with the information you provide. Because your anonymity and confidentiality are assured, be candid in responding to questions asked.

The attached questionnaire contains items intended to reflect a number of impressions you may have about your work, the LAPD, and the role you play in the division. You will also be asked to respond to questions about your feelings related to work. Be sure to <u>answer every item</u> even though some may appear similar to others in the questionnaire; this is necessary to remove as much measurement error as possible.

If you have any questions about the meaning of any of the items in the questionnaire, please ask the California State University employee who is administering this questionnaire. Work quickly; your first impression after reading the item is usually the most accurate indicator of your true feelings. Thank you very much for your cooperation.

If you have any questions concerning this study you may contact Dr. Tom Mayes at California State University, Fullerton, 714-773-2435.

LOS ANGELES POLICE DEPARTMENT
EMPLOYEE SURVEY

GENERAL INFORMATION

The following information is needed to allow coding of the questionnaire and to aid in data analysis. Circle the appropriate answer for each item.

1. What is your rank in the LAPD? Circle one:

   (6) Lieutenant
   (5) Sergeant
   (4) P.O. III + 1
   (3) P.O. III
   (2) P.O. II
   (1) P.O. I

2. What is your assignment? Circle one:

   (1) Watch Commander
   (2) Assistant Watch Commander
   (3) Field Supervisor
   (4) A-Car
   (5) X-Car
   (6) Storm
   (7) U-Car
   (8) Desk Officer

3. What watch do you currently work? (1) AM's (2) Mid-Days (3) Days (4) PM's (5) Mid-PM's

4. What is your sex? Circle one: (1)Male (2) Female

5. What is your age? _______

6. How long have you been in your current assignment?

   ______Years, _____Months

7. How long have you been working for LAPD? ______Years, _____Months

8. How many years of formal education have you completed? Please circle the appropriate number below:

12	High School
13 14 15 16	College
17 18 19 20 21 22 23 24 25	Graduate/Professional

9. What is your division? Circle one: (1) Hollywood (2) Wilshire

10. What is your Serial Number ?____________

Your Serial Number will only be used by the research team at California State University, Fullerton, to match your responses to other questionnaires. By contract, no one in the LAPD will see your answers.

YOUR PRESENT JOB

Think about the type of work you do in your job in the LAPD.

Circle the number that best applies, using the scale below the item.

11. Knowing what you know now, if you had to decide all over again whether to take the type of job you now have, what would you decide?

Decide Without Hesitation To Take the Same Type of Job	Have Some Second Thoughts	Decide Definitely Not to Take This Type of Job
1	2	3

12. If you were free right now to go into any type of job you wanted, what would your choice be?

Take the Same Type of Job As Now Have	Take A Different Type of Job	Not Want To Work
1	2	3

13. If a friend of yours told you he was interested in working in a job like yours, what would you tell him?

Strongly Recommend it	Have Doubts About Recommending it	Advise Him Against it
1	2	3

14. All in all, how satisfied would you say you are with your job?

Very Satisfied	Somewhat Satisfied	Not Too Satisfied	Not at All Satisfied
1	2	3	4

JOB DEMANDS

Conflicts can occur in any job. For example, someone may ask you to do your work in a way which is different from what you think is best or you may find that it is difficult to satisfy everyone. How often do you face problems in your work like the ones listed below? Mark your answer by circling a number next to each item, based on the scale below.

1 = Rarely or Never
2 = Sometimes
3 = Fairly Often
4 = Very Often

R	S	F	V	
1	2	3	4	15. Persons equal to you in rank and authority ask you to do things which conflict.
1	2	3	4	16. People in a good position to see if you do what they ask give you things to do which conflict with one another.
1	2	3	4	17. People whose requests should be met give you things to do which conflict with other work you have to do.

FEELINGS AT WORK

Here are some items about how you may feel. When you think about yourself and your job overall, how much of the time do you feel this way?

Using the following scale, circle the appropriate number to the left of each item.

1 = Never or a Little of the Time
2 = Some of the Time
3 = A Good Part of the Time
4 = Most of the Time

N	S	A	M	
1	2	3	4	18. I feel sad.
1	2	3	4	19. I feel unhappy.
1	2	3	4	20. I feel good.
[illegible]	2	3	4	21. I feel depressed.
[illegible]	2	3	4	22. I feel blue.
1	2	3	4	23. I feel cheerful.

1 = Never or a Little of the Time
2 = Some of the Time
3 = A Good Part of the Time
4 = Most of the Time

N	S	A	M	
1	2	3	4	25. I feel jittery.
1	2	3	4	26. I feel calm.
1	2	3	4	27. I feel fidgety.
1	2	3	4	28. I get angry.
1	2	3	4	29. I get aggravated.
1	2	3	4	30. I get irritated or annoyed.

WORK ACTIVITIES

The next few items are concerned with various aspects of your work activities. Indicate how much of each aspect you have on your job based on the following scale.

How much of each aspect do you find on your job?

1 = Hardly Any
2 = A Little
3 = Some
4 = A Lot
5 = A Great Deal

Circle a nuber next to each item.

HA	AL	S	L	GD	
1	2	3	4	5	31. How much slowdown in the pace of work do you experience?
1	2	3	4	5	32. How much time do you have to think and contemplate?
1	2	3	4	5	33. How much workload do you have?
1	2	3	4	5	34. What quantity of work do others expect you to do?
1	2	3	4	5	35. How much time do you have to do all your work?
1	2	3	4	5	36. How many projects, assignments, or tasks do you have?
1	2	3	4	5	37. How many lulls between heavy workload periods do you have?

DESCRIBING YOURSELF

Listed below are a number of statements about what people might feel about themselves and other aspects of life. Mark each item based on the following scale.

How much do you agree with each statement?

1 = Strongly Disagree
2 = Disagree
3 = Neither Agree nor Disagree
4 = Agree
5 = Strongly Agree

Circle a number next to each item.

SD	D	N	A	SA		
1	2	3	4	5	38.	On the whole, I am satisfied with myself.
1	2	3	4	5	39.	I feel I do not have much to be proud of.
1	2	3	4	5	40.	I certainly feel useless at times.
1	2	3	4	5	41.	I feel that I'm a person of worth, at least on an equal basis with others.
	2	3	4	5	42.	I feel that I have a number of good qualities.
1	2	3	4	5	43.	All in all, I am inclined to feel that I am a failure.
1	2	3	4	5	44.	I wish I could have more respect for myself.
1	2	3	4	5	45.	I am able to do things as well as most other people.
1	2	3	4	5	46.	At times I think I am no good at all.
1	2	3	4	5	47.	I take a positive attitude toward myself.

THOUGHTS ABOUT COMPUTERS

Use the following scale to indicate your level of agreement or disagreement with each statement. Work quickly, but be sure to consider each item individually.

1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree

Circle one for each statement:

SD	D	N	A	SA		
1	2	3	4	5	48.	Computers can save people a lot of work.
1	2	3	4	5	49.	It takes a good math background to learn to use a computer.
1	2	3	4	5	50.	Computer languages are difficult to learn.
1	2	3	4	5	51.	It takes a logical mind to learn to program a computer.
1	2	3	4	5	52.	You need to know how to use a computer to get a good job.
1	2	3	4	5	53.	I would like to own a home computer.
1	2	3	4	5	54.	Everyone will own a computer 5 years from now.
1	2	3	4	5	55.	In the future, there will still be jobs that don't require computer skills.
1	2	3	4	5	56.	Computers create new jobs for people.
1	2	3	4	5	57.	The power in society will soon belong to people who know how to use computers.
1	2	3	4	5	58.	Five years from now everyone will need to know how to operate a computer.

EXPERIENCES

The following items refer to things and experiences that may cause anxiety or apprehension. For each item, use the following scale to <u>indicate how anxious (nervous) each one would make you at this point in your life</u>. Work quickly but be sure to consider each item individually.

1 = Not at All
2 = A Little
3 = A Fair Amount
4 = Much
5 = Very Much

How much anxiety (nervousness) does the experience cause you?

<u>Circle</u> one number for each item.

N	L	F	M	V		
1	2	3	4	5	59.	Thinking about taking a class in a computer language (e.g. BASIC, Pascal, COBOL, etc.).
1	2	3	4	5	60.	Being around people who are "into" computers.
1	2	3	4	5	61.	Applying for a job that requires some computer training.
1	2	3	4	5	62.	Sitting in front of a home computer.
1	2	3	4	5	63.	Watching a movie about an intelligent computer.
1	2	3	4	5	64.	Looking at a computer printout.
1	2	3	4	5	65.	Getting "error" messages from the computer.
1	2	3	4	5	66.	Using a typewriter.
1	2	3	4	5	67.	Visiting a computer store.
1	2	3	4	5	68.	Being refused information because the "computer is down".
1	2	3	4	5	69.	Learning to write computer programs.
1	2	3	4	5	70.	Talking to a computer programmer.
1	2	3	4	5	71.	Erasing or deleting material from a computer.
1	2	3	4	5	72.	Taking a class about the uses of computers.
1	2	3	4	5	73.	Watching or listening to news programs about the increasing role of computers in society.
1	2	3	4	5	74.	Learning computer terminology.
1	2	3	4	5	75.	Attending a workshop on the uses of computers.

1 = Not at All
2 = A Little
3 = A Fair Amount
4 = Much
5 = Very Much

How much anxiety (nervousness) does the experience cause you?

Circle one number for each item.

N	L	F	M	V		
1	2	3	4	5	76.	Watching someone working at a computer terminal.
1	2	3	4	5	77.	Thinking about prepackaged (software packages) programs for a computer.
1	2	3	4	5	78.	Looking at a high speed computer printer.

PERSONAL INFLUENCE

The next series of questions asks how much influence you now have in each of several areas. By influence we mean the degree to which you control what is done by others at work and have freedom to determine what you do yourself at work. Use this scale:

1 = Very Little
2 = Little
3 = A Moderate Amount
4 = Much
5 = Very Much

Circle a number next to each item.

VL	L	MA	M	VM		
1	2	3	4	5	79.	How much influence do you have over the variety of tasks you perform?
1	2	3	4	5	80.	How much influence do you have over the availability of tools and equipment you need to do your work?
1	2	3	4	5	81.	How much influence do you have over the order in which you perform tasks at work?
1	2	3	4	5	82.	How much influence do you have over the amount of work you do?
1	2	3	4	5	83.	How much influence do you have over the pace of your work, that is, how fast or slow you work?
1	2	3	4	5	84.	How much influence do you have over the quality of the work you do?

1 = Very Little
2 = Little
3 = A Moderate Amount
4 = Much
5 = Very Much

Circle a number next to each item.

VL	L	MA	M	VM		
1	2	3	4	5	85.	How much influence do you have over the arrangement of your work area?
1	2	3	4	5	86.	How much influence do you have over the decisions concerning which individuals in your work unit do which tasks?
1	2	3	4	5	87.	How much influence do you have over the hours or schedule that you work?
1	2	3	4	5	88.	How much influence do you have over the decisions as to when things will be done in your work unit?
1	2	3	4	5	89.	How much do you influence the policies, procedures, and performance in your unit?
[illegible]	2	3	4	5	90.	How much influence do you have over the availability of materials you need to do your work?
1	2	3	4	5	91.	How much influence do you have over the training of other workers in your unit?
1	2	3	4	5	92.	How much influence do you have over the arrangement of desks and other work equipment in your unit?
1	2	3	4	5	93.	To what extent can you do your work ahead and take a short rest break during work hours?
1	2	3	4	5	94.	In general how much influence do you have over work and work-related factors?

ROLE ISSUES

These questions deal with different aspects of work. Indicate how often these aspects appear in your job, using this scale:

1 = Hardly, Rarely
2 = Occasionally
3 = Sometimes
4 = Fairly Often
5 = Very Often

Circle a number next to each item.

H	O	S	F	V		
1	2	3	4	5	95.	How often are you clear on what your job responsibilities are?
1	2	3	4	5	96.	How often can you predict what others will expect of you on the job?
1	2	3	4	5	97.	How much of the time are your work objectives well defined?
1	2	3	4	5	98.	How often are you clear about what others expect of you on the job?
1	2	3	4	5	99.	How often does your job let you use the skills and knowledge you learned in school?
1	2	3	4	5	100.	How often are you given a chance to do the things you do best?
1	2	3	4	5	101.	How often can you use skills from your previous experience and training?

DESCRIBE YOUR SUPERVISOR

Instructions: For each item select the answer that best describes your supervisor's behavior. Mark your answers based on this scale:

1 = Never (Not at all)
2 = Seldom (To a limited extent)
3 = Sometimes (To a moderate extent)
4 = Usually (To a considerable extent)
5 = Always (To a very great extent)
N/A = Don't know or not applicable

Circle a number next to each item.

N	Se	So	U	A	N/A		
1	2	3	4	5	N/A	102.	My supervisor emphasizes the importance of achieving a high level of performance.
1	2	3	4	5	N/A	103.	My supervisor is friendly and easy to approach.
1	2	3	4	5	N/A	104.	My supervisor consults with subordinates before making major decisions.
1	2	3	4	5	N/A	105.	My supervisor lets subordinates know what is expected of them.
1	2	3	4	5	N/A	106.	My supervisor sets clear and specific performance goals for subordinates.
1	2	3	4	5	N/A	107.	My supervisor encourages subordinates to do high quality work.
1	2	3	4	5	N/A	108.	My supervisor is sympathetic and supportive when a subordinate is upset about something.
1	2	3	4	5	N/A	109.	My supervisor asks subordinates for their opinions and advice before making an important decision.
1	2	3	4	5	N/A	110.	My supervisor clarifies and explains the rules, policies, and standard procedures that subordinates are supposed to observe.
1	2	3	4	5	N/A	111.	My supervisor meets with individual subordinates to jointly establish goals and objectives for each important aspect of the subordinate's job.
	2	3	4	5	N/A	112.	My supervisor pushes for increased productivity and efficiency.
1	2	3	4	5	N/A	113.	My supervisor makes subordinates feel at ease when talking with them.

1 = <u>N</u>ever (Not at all)
2 = <u>Se</u>ldom (To a limited extent)
3 = <u>So</u>metimes (To a moderate extent)
4 = <u>U</u>sually (To a considerable extent)
5 = <u>A</u>lways (To a very great extent)
N/A = Don't know or not applicable

<u>Circle</u> a number next to each item.

N	Se	So	U	A	N/A		
1	2	3	4	5	N/A	114.	My supervisor allows subordinates to participate in making work-related decisions.
1	2	3	4	5	N/A	115.	My supervisor explains each subordinate's duties and job responsibilities.
1	2	3	4	5	N/A	116.	My supervisor sets performance goals that are challenging but attainable.
1	2	3	4	5	N/A	117.	My supervisor tries to keep subordinates working at their maximum level of performance.
1	2	3	4	5	N/A	118.	My supervisor shows consideration for the needs and feelings of subordinates.
1	2	3	4	5	N/A	119.	My supervisor allows subordinates to have substantial influence in the making of decisions.
1	2	3	4	5	N/A	120.	My supervisor tells subordinates his/her priorities regarding which tasks, duties, and objectives are most important.
1	2	3	4	5	N/A	121.	My supervisor tries to establish mutually acceptable performance goals with each subordinate.
1	2	3	4	5	N/A	122.	My supervisor checks closely on the performance of subordinates to see if it is adequate.
1	2	3	4	5	N/A	123.	My supervisor tries to be fair and objective in the way she/he treats subordinates.
1	2	3	4	5	N/A	124.	My supervisor follows the advice of subordinates when making decisions about work assignments and procedures.
1	2	3	4	5	N/A	125.	My supervisor checks to see if subordinates understand what they are expected to do.
1	2	3	4	5	N/A	126.	My supervisor tries to measure how much progress is made by subordinates toward the attainment of their performance goals.

1 = Never (Not at all)
2 = Seldom (To a limited extent)
3 = Sometimes (To a moderate extent)
4 = Usually (To a considerable extent)
5 = Always (To a very great extent)
N/A = Don't know or not applicable

Circle a number next to each item.

N	Se	So	U	A	N/A		
1	2	3	4	5	N/A	127.	My supervisor tries to eliminate unnecessary costs and wasted resources in my work unit.
1	2	3	4	5	N/A	128.	My supervisor shows a personal interest in the welfare of subordinates.
1	2	3	4	5	N/A	129.	My supervisor gets subordinate approval on important matters before going ahead.
1	2	3	4	5	N/A	130.	My supervisor makes sure subordinates agree with him/her about work duties and responsibilities.
1	2	3	4	5	N/A	131.	My supervisor provides subordinates with feedback about how well they are performing each aspect of their jobs.

FEELINGS ABOUT THE LAPD

Below are statements that represent possible feelings that individuals might have about their work organization. Regarding your own feelings about the LAPD, indicate the degree of your agreement or disagreement with each statement. Use the following scale:

1 = Strongly Disagree
2 = Moderately Disagree
3 = Slightly Disagree
4 = Neither Agree nor Disagree
5 = Slightly Agree
6 = Moderately Agree
7 = Strongly Agree

Circle a number next to each item.

StD	MD	SD	N	SA	MA	StA		
1	2	3	4	5	6	7	132.	I am willing to put in a great deal of effort beyond that normally expected in order to help the LAPD be successful.
1	2	3	4	5	6	7	133.	I talk up the LAPD to my friends as a great organization to work for.

1 = Strongly Disagree
2 = Moderately Disagree
3 = Slightly Disagree
4 = Neither Agree nor Disagree
5 = Slightly Agree
6 = Moderately Agree
7 = Strongly Agree

Circle a number next to each item.

StD	MD	SD	N	SA	MA	StA		
1	2	3	4	5	6	7	134.	Iwould accept almost any type of job assignment in order to keep working for the LAPD.
1	2	3	4	5	6	7	135.	I find that my values and the LAPD's values are very similar.
1	2	3	4	5	6	7	136.	I am proud to tell others that I am part of the LAPD.
1	2	3	4	5	6	7	137.	I could just as well be working for a different organization as long as the type of work were similar.
1	2	3	4	5	6	7	138.	The LAPD really inspires the very best in me in the way of job performance.
1	2	3	4	5	6	7	139.	Often, I find it difficult to agree with the LAPD's policies on important matters relating to its employees.
1	2	3	4	5	6	7	140.	I really care about the fate of the LAPD.
1	2	3	4	5	6	7	141.	I feel very little loyalty to the LAPD.
1	2	3	4	5	6	7	142.	It would take very little change in my present circumstances to cause me to leave the LAPD.
1	2	3	4	5	6	7	143.	I am extremely glad that I chose the LAPD to work for, over other organizations I was considering at the time I joined.
1	2	3	4	5	6	7	144.	There's not too much to be gained by sticking with the LAPD indefinitely.
1	2	3	4	5	6	7	145.	For me this is the best of all possible organizations for which to work.
1	2	3	4	5	6	7	146.	Deciding to work for the LAPD was a definite mistake on my part.

THIS IS THE END. THANK YOU FOR YOUR COOPERATION.

Evaluation of PIR Content
LAPD ARS Project 1990

DESCRIPTION OF RATING FACTORS

OBSERVATIONS: WHAT THE OFFICER SAW

Personal observations at the scene of the crime should be included in the PIR to supplement witness statements. While specific to the crime being reported, observations might include:

Complete information on the medical condition of the victim (stitches, observable injuries, loss of consciousness, etc.)

Indications of drug or alcohol influence by victim or witnesses

for car thefts include observations of the car (smashed window, punched ignition, stereo missing, slide hammer on floorboard

ORGANIZATION AND WRITING STYLE

The narrative should have a logical flow from facts to supportable conclusions. Names of suspects, witnesses, officers should be used throughout to describe who did what in the incident. Examples of organization/style errors are:

Narrative is not legible

Presence of spelling or grammatical errors

Use of the passive voice ("The defendant was observed")

PHYSICAL EVIDENCE

When physical evidence is obtained it must be reported in such a way that the chain of evidence is not threatened. Examples of desired features are:

If prints are taken state who took them

For physical evidence, where was it found? Who found it? Who transmitted it? Who booked it?

COMPLETENESS OF GENERAL INVESTIGATION

There should be a minimal basic investigation conducted at the scene of the crime. There should be follow-up action taken in specific instances. Examples of this category are:

Specification of connection reports

Spelling out observations rather than simply writing conclusions

Verification of offered defenses (if at work, find out where the subject works, address, phone number, supervisor's name)

Look for items suggested by facts (Guns or knives mentioned by witness; where did the officer look? Who was asked about it?)

For suspect interviews indicate whether procedure was inside or outside Miranda constraints

STATEMENTS FROM VICTIMS, WITNESSES, SUSPECTS

This information should establish the identity and usual whereabouts of each party to a crime. Statements should be in such detail that crime elements can be identified or guidance is provided for additional investigation. Examples in this category are:

State the apparent motive for the crime

Where defendant makes a statement in conflict with the victim, include victim's response to this information

Interview each witness and provide a statement form each in the narrative

Include statements from all parties-victims, witnesses, suspects

CORPUS

The report must include sufficient information about the elements of a crime to allow correct classification of the offense. Some examples are:

The stated M.O. or narrative should be consistent with the crime classification used

Car burglaries should include whether the car was locked

PIR Research Control # (Eg. 1A01) ____________

Division (Circle one) 1. Hollywood 2. Wilshire

Rater (Name) ____________

Automated Reporting System Project
Evaluation of PIR Content Quality

The information you provide is strictly confidential and will be used for research purposes only. No one in the LAPD will see your ratings in a form that will allow you to be identified. Your name is being requested for data coding and analysis only.

RATING OF "BOX" ENTRIES

Number of Errors:
(Put numbers in spaces)

____Missing Entry (Field left blank)
____Inaccurate Entry
____Incomplete Entry

RATING OF NARRATIVE

METHOD OF WRITING (Circle one number) 1. Hand-written form
2. Automated form

OBSERVATIONS: WHAT THE OFFICER SAW (Circle One Response)

N/A Not applicable for this case
1. Obvious omissions
2. Likely omissions
3. Observations reported are ambiguous or not fully described
4. Observations complete and fully described

ORGANIZATION AND WRITING STYLE (Circle One Response)

1. Not readable, hard to analyze
2. Readable, but failed to say who did what
3. States who did what, but is disorganized
4. States who did what, is organized, has spelling/grammar errors
5. Excellent content, organization, no errors

PHYSICAL EVIDENCE (Circle One Response)

N/A Not applicable for this case
1. Serious evidence problems
2. Minor evidence problems
3. No indication of evidence problems

COMPLETENESS OF GENERAL INVESTIGATION (Circle One Response)

1. No narrative
2. Some information provided
3. Most information needed is present
4. All information desired is present

STATEMENTS FROM VICTIMS, WITNESSES, SUSPECTS (Circle One response)

1. No statements
2. Some parties contacted; no full statements
3. Some parties contacted; full statements
4. All parties contacted; no full statements
5. All parties contacted; some full statements
6. Full statements form all, or reasons why not

CORPUS (Circle One Response)

1. No crime stated
2. Some elements present but can't file
3. Crime other than one designated is supported
4. Complete listing of elements, no additions needed; full support for filing

Los Angeles Police Department

Crime Reporting System
Study
1990

Supervisor Questionnaire

LAPD Crime Reporting System Study

Introduction and Instructions for Supervisors

The purpose of this study is to evaluate the PIR reporting system. Of interest is the relationship between the reporting system and job performance.

This questionnaire asks you to evaluate each of your subordinates in terms of several aspects of the job. This is strictly a research undertaking and the identity of the respondents will remain anonymous. The questionnaire should be answered during normal duty hours. This booklet contains ten (10) sets of rating forms separated by colored paper. Use one set for each of your subordinates. Be sure to write your serial number and your subordinate's serial number on the first page of each rating.

Since the statistical relationship which will be analyzed hinges on your assessment of your subordinate's performance, be sure to consider your answers carefully. Complete the questionnaire(s) based on your knowledge of the subordinate. There should be no need for you to research records such as the employee's Official Personal Folder.

Do not feel constrained by past official performance evaluations in answering the questionnaire. In this study, the rating you assign will not be reviewed in the same light as those on a performance evaluation. Since this is a research undertaking, the ratings will have no impact on the employee(s) involved, nor will the employee see your ratings.

Please complete the questionnaires and mail the whole booklet within ten days of receipt to:

Dr. Tom Mayes
Department of Management
School of Business Administration & Economics
California State University, Fullerton
Fullerton, CA 92634
714-773-2435

Your cooperation is greatly appreciated.

JOB PERFORMANCE RATING
(RESEARCH PURPOSES ONLY)

Supervisor's Serial # ____________________ Date __________

Subordinate's Serial # ____________________ Division _______
(Person being rated)

Subordinate's Rank __________________

Serial Numbers will only be used by the research team at California State University, Fullerton, to match your responses to other questionnaires. By contract, no one in the LAPD will see the information you provide.

1. How long have you been the supervisor for the individual you are rating?
   - a. less than one year
   - b. at least one year but not more than three years
   - c. at least three years but not more than five years
   - d. at least five years but not more than ten years
   - e. more than ten years

2. Which of the following expressions best describes your assessment of the level of initiative exhibited by this employee?
   - a. excellent
   - b. very good
   - c. good
   - d. acceptable
   - e. need for some improvement
   - f. need for substantial improvement
   - g. unacceptable

3. How would you describe the work efforts of this employee?
   - a. excellent
   - b. very good
   - c. good
   - d. acceptable
   - e. need for some improvement
   - f. need for substantial improvement
   - g. unacceptable

4. Which of the following expressions best describes your assessment of the depth of this individual's job knowledge?

a. excellent
b. very good
c. good
d. acceptable
e. need for some improvement
f. need for substantial improvement
g. unacceptable

5. How would you describe the quality of this individual's work?

a. excellent
b. very good
c. good
d. acceptable
e. need for some improvement
f. need for substantial improvement
g. unacceptable

6. How would you describe the oral communication skills of the employee?

a. excellent
b. very good
c. good
d. acceptable
e. need for some improvement
f. need for substantial improvement
g. unacceptable

7. How would you describe the written communication skills of this individual?

a. excellent
b. very good
c. good
d. acceptable
e. need for some improvement
f. need for substantial improvement
g. unacceptable

8. Which of the following expressions best describes your assessment of this individual's capacity to learn?

a. excellent
b. very good
c. good
d. acceptable
e. need for some improvement
f. need for substantial improvement
g. unacceptable

9. How well does this individual utilize his/her time during the work day?

a. very wasteful
b. wasteful
c. acceptably
d. well
e. very well

10. How confident would you be that this employee could properly resolve a difficult case without your assistance?

a. extremely confident
b. confident
c. fairly confident
d. 50/50 chance of proper resolution
e. somewhat doubtful
f. doubtful
g. extremely doubtful

11. Please rate the overall performance of this employee on the following numeric scale where a rating of "7" is the best and "1" is the worst.

7	6	5	4	3	2	1
(best)						(worst)

Los Angeles Police Department
Hollywood Division

Crime Reporting System
Study
1990

Automated Reporting System Evaluation

Serial # ___________

Date ___________

Hollywood Division

AUTOMATED REPORTING SYSTEM USE QUESTIONNAIRE

Your Serial Number will only be used by the research team at California State University, Fullerton, to match your responses to other questionnaires. By law and contract, no one in the LAPD will see your survey.

This questionnaire seeks several different kinds of information concerning the implementation of laptop computer technology in the Los Angeles Police Department. Since you were a daily user of such equipment, you are in a position to provide invaluable assistance by sharing the insights and experience you have acquired. Please give us your honest and candid judgment. Thank you.

Please read each statement carefully. Then decide whether you agree or disagree with the statement, and how strongly. Finally, circle the appropriate number next to the item based on this scale:

1 = Strongly Disagree
2 = Disagree
3 = Neutral or doesn't apply
4 = Agree
5 = Strongly Agree

Circle a number next to each statement.

SD	D	N	A	SA		
1	2	3	4	5	1.	The laptop computer is troublesome to carry around during the shift.
1	2	3	4	5	2.	The laptop computer's report format is suitable for my needs.
1	2	3	4	5	3.	I could type fairly well before we started using laptop computers.
1	2	3	4	5	4.	I didn't think hand-writing reports was much of a chore.

1 = Strongly Disagree
2 = Disagree
3 = Neutral or doesn't apply
4 = Agree
5 = Strongly Agree

Circle a number next to each statement.

SD	D	N	A	SA		
1	2	3	4	5	5.	If the Department wanted to discontinue the use of laptop computers and go back to hand-written reports, it would be OK with me.
1	2	3	4	5	6.	I am concerned about laptop computers being damaged or stolen.
1	2	3	4	5	7.	Computer-entered reports take longer to correct than hand-written reports.
1	2	3	4	5	8.	I had problems transferring reports via disk from laptops to the station system.
1	2	3	4	5	9.	Laptop computers have made it easier for me to produce a good report.
1	2	3	4	5	10.	My typing is good enough to allow me to use the desktop and laptop computers easily.
1	2	3	4	5	11.	I think a lot of my fellow officers would like to get rid of the laptop computers and just hand-write reports.
1	2	3	4	5	12.	There have been instances when I have lost information because of a problem with my laptop computer.
1	2	3	4	5	13.	My reports are returned to me for correction more often than before we used laptop computers.
1	2	3	4	5	14.	The screen on the laptop computer is easy to read.

1 = Strongly Disagree
2 = Disagree
3 = Neutral or doesn't apply
4 = Agree
5 = Strongly Agree

Circle a number next to each statement.

SD	D	N	A	SA		
1	2	3	4	5	15.	Before we got laptop computers, I doubted whether they would be much of an improvement over writing reports by hand.
1	2	3	4	5	16.	It did not take me long to learn how to use laptop computers.
1	2	3	4	5	17.	If given a choice, I would write reports by hand.
1	2	3	4	5	18.	Telephone transfer of reports to the station system is easier than disk transfer.
1	2	3	4	5	19.	The laptop computer is more convenient to carry than a notebook and reports.
1	2	3	4	5	20.	I had to invest a lot of effort in improving my typing skills in order to be able to use laptop computers.
1	2	3	4	5	21.	Other than the MDT or the NECS terminal, I had never used a computer before the laptops were issued during this pilot project.
1	2	3	4	5	22.	Having responsibility for such an expensive and delicate piece of equipment makes me uncomfortable.
1	2	3	4	5	23.	I produce a more complete report now than I did before we got laptop computers.
1	2	3	4	5	24.	The laptop computer's keyboard is awkward to use.
1	2	3	4	5	25.	A spell-check feature would make it easier for me to write my reports.

1 = Strongly Disagree
2 = Disagree
3 = Neutral or doesn't apply
4 = Agree
5 = Strongly Agree

Circle a number next to each statement.

SD	D	N	A	SA		
1	2	3	4	5	26.	The screen on the laptop computer is often difficult to read.
1	2	3	4	5	27.	Laptop computers have proven to be a reliable piece of equipment.
1	2	3	4	5	28.	Computer-entered reports are easier to correct than hand-written reports.
1	2	3	4	5	29.	It took me a long time to get used to using the laptop computer to write reports.
1	2	3	4	5	30.	I disliked having to write reports by hand.
1	2	3	4	5	31.	The scrolling fields were difficult to use.
1	2	3	4	5	32.	I received enough training in the use of the computers.
1	2	3	4	5	33.	I produce a longer narrative now than I did before we started using laptop computers.
1	2	3	4	5	34.	I have trouble using the laptop computer easily because I don't type fast.
1	2	3	4	5	35.	Most of the officers I know like having the laptop computers.
1	2	3	4	5	36.	It is difficult to find a place to store the computer in my patrol car.
1	2	3	4	5	37.	I received too much training in the use of the automated reporting system computers.

1 = Strongly Disagree
2 = Disagree
3 = Neutral or doesn't apply
4 = Agree
5 = Strongly Agree

Circle a number next to each statement.

SD	D	N	A	SA		
1	2	3	4	5	38.	The on-screen help features provide all the assistance I need to operate the laptop.
1	2	3	4	5	39.	I know that my handwriting is hard to read.
1	2	3	4	5	40.	I had some experience with computers before we started using laptop computers in this pilot project.
1	2	3	4	5	41.	I found the on-screen help features useful.
1	2	3	4	5	42.	The reports I produce on laptop computers are better organized than the ones I wrote by hand.
1	2	3	4	5	43.	Entering reports by computer saves me time.
1	2	3	4	5	44.	Computer files are easier to lose than paper documents.
1	2	3	4	5	45.	The laptop computers are not much of an improvement over writing our reports by hand.
1	2	3	4	5	46.	The laptop computer is awkward to use in the field.
1	2	3	4	5	47.	The pop-up windows are easy to use.
1	2	3	4	5	48.	Laptop computers are a gimmick or fad. They won't be around too long.
1	2	3	4	5	49.	I would support a department-wide automated reporting system.

1 = Strongly Disagree
2 = Disagree
3 = Neutral or doesn't apply
4 = Agree
5 = Strongly Agree

Circle a number next to each statement.

SD	D	N	A	SA		
1	2	3	4	5	50.	I would be comfortable using a computer generated report to testify in court.
1	2	3	4	5	51.	I often enter information directly into the laptop computer without taking notes.
1	2	3	4	5	52.	The Automated Reporting System Task Force provided adequate support and feedback throughout this pilot project.

THE FOLLOWING QUESTIONS SHALL BE COMPLETED BY SUPERVISORS ONLY

1	2	3	4	5	53.	Compared to hand-written reports the automated system reports were easier to review and approve.
1	2	3	4	5	54.	Automated system reports were less complete than hand-written reports.
1	2	3	4	5	55.	Automated system reports had fewer errors than hand-written reports.

Los Angeles Police Department
Hollywood Detective Division

Crime Reporting System
Study
1990

Automated Reporting System Evaluation

AUTOMATED REPORTING SYSTEM USE QUESTIONNAIRE

Your responses to this questionnaire will only be used by the research team at California State University, Fullerton, to evaluate the laptop computers recently used in the Hollywood Division. By law and contract, no one in the LAPD will see your survey.

This questionnaire seeks several different kinds of information concerning the implementation of laptop computer technology in the Los Angeles Police Department. Since you were a daily user of computer generated reports, you are in a position to provide invaluable assistance by sharing the insights and experience you have acquired. Please give us your honest and candid judgment. Thank you.

Please read each statement carefully. Then decide whether you agree or disagree with the statement, and how strongly. Finally, circle the appropriate number next to the item based on this scale:

1 = Strongly Disagree
2 = Disagree
3 = Neutral or doesn't apply
4 = Agree
5 = Strongly Agree

Circle a number next to each statement.

SD	D	N	A	SA		
1	2	3	4	5	1.	The laptop computer's report format is suitable for my needs.
1	2	3	4	5	2.	The automated system reports would be easier to use if the print was larger.
1	2	3	4	5	3.	A spell-check feature in the automated reporting system computers would improve the quality of reports.
1	2	3	4	5	4.	The automated reports I received during the pilot project did not improve my crime clearance and filing rate.

1 = Strongly Disagree
2 = Disagree
3 = Neutral or doesn't apply
4 = Agree
5 = Strongly Agree

Circle a number next to each statement.

SD	D	N	A	SA		
1	2	3	4	5	5.	If the Department wanted to discontinue the use of laptop computers and go back to hand-written reports, it would be OK with me.
1	2	3	4	5	6.	If all of my paperwork (including that sent to prosecutors) was automated, my crime clearance and filing rate would improve.
1	2	3	4	5	7.	Reports generated by the automated system are an improvement over hand-written reports.
1	2	3	4	5	8.	I would support a department-wide automated reporting system.
1	2	3	4	5	9.	I would be comfortable using a computer generated report to testify in court.
1	2	3	4	5	10.	The Automated Reporting System Task Force provided adequate support and feedback throughout this pilot project.
1	2	3	4	5	11.	Automated system reports were less complete than hand-written reports.
1	2	3	4	5	12.	Automated system reports had fewer errors than hand-written reports.
1	2	3	4	5	13.	I find the automated system reports easier to read than hand-written reports.

14. Report any problems you had with the automated PIR reporting system.

____ Check here and write your comments or suggestions on the reverse.

APPENDIX B PRELIMINARY INVESTIGATION REPORT - PIR

Page ____ of ______ 03.01.0 (R.8/88)

Los Angeles Police Department

PRELIMINARY INVESTIGATION of

☐ COMBIND EVID. REPORT
☐ MULTIPLE DRS ON THIS REPORT

INVEST DIV. | DR

SHOTS FIRED ☐

USE OF FORCE ☐

NARCOTICS STOLEN – NARC. DIV. ☐

DSD (GAS)/ CRASH ☐

FIREARM STOLEN/ LOST – DHD & R&I CRIME/PROPERTY TT SPVR. ☐

PRELIMINARY CASE SCREENING

☐ SUSPECT/VEHICLE NOT SEEN
☐ PRINTS OR OTHER EVIDENCE NOT PRESENT
☐ MO NOT DISTINCT
☐ PROPERTY LOSS LESS THAN $5000
☐ NO SERIOUS INJURY TO VICTIM
☐ ONLY ONE VICTIM INVOLVED

VICTIM

LAST NAME, FIRST, MIDDLE (FIRM IF BUSINESS) | SEX | DESC. | AGE | DOB

ADDRESS R- | ZIP | PHONE

B-

DR. LIC. NO. (IF NONE, OTHER ID & NO) | FOREIGN LANGUAGE SPOKEN (IF APPLICABLE) | OCCUPATION

PREMISES (SPECIFIC TYPE)

ENTRY 459/BFV
☐ FRONT
☐ REAR
☐ SIDE
☐ ROOF
☐ FLOOR
☐ OTHER

POINT OF ENTRY | POINT OF EXIT

METHOD

INSTRUMENT / TOOL

LOCATION OF OCCURRENCE SAME AS V'S ☐ RES. ☐ BUS. | R.D. | PRINTS BY PREL INV ATTEMPT Y N OBTAINED Y N

DATE & TIME OF OCCURRENCE | DATE & TIME REPORTED TO PD

TYPE PROPERTY STOLEN/LOST/DAMAGED ☐ 3.4 GIVEN | STOLEN/LOST $ | RECOVERED $ | EST. DAMAGED ARSON/VAND $

VICT'S VEH. (IF INVOLVED) - YEAR, MAKE, TYPE, COLOR, LIC. NO.

NOTIFICATIONS (PERSON & DIVISION) | CONNECTED REPORTS (TYPE & DR)

MO IF LONG FORM, LIST UNIQUE ACTIONS. IF SHORT FORM, DESCRIBE SUSPECT'S ACTIONS IN BRIEF PHRASES, INCLUDING WEAPON USED. DO NOT REPEAT ABOVE INFO. BUT CLARIFY REPORT AS NECESSARY. IF ANY OF THE MISSING ITEMS ARE POTENTIALLY IDENTIFIABLE, ITEMIZE AND DESCRIBE ALL ITEMS MISSING IN THIS INCIDENT IN THE NARRATIVE.

MOTIVATED BY HATRED/PREJUDICE ☐ DOMESTIC VIOLENCE ☐

REPORTING EMPLOYEE(S) INITIALS, LAST NAME | SERIAL NO. | DIV./DETAIL

PERSON REPORTING SIGNATURE x | OR RECEIVED BY PHONE – ☐

NOTE: IF SHORT FORM AND VICTIM/PR ARE NOT THE SAME, ENTER PR INFORMATION IN INVOLVED PERSONS SECTION.

Complete below sections if any Preliminary Case Screening boxes are not checked.

SUSP'S VEHICLE YEAR | MAKE | MODEL | TYPE

COLOR (S) | VEH. LIC. NO. | STATE

Interior	Exterior	Body	Windows
COLOR:	1 CUSTOM WHEELS	1 DAMAGE	1 DAMAGE
1 BUCKET SEATS	2 PAINTED INSCRIPT.	2 MODIFIED	2 CUST TINT
2 DAMAGED INSIDE	3 LEVEL ALTERED	3 STICKER	3 CURTAINS
	4 RUST / PRIMER	4 LEFT	4 LEFT
	5 CUSTOM PAINT	5 RIGHT	5 RIGHT
	6 VINYL TOP	6 FRONT	6 FRONT
		7 REAR	7 REAR

S-1 SEX | DESC. | HAIR | EYES | HEIGHT | WEIGHT | AGE | CLOTHING | NAME, ADDRESS, DOB, IF KNOWN; NAME, BKG. NO., CHARGE, IF ARRESTED.

PERSONAL ODDITIES (UNUSUAL FEATURES, SCARS, TATTOOS, ETC.) | Weapon (VERBAL THREATS, BODILY FORCE, SIMULATED GUN, ETC. IF KNIFE OR GUN, DESCRIBE FULLY)

S-2

INVOLVED PERSONS W - WITNESS R - PERSON RPTG. S - PERSON SECURING (459) D - PERSON DISCOVERING (459) P - PARENT CP - CONTACT PERSON (DOMESTIC VIOLENCE)

NAME | SEX | DESC | DOB | ADDRESS | CITY | ZIP | PHONE

DR. LIC. NO. (IF NONE, LIST OTHER ID & NO.) | FOREIGN LANGUAGE SPOKEN (IF APPLICABLE)

R-
B-
R-
B-
R-
B-

COMBINED EVID. RPT. USE THIS SECTION IN LIEU OF PROPERTY REPORT IF NO GUN AND NO MORE THAN THREE ITEMS OF EVIDENCE | LOC. EVID. BKD. | 10.10 GIVEN? Y N | Preliminary Drug Test | SUPV./INV. OFCR. TESTING | SER. NO. | WITNESS OFCR. | SER NO.

ITEM	QUAN.	ARTICLE	SERIAL NO./TYPE TEST OF DRUG	BRAND / DRUG WEIGHT, UNITS	MODEL NO./DRUG TEST RESULT	MISC.

NARRATIVE 1) LIST ADD'L SUSPS. & INVOLVED PERSONS. 2) RECONSTRUCT OCCURRENCE, INCL. ALL ELEMENTS OF CORPUS DELECTI. 3) IF NOT USING EVID. CONTINUATION FORM, DESCRIBE EVIDENCE INCLUDE PRINTS, STATE LOCATION FOUND AND BY WHOM, GIVE DISPOSITION. 4) SUMMARIZE OTHER DETAILS, INCL. WHEN & WHERE PERSONS WITH NO PHONE CAN BE LOCATED. 5) INDICATE TYPE OF TRANSLATOR NEEDED FOR ANY INVOLVED PERSON. 6) LIST ITEMS MISSING.

VICTIM INDEMNIFICATION INFORMATION (IF APPLICABLE)

IS ANY OF THE VICTIM'S PROPERTY MARKED WITH AN OWNER APPLIED IDENTIFICATION NUMBER?
IF "YES" EXPLAIN IN NARRATIVE. YES ☐ NO ☐

APPROVAL AND REVIEW

SUPERVISOR APPROVING | SERIAL NO. | DETECTIVE SUPERVISOR REVIEWING | SERIAL NO

DATE & TIME REPRODUCED | CLERK

Category ______

APPENDIX C PREFORMATTED NARRATIVES

VEHICLE VANDALISM

(The victim) stated that at the listed date and time (he) left the victim's vehicle at the listed location. Upon (his) return at the listed date and time (he) discovered the listed damage to the victim's vehicle.

The registered owner of the victim's vehicle is . . (Robert Jones,

R/A 123 W. Forth St., L.A. 90000, phone 213 444-4444, B/A 321 E. First St., L.A. 90000, phone 213 555-6666 ext. 767)

My investigation revealed . . .

APPENDIX D TRAINING MATERIALS

Automated Reporting System User's Manual

October, 1990

AUTOMATED REPORTING SYSTEM USER'S MANUAL

TABLE OF CONTENTS

INTRODUCTION

This manual is designed to assist you in the basic functions of the Automated Reporting System and its related procedures. You will find extensive built-in help features in the laptop system which will allow you to get assistance in most areas of the program.

LAPTOP SYSTEM

Starting the laptop

1) Open the laptop display and adjust the viewing angle.

2) If you plan to use the AC or auto adapter, connect the DC output plug to the DC IN 12V socket on the left side of the laptop and plug the power cord into a standard wall socket or your car's cigarette lighter. AC and auto adaptors are available from the kit room.

3) Press and hold the POWER button for one second. The POWER button is located on the left side of the laptop.

4) Confirm that no error messages appear during the memory test. A beep sounds when the memory test completes.

5) Adjust the display's brightness and contrast.

6) The full logon or relogon screen should now be displayed.

Turning off the laptop

1) The laptop should only be turned off after selecting "Quit for now", "Logoff", or using Alt-F12 (Rapid Save).

2) Make sure the diskette drive is empty. If it is not empty, wait until the Disk In Use light is off, then remove the diskette.

3) Press and hold the POWER button until the Power/Speed light goes out. The computer is turned off.

SYSTEM ENTRY AND EXIT

Logon

The full logon process is only required one time at the beginning of each watch. All fields on the logon screen are mandatory for each officer signing on the laptop, with the exception of the middle initial. Be sure to verify the date and time when signing on; this information is used by the system.

Quit for now

During the periods of time when you are not using your laptop computer, you should use the "Quit for now" feature. This feature is found on the Main screen on the Quit menu. Using this feature will ensure that your reports are saved and prevent unauthorized access to your laptop. Once this feature has been selected and the relogon screen appears you can turn your laptop off to conserve battery power. **NOTE: IN ORDER TO AVOID INADVERTENT LOGOFF YOU SHOULD USE THE ALT F12 RAPID-SAVE FUNCTION WHENEVER POSSIBLE.**

Logoff

The logoff function is also found on the quit menu. This function should only be used at the end of you watch. All reports must be transferred from your laptop prior to selecting logoff. For further instruction on transferring reports see "Transferring PIRs".

Relogon

In order to reenter the ARS program from the relogon screen you enter your password. This password must match the password entered at logon. If you forget your password or your password does not match, follow the procedure under "Obtaining an override password".

Rapid Save (AltF12)

If it becomes necessary to quickly save your work and exit the system the Rapid Save AltF12 function should be used. This will immediately save your current report and return you to the relogon screen.

Password

Your password is 1 to 8 characters of your own choosing which will perform the following functions on the laptop:

* Signature verification on reports
* Relogon to laptop system

Obtaining an override password

If you forget your password, the following procedure should be used:

1) Contact any supervisor

2) Give the supervisor your laptop ID#. This number is located on a label on your laptop and on the relogon screen.

3) Give the supervisor your serial number.

4) Enter the override password provided by the supervisor.

5) The password you originally entered will be presented briefly then you will be logged on. If the password was incorrect, you must logoff and re-logon

WRITING A REPORT

To begin writing a report you select "Create PIR" from the "Reporting" menu of the Main Screen. The information contained in the PIR is divided into ten screens:

=> CRIME
=> VICTIMS (including VICTIMS VEHICLES)
=> SUSPECTS
=> SUSPECT VEHICLES
=> PROPERTY
=> M.O.
=> EVIDENCE
=> NARRATIVE
=> ADD'L/MISC/NOTIF

These screens are entered by moving the highlight bar to the desired selection with the cursor control keys and pressing enter or by pressing the screens corresponding letter.

SUMMARY OF MAJOR KEY FUNCTIONS

CTRL ENTER	Same function as F12.
ENTER	Accepts input for a field and moves to the next field.
TAB	Moves forward to the next field
SHIFT TAB	Moves back to the previous field

PGUP	Moves to the previous record in multiple record screens (Victim, Victim's vehicle, Suspect, Suspect's vehicle, Property, Evidence).
PGDN	Moves to the next record in multiple record screens.
DELETE	Erases the character highlighted by the cursor.
INSERT	Toggles between insert (moves characters to the right upon input) and typeover (new input replaces old input).
ARROW KEYS	Moves the cursor within a field or in the narrative.
BACKSPACE	Moves cursor backward & erases characters.
F1	Calls the help function.
F2	Brings up data entry picklist when available.
F4	Text copy function (Narrative only)
F5	Summary of involved parties and vehicles
F7	Checks a PIR for errors (Available at summary screen)
F8	Adds a text note to a specific field.
F9	Adds a general note to a PIR
F11	Save & continue
F12	Save and exit

HELP SYSTEM

The ARS program was designed with an extensive help system to make learning and using the system as easy as possible. The help system is divided into three categories:

* Help lines
* Field sensitive help
* Topical help

Help lines

The second line from the bottom of the screen provides you with on screen help relevant to your cursor location. You should look to this line to determine if a picklist is available, if the field is a scrolling field, or if the field is restricted to specific input. The help line may also provide further description of the field's contents or information on how to enter data.

Context sensitive help (F1)

Pressing F1 at any location in the ARS system will provide you with help text relevant to the location of your cursor. On the Logon screen, Main screen, and Summary screen there is only general help available. On all data entry screens, specific help is available for some fields and general help for others.

Help Topics (F1-F1)

If you require help on a specific topic, simply press F1 twice from any location in the ARS system and a list of help topics will appear. Move the cursor to the desired topic and press enter. Using the PgUp and PgDn keys will take you between pages of longer help texts.

Hypertext

On some help screens (i.e., Abbr use and rules) there is a hypertext feature which allows you to go to additional help based on the selection of a specific letter or category. This feature is especially useful in the areas of abbreviations and definitions.

Error Messages

In some areas error messages are used to indicate an attempt to perform a function which is not acceptable. These messages explain the error and indicate how to proceed.

PICKLISTS

Many of the fields in the ARS system have picklists available for data entry purposes. These picklists are used to create consistent input in fields which will eventually be transferred to other automated systems. The picklists are either mandatory or verified.

Mandatory Picklists

Mandatory Picklists require selection from the picklist. Pressing F2 or striking any non-cursor control key will bring up the picklist. You then highlight the selection you desire and press enter. The text of your selection is then displayed in the field.

Verified Picklists

Verified picklists allow you to type some or all of your desired input and have it verified against the picklist. If the input is valid, the text remains (or additional text is displayed) and the cursor advances to the next field. If the input is invalid, the picklist is displayed and the desired input is selected.

Changing data in a picklist field

To change the input in a picklist field press F2 and select the desired input. In verified picklists you may type the new input over the old input.

Erasing input in picklist fields

To erase input in a picklist field press F2 and then the "Esc" key without making a selection or use the Backspace Key.

Selecting "Other/"

If no selection on the picklist satisfies your input requirements, most picklists contain the "Other/" selection. When you select "Other/" the cursor remains on the field and allows you to input additional text. If a picklist does not have the "Other/" selection and the field is mandatory you must choose the best selection.

Multi-level picklists

Some picklists require you go through more than one list before you make your selection. If a picklist has a selection which takes you to another list, it is indicated by the ">>" symbol.

POP-UP DATA INPUT WINDOWS

There are three locations in the ARS system where data is entered in a pop-up window:

* Crime location
* Victim's vehicle
* Suspect known

In order to enter data in the pop-up windows use the following procedure:

1) Type a "Y" in the single character field adjacent to the field description and press enter.

2) Enter data in the fields displayed in the window.

3) When input is complete, press F12.

4) A summary of your input appears on the screen and the "Y" is erased.

To edit the data in the pop-up windows, follow the same procedure.

MULTIPLE RECORDS SCREENS

There are some screens in the ARS system which allow the input of multiple records. These screens are:

* Victims (including Victims Vehicle)
* Suspects
* Suspect Vehicles
* Involved Persons
* Property
* Evidence

To create additional victims, suspects, etc. press the PgDn key after completing a record. You are then presented with a new blank screen and the record number is increased sequentially. To move between records use the PgUp and PgDn keys.

Copying, Deleting, and Moving records (F10 Action Window)

There may be occasions when it is necessary to copy, delete, or move individual records within or between screens of a PIR. These functions are found in the F10 Action Window. The Action Window is available in any multiple record screen. **Note:** You cannot copy or move records from one PIR to another.

Victims

COPY business and/or residence address info

1) Press F10 for the Action Window

2) Select "COPY business and residence info to here"
"COPY residence information here" or
"COPY business information to here"

3) You are then presented with a list of records available to copy from. Highlight your choice and press enter.

4) Verify the proper information was copied.

DELETE this person permanently

1) Move to the record you wish to delete.

2) Press F10 for the Action Window.

3) Select "Delete this person permanently".

4) Answer yes to confirm deletion.

MOVE this person

1) Go to the record you want to move.

2) Press F10 for the Action Window.

3) Select "MOVE this person".

4) You are presented with a list of the current victims. Highlight the location you wish to move this record to and press enter. **Please note:**

   * **Moving a record up the list will place it before the record you highlight. (This is how you make a record the first record).**

   * **Moving a record down the list will place the record after the record you highlighted.**

5) Press F5 to bring up the summary list and verify the move was successful.

Victim's Vehicle

COPY another vehicle to here

1) Go to a blank Victims Vehicle

2) Press F10 To bring up the action window.

3) Select "COPY another vehicle to here".

4) You are presented with a list of Victims Vehicles to copy from. Highlight the record you wish to copy and press enter. **NOTE: The entire vehicle record is copied, you must edit any fields which are not the same as the record you copied.**

Suspect

COPY another suspect to here

1) Go to a blank suspect.

2) Press F10 to bring up the Action Window.

3) Select "COPY another Suspect to here".

4) You are presented with a list of suspects. Highlight the suspect you wish to copy and press enter.
NOTE: The suspect copy function copies ALL information, including data in the identified suspect window. You must modify the new record if it is not exactly the same.

DELETE this Suspect permanently

This function follows the same procedure as deleting a victim.

MOVE this suspect

This function follows the same procedure as moving a victim.

Suspect Identified/Arrested Window

The only functions available for Identified/Arrested suspects are the address copying features. These functions follow the same procedures as copying addresses for a victim.

Suspect Vehicles

Suspect Vehicles has the same functions and follows the same procedures as Victim's vehicles.

Involved Persons

Involved Persons has the same functions and follows the same procedures as Victims.

PLEASE NOTE: * **You can only move an item within its type of involvement (WIT, SEC, Etc.).**

* **You cannot bring up the Action Window when your cursor is on any of the "Types of Involvement" field.**

Property

COPY another property record to here

1) Go to a new Property item.

2) Enter the Disposition and move the cursor to the "Quan" field.

3) Press F10 to bring up the action window.

4) Select "COPY another property record to here".

5) You are presented with a list of ALL property items. Select the item you wish to copy and press enter.

6) Press the PgDn key.

7) Check the Property Summary Box and verify the copy was successful.

DELETE this property permanently

1) Use PgUp or PgDn to move to the record you wish to delete.

2) Move the cursor to the "Quan" field.

3) Press F10 to bring up the Action Window

4) Select "DELETE this property PERMANENTLY".

5) Answer yes to the confirmation question.

6) Check the Property Summary Box and verify the delete was successful.

MOVE this prop. within disposition only

1) Use PgUp or PgDn to move to the record you wish to move.

2) Move the cursor to the "Quan" field.

3) Press F10 to bring up the Action Window

4) Select "MOVE this prop. within disposition only".

5) You are presented with a list of ALL property items, but you are restricted to selecting only items with the same victim number and disposition type. Select the location you wish to move this item to and press enter.
   NOTE: The same rules apply to moving property that were described in the victim section.

6) Check the Property Summary Box and verify the move was successful.

Evidence

The evidence screen has the same functions and follows the same procedures as victims vehicles.

NARRATIVE WORD PROCESSING FUNCTIONS

The narrative portion of the report is a full featured text processor. The following is a summary of its features and there use.

TAB	Moves the cursor 5 spaces.
ENTER	Completes the line.
ARROW KEYS	Moves the cursor to any location in the narrative.

Blocking Functions

In order to mark a section of text to perform a function on it, use the following procedure:

1) Move the cursor to the beginning of the text to be blocked and press <ALT><B>.

2) Use the arrow keys to move the end of the text to be blocked and press <ALT><E>.

3) The blocked text will then be shown in reverse video.

Once the text has been blocked, the following functions can be performed.

<ALT><M> Moves the blocked text to the location of the cursor.

<ALT><C> Copies the blocked text to the location of the cursor.

<ALT><D> Deletes the blocked text.

<ALT><H> Unblocks the text and reblocks the text.

Reformatting Narrative

In order to reformat the text to eliminate single line spacing and maintain acceptable line length do one of the following:

<ALT><1> Reformats a paragraph. The text will be reformatted from the cursor location to the end of the paragraph.

<ALT><0> Reformats the entire narrative.

Summary Window

Pressing F5 while in the narrative will provide with a summary of the following entries:

* Victims
* Victim's Vehicles
* Suspects
* Suspect's Vehicles
* Involved Persons

Narrative Copy Function

To copy a narrative from another PIR currently on your laptop, use the following procedure:

1) Press F4

2) You are presented with a window listing the first line of the narrative from all the PIRs currently on your laptop.

3) Highlight the narrative you wish to copy and press enter.

4) The text is blocked so you can move it to any location in the narrative. When it is at the desired location press enter.

5) Press <ALT><H> to hide the blocking.

SIGNING A REPORT/VALIDATION PROCESS

When you complete a report you must then select the signature function from the summary screen. When you select the signature function the ARS system will automatically check your PIR for errors and omissions. This verification is made for basic report writing rules and PACMIS data entry purposes only and does not guarantee you report is error free. If there are errors or omissions you will be presented with a list. As you select each item from the list you are taken to the location of the error to correct it. When you press F12 to accept you modification you are returned to the next item on the error list. This process repeats until all of the errors and omissions have been satisfied. You are then presented with the signature window. Enter your password and you are returned to the Main Screen and your PIR is designated as signed in the status column.

AUTO ENTRY

In order to facilitate quicker data entry, the Auto Entry function is available. To use the Auto Entry function use the following procedure.

1) Start a new PIR.

2) Move the highlight bar to "Auto Entry" or type "Z" while on the Summary Screen.

3) You are then presented with the Automatic Mode Window. Answer "Y" or "N" to each question and then answer "Y" to the "Initiate Auto Mode?" question.

4) You will then be taken to the Crime screen. Enter the crime information and press F12.

5) You will then automatically be taken to the next screen each time you press F12. Screens which are not mandatory or are not required, based on the answers to the questions in Automatic Mode Window, will be skipped.

6) When you complete the narrative and press F12 the PIR will automatically be error checked.

7) After the errors have been rectified, you will be presented with the signature window. Enter your password to sign the report.

8) After your signature has been accepted you will be returned to the Main Screen.

Exiting Auto Entry

If you need to leave the Auto Entry process while writing a PIR you press "Esc". You will be returned to the Summary Screen for the PIR you are writing, once you exit the screen you are currently on, and can complete the report in the normal fashion. If you wish to reenter Auto Entry, you must select Auto Entry again from the summary screen and restart the process.

AUTO REVIEW

If you need to quickly review a PIR to determine if it is complete, select the Auto Review function from the summary screen. This process will take you to all screens in the ARS system and all the windows sequentially as you press F12.

EDITING A REPORT

In order to edit an existing PIR, use the following procedure:

1) From the reporting menu of the main screen, select "Edit/Approve PIR".

2) Move the highlight bar to the PIR you wish to edit and press enter.

3) From the Summary screen you can enter any screen and edit its contents.

DELETING REPORTS

In order to delete a report on your laptop computer, use the following procedure:

1) Select "Delete PIR" from the reporting menu of the Main screen.

2) Move the highlight bar to PIR you wish to delete and press enter.

3) Answer yes to the confirmation window.

4) Confirm the PIR was deleted by looking at the PIR status line.

TRANSFERRING PIRs

TRANSFERRING PIRs by Diskette

In order to transfer PIRs from your laptop computer to a desktop computer for supervisor review and approval, use the following procedure:

1) Place a diskette in the diskette drive located on the right hand side of the laptop.

2) From the transferring menu of the Main screen, select "Download PIRs to diskette".

3) Move the highlight bar to the PIR you wish to transfer and press enter. A check mark appears to the left of the selected PIR. Repeat this process for each PIR you wish to transfer.

4) When you have selected the PIRs you wish to transfer, press F12.

5) The laptop will give you a message indicating it is working and the "Disk In Use" light will turn red.

6) When the working message leaves the screen, verify the PIRs you selected are no longer on the PIR status line and remove the diskette.

7) Insert the diskette in the diskette drive of the desktop computer.

8) From the transferring menu on the desktop computer select "Upload PIRs from diskette".

9) The desktop computer will display a "working" message while it retrieves the PIRs.

10) When the message leaves the screen, verify the PIRs you were transferring are now on the desktop computer's PIR Status line.

11) Remove the diskette from the desktop computer's diskette drive.

TRANSFERRING PIRs BY TELEPHONE (MODEM)

The laptop computer gives you the option of transferring PIRs over conventional telephone lines to the station computers for supervisor review and approval. To use this function follow the procedure outlined below:

1) Select "Mark PIRs & Transfer" from the transferring menu.

2) Move the highlight bar to the PIR(s) you wish to transfer and press enter. A checkmark should appear next to each PIR you wish to transfer.

3) When you have selected the PIR(s) you wish to transfer, press F12.

4) A status box appears indicating the processes taking place. When the message appears asking you to plug the phone into the laptop, remove the modular phone jack on the back of the laptop computer and press enter.

   NOTE: IF YOU CONNECT TO A PHONE ON A CENTREX SYSTEM YOU MUST DIAL THE PROPER NUMBER TO GET AN OUTSIDE LINE PRIOR TO PRESSING ENTER TO BEGIN TRANSMISSION.

   NOTE: IF A PROBLEM OCCURS WITH THE TELEPHONE TRANSFER, TURN OFF YOUR LAPTOP COMPUTER AND UNPLUG THE PHONE, THEN TURN THE COMPUTER BACK ON.

5) You will see the laptop move through several screens. DO NOT PRESS ANY KEYS WHILE IT IS PROCESSING.

6) When the report(s) is/are transferred, you will be returned to the summary screen and the report will no longer be on your screen.

7) Disconnect the phone from the laptop computer.

PRINTING PIRs

PRINTING PIRS FROM A LAPTOP COMPUTER

The laptop computer allows you to print both draft copies and final copies of PIRs. The draft print function is used to create hardcopy output which you can review prior to submitting a report for approval and by training officers to document the report writing skills of a probationer. Final PIRs will only be printed if you are following the Emergency operations procedure outlined in this manual. Both functions follow the same procedure.

1) Open the LEFT HAND compartment on the back of your laptop computer.

2) Plug the cable from the printer into the port labeled "PRT/FDD".

NOTE: The laptop is configured to print on the Hewlett Packard Laserjet II. If you are printing on the IBM Proprinter you must select Printer Setup from the Print menu. Move the highlight bar to "IBM Proprinter" and press enter.

3) From the Print menu of the Main screen select "Print Final PIR" or "Print Draft PIR".

4) Move the highlight bar to each PIR you wish to print and press enter. A check mark will appear to the left of each PIR selected.

5) Press F12 to begin the print process. The laptop will display a "working" message while it formats the PIRs for printing. It will then send the PIRs to the printer.

6) Disconnect printer cable from your laptop and close the compartment.

PRINTING PIRs FROM THE NETWORK

To print PIRs from a workstation on the station system, follow steps 3-6 of the above procedure.

TROUBLESHOOTING

The following is a list of possible problems which may occur on the laptop computer and their suggested resolution:

Situation: The previous officer did not log off and when you turn on the laptop you see the short logon screen.

Resolution: Contact a supervisor or kit room officer to locate an "Emergency Report Extractor Disk". Instructions for its use are contained in the Supervisor's Reference Guide.

Situation: When you turn on your laptop computer, you get the following message:

"MEMORY TEST 640 KB

WARNING: DATA IN HARD RAM WAS LOST>
YOU MUST FORMAT HARD RAM BEFORE USE.
PRESS ANY KEY TO CONTINUE."

Resolution: Contact any supervisor to have the problem corrected or return the laptop to the kit room and exchange it for another.

Situation: When you turn on the laptop computer you see the following message:

"NON-SYSTEM DISK OR DISK ERROR
REPLACE AND STRIKE ANY KEY WHEN READY"

Resolution: A diskette has been left in the laptop computers diskette drive. Remove the diskette and press any key.

Situation: You attempt to re-logon and you see the following warning message:

No match with either Officer
Hit any Key...

Resolution: First retry your password. If you continue to get the warning message, follow the section in this manual on obtaining an override password.

Situation: The cursor will not move and you have exhausted every way to resolve the problem.

Resolution: Press <Ctrl><Alt> and <Delete> simultaneously or turn the laptop off for a few second and turn it back on. The ARS system will restart and you will be presented with the re-logon screen.

NOTE: Data which had not been saved may be lost. Be sure to review the report you were working on.

ARS STATION SYSTEM PROCEDURES

FIRST TIME LOGON

1) PRESS THE SPACE BAR TO BRING UP THE LOGON FIELDS AT THE BOTTOM OF THE SCREEN.

2) TYPE IN YOUR SERIAL NUMBER AND PRESS ENTER.

3) TYPE IN ANY PASSWORD YOU WISH TO USE. THIS PASSWORD SHOULD BE 3-8 CHARACTERS AND WILL BECOME YOUR PERMANENT STATION SYSTEM PASSWORD.

SUBSEQUENT LOGONS

1) ENTER YOUR SERIAL NUMBER AND THE PASSWORD YOU ENTERED DURING YOUR FIRST TIME LOGON.

* IF YOU FORGET YOUR PASSWORD CONTACT A SUPERVISOR.

TRANSFERRING REPORTS

1) REPORTS WRITTEN ON A LAPTOP MAY BE UPLOADED FROM DISKETTE ON ANY DESKTOP COMPUTER.

2) REPORTS WRITTEN ON THE DESKTOP COMPUTERS ARE TRANSFERRED TO THE SUPERVISOR BY SELECTING THE "TRANSFER TO SUPERVISOR" FUNCTION FROM THE TRANSFERRING MENU.

KICKBACKS

IF YOU HAVE ANY "KICKBACK" REPORTS ON THE SYSTEM THEY WILL BE VISIBLE ON THE UNATTENDED DISPLAY. TO ACCESS THEM, LOGON THE DESKTOP AND USE THE "EDIT" FUNCTION.

KIT ROOM PROCEDURES

STORAGE

All laptop computers and related peripherals will be stored in the Divisional Kit Room. The ideal is to have the laptop computers stored plugged in to AC chargers. This will prevent memory loss, and charge the attached battery.

There will be ten (10) battery chargers in the kit room which hold three (3) batteries each for a total of thirty (30). They charge one battery at a time, taking approximately two hours each. There will be forty (40) additional batteries available, bringing the total to seventy (70) spare batteries. Batteries will be rotated through the charging cycle in the same manner as ROVER batteries to keep the maximum charge possible.

CHECKING IN AND OUT

Laptop computers, cases, and spare batteries will be issued at the beginning of a watch in the same manner as other equipment, such as shotguns and ROVERs. You will check out a same (including the DC adapter), a laptop computer with a battery attached, and a spare battery. Prior to leaving the station for the field, turn on your laptop to ensure that the logon screen appears properly, the memory was not lost, and the machine functions correctly.

IF there is any problem with the function of the computer, complete a repair request (provided in the kit room) listing the problem (s), attach the repair request to the laptop, turn it in to the kit room officer, and check out a functioning computer.

The kit room officer will be responsible for notifying a supervisor of the problem. If the supervisor cannot fix the problem, he/she will notify task force personnel for repairs.

The equipment will be checked in at end of watch, as other equipment.

ONLY ONE COMPUTER PER UNIT WILL BE ISSUED

ARSPP
GROUP TRAINING OULINE
TRAINERS OUTLINE
7-20-90

INSTRUCTORS SHOULD:

1. CONTINUE WITH INSTRUCTION UNLESS NOTIFIED BY A PROCTOR OR STUDENT TO SLOW OR STOP
2. USE THE APPLICATION PROVIDED- DON'T INVENT YOUR OWN AS YOU GO ALONG: TOO EASY TO MISS MATERIAL
3. USE THE IPAT METHOD. KEEP INTRO SHORT, TELLING WHAT YOU ARE GOING TO TELL THEM IN EACH MODULE. THEN DEMONSTRATE ONE FIELD AT A TIME, HAVE THEM DO IT BEFORE GOING TO THE NEXT FIELD. AT THE END OF EACH MODULE IS A SHORT APPLICATION AND VERBAL TEST.)

PROCTORS SHOULD:

1. CONFINE ALL CONVERSATION TO HELPING STUDENTS ON THE MATERIAL BEING COVERED
   - A. DON'T GET AHEAD OF THE CLASS. IF A STUDENT IS CATCHING ON QUICKLY, ENSURE THAT HE/SHE KNOWS THE MATERIAL AND ENLIST THEIR AID IN ASSISTING OTHER STUDENTS HAVING PROBLEMS
   - B. DON'T ANSWER QUESTIONS ON MATERIAL NOT SPECIFICALLY COVERED IN CLASS; BRING IT TO THE INSTRUCTOR'S ATTENTION SO THE ENTIRE CLASS CAN BENEFIT

<u>INTRODUCTION</u> (30 MINUTES)

I. <u>INTRODUCE YOURSELF AND OTHER INSTRUSTORS/PROCTORS</u>

- A. WRITES NAME ON BOARD
- B. BACKGROUND OF EACH

II. <u>RULES/MISC INFO</u>

- A. HOURS: OFFICERS
  SUPERVISORS
- B. BREAKS: TRY FOR 5-10 MINUTES PER HOUR, AS TIME PERMITS
- C. LOCATION OF: RESTROOMS
  FOOD/DRINKS
- D. FOOD/DRINK OK IN ROOM IF: EVERYONE PICKS UP AFTER THEMSELVES &
  YOU DONT SPILL IN MACHINE(NO DRAIN)
- E. QUESTIONS
  1. ENCOURAGE AT ANY TIME
  2. IF PROBLEM OF ONLY ONE AND HOLDING BACK GROUP, HANDLE ON BREAK
  3. IF YOU HAVE EXTRA TIME OR UNDERSTAND SOMETHING YOUR NEIGHBOR DOESN'T, HELP THOSE HAVING MORE TROUBLE THAN YOU ARE

III. <u>INTRODUCTION OF THE ARSPP</u>

- A. TAPE, IF AVAILABLE
- B. DESCRIBE PROGRAM IF NOT
  1. HISTORY
  2. BRIEF DESCRIPTION OF FIELD USE
- C. WHAT DOES THIS MEAN TO YOU

1. REDUCED PAPERWORK
2. SIMPLIFIED REPORT-WRITING
3. FOUNDATION OF FUTURE SYSTEMS RESULTING IN:
   a. INCREASED OFFICER SAFETY
   b. INCREASED INFO AVAILABLE WHEN YOU NEED IT
4. A MORE EFFECTIVE DEPT. AND MORE PEOPLE GOING TO JAIL

D. DESCRIPTION OF PILOT PROJECT
   1. PURPOSE
      a. TO DETERMINE IF THE USE OF LAPTOP COMPUTERS WILL PROVIDE SUFFICIENT OVERALL BENEFITS TO WARRENT DEPARTMENT-WIDE IMPLEMENTATION
   2. DESCRIPTION OF PILOT PROJECT
      a. HOLLYWOOD AND WILSHIRE TEST DIVS
         1) HWD WILL USE COMPUTERS, WILSHIRE EXISTING PAPER SYSTEM
      b. COMPARARATIVE ANALYSIS
         1) CONDUCTED BY CAL STATE FULLERTON TO ENSURE UNBIASED STUDY
         2) WILL EXAMINE:
            a) MORALE
            b) TIME REQUIRED BY EACH REPORT-WRITING STEP
            c) QUALITY OF REPORTS
            d) DATA INPUT ERROR RATE
            e) RELIABILITY OF EQUIPMENT
            f) EQUIPMENT AND TRAINING COSTS
      c. FINAL REPORT AND RECOMMENDATIONS
   3. SYSTEM DEVELOPED
      a. USER FREINDLY
      b. EQUIPMENT SELECTION CRITERIA

IV. <u>INTRODUCE COURSE</u>

A. YOU ARE HERE TO LEARN HOW TO USE THE LAPTOP AND STATION COMPUTER EQUIPMENT TO TAKE AND PROCESS PIRS.
B. EXPECTATIONS OF YOU:
   1. PARTICIPATE FULLY IN ALL EXERCISES AND TESTS
   2. DEMONSTRATE ABILITY BY:
      a. PASSING A WRITTEN TEST
      b. TAKING A REPORT AND PROCESSING IT USING THE ARS EQUIPMENT
C. TYPING ABILITY NOT A FACTOR IN SUCCESS
   1. EXPERIENCE OF OTHER AGENCIES
   2. HUNT-AND-PECKERS SOME OF BEST
D. TEACHING ONLY BASIC SYSTEM- REFER TO MANUAL FOR ADDITIONAL INFO

V. <u>WHEN TO USE/ NOT TO USE</u>

A. IF SWAT CALL-UP - SIGNED REPORT REQUIRED

<u>LAPTOP SYSTEM</u> (30 MINUTES)

I. <u>DESCRIBE COMPUTER</u>

A. ON/OFF SWITCH
   1. HOLD SWITCH IN FOR ABOUT 1 SECOND UNTIL SCREEN GOES LIGHT FOR ON OR DARK FOR OFF
   2. IF CASE CLOSED WITHOU TURNING OFF, WILL BEEP
B. POWER
   1. BATTERY
      a. LOCATED AT LEFT REAR OF COMPUTER

b. 2 HOURS EXPECTED LIFE BETWEEN CHARGES
c. WILL CHARGE WHILE PLUGGED INTO AUTO ADAPTER, WHETHER BEING USED OR NOT
d. TO REMOVE FROM COMPUTER
    1) PULL BATTERY RELEASE LEVEL TOWARD REAR OF COMPUTER
    2) AT THE SAME TIME PRESS AND SLIDE THE PACK TOWARD THE REAR
e. TO REINSERT, SLIDE PACK FORWARD UNTIL IT SNAPS INTO PLACE
f. BATTERY CHARGE INDICATOR
    1) SMALL SLIDE INDICATOR ON BOTTOM OF BATTERY
        a) DOESN'T EFFECT THE BATTERY-REMINDER ONLY
        b) SLIDE SHOWING RED INDICATES BATTERY IS SPENT
        c) SUGGESTION: SLIDE OFF RED WHEN ISSUED FRESH BATTERIES AND TO RED WHEN TAKING SPENT BATTERY OFF COMPUTER TO ENABLE TO TELL DIFFERENCE LATER
    2) GREEN: FULLY CHARGED
    3) BLINKING RED: BATTERY IS LOW
g. BATTERY ALARM SOUNDS WHEN BATTERY IS LOW

2. AUTO ADAPTER
    a. ISSUED WITH EACH LAPTOP-STORED IN CASE
    b. PLUGS INTO THE VEH CIGARETTE LIGHTER AND THE 'DC IN 12V' RECEPTICLE ON RIGHT SIDE OF LAPTOP
        1) 'DC IN' LIGHT ON COMPUTER GLOWS RED IF RECEIVING POWER
            a) IF NOT, CIGARETTE LIGHTER MAY NOT BE WORKING
    c. INTENDED AS:
        1) BACKUP PWER SUPPLY IF RUN OUT OF BATTERIES
        2) WAY TO CONCERVE BATTERY POWER IF USING COMPUTER IN VEH
            a) NOT REQUIRED

C. SCREEN
    1. ADJUSTMENT KNOBS ON RIGHT SIDE OF COMPUTER
    2. BACK-LIGHTING: CONTROLLED BY REAR KNOB
    3. CONTRAST: CONTROLLED BY FRONT KNOB

D. KEYBOARD
    1. USE LIKE A TYPEWRITER
        a. PRESS KEYS AND RELEASE IMMEDIATELY
            1) HOLDING A KEY DOWN IS THE SAME AS PRESSING IT A NUMBER OF TIMES, DEPENDING ON THE LENGTH OF TIME YOU HOLD IT DOWN

II. <u>LOGON</u>

A. TURN ON THE COMPUTER

B. INITIAL LOGON
    1. HELP WINDOW
        a. PRESS <F1> ANYWHERE IN PROGRAM (DO IT AND HAVE OFCR READ IT ALOUD)
        b. ADDITIONAL TOPICS
            1) <F1> AGAIN WHILE IN A HELP WINDOW (<F1> TWICE)
        c. <ESC> TO LEAVE
    2. HELP LINES
        a. ALWAYS VISIBLE
        b. EXPLAINS EACH INDIVIDUAL FIELD
        c. LISTS MAIN FUNCTION KEYS (SUCH AS <F1> FOR HELP)
    3. FIELDS
        a. DATE & TIME
            1) DEFAULTS TO SYSTEM CLOCK
            2) VERIFY AND ACCEPT, OR CHANGE
            3) STAYS SAME UNTIL LEAVE THE SCREEN
            4) ALWAYS PRESS <ENTER> WHEN YOU FINISH A FIELD

b. DIVISION OF ASSIGNMENT
1) VERIFIED ABBREVIATION PICKLIST
a) ABBREVIATION OF CHOICE MANUALLY ENTERED OR PRESS <F2>
i. ENTER TWO CHARACTER DIVISION CODE
ii. IF CORRECT, ABBREVIATION AND/OR TEXT OF CHOICE DISPLAYED
iii. IF INCORRECT, THE PICKLIST APPEARS AND A CHOICE IS MADE FROM IT
b) PICKLIST MAY BE USED INSTEAD OF MANUAL ENTRY
i. PRESS THE <F2> KEY
c) EXIT
i. <ENTER>
i) ACCEPTS CHOICE
ii) CURSOR GOES TO NEXT DATA-ENTRY FIELD
ii. <ESC>
i) DOES NOT ACCEPT ANY DATA
ii) PREVIOUS PICKLIST LEVEL APPEARS (IF THERE WAS ONE) OR PICKLISTS DISAPPEAR AND CURSOR RETURNS TO THE SAME FIELD
2) CREATES DEFAULT INPUT FOR OTHER FIELDS LATER IN REPORT
c. UNIT
1) FIRST TWO NUMBERS ARE AUTOMATIC FROM DIV ENTERED ABOVE
d. SERIAL NUMBER
1) MUST BE 5 CHARACTERS
2) USED FOR REPORT IDENTIFICATION
e. CURSOR MOVEMENT (USE LAST NAME FIELD)
1) <ENTER> ACCEPTS INFO ENTERED INTO ONE FIELD AND MOVES ON TO THE NEXT
2) TO GO BACK ONE FIELD, USE THE REVERSE TAB (PRESS AND HOLD <SHIFT>, THEN PRESS <TAB>)
3) CURSOR KEYS (ARROWS)
a) UP/DOWN: VERTICLE MOVEMENT ON SCREEN
b) LEFT/RIGHT: MOVEMENT WITHIN A FIELD ONLY
4) <HOME> TAKES CURSOR TO BEGINNING OF A FIELD
5) <END> TAKES CURSOR TO END OF A FIELD
6) TO ERASE CHARACTERS:
a) BACK SPACE <BkSp>: MOVES CURSOR LEFT AND ERASES CHARACTERS TO THE LEFT OF IT
b) DELETE <Del>: ERASES CHARACTERS UNDER THE CURSOR AND MOVES THE REST OF THE LINE TO THE LEFT TO FILL THE VACATED SPOT

f. RANK
1) USE STANDARD ABBREVIATIONS
g. PASSWORD (<u>FOR TRAING ONLY, STUDENTS MUST USE 'LAPTOP'</u>)
1) OFFICER'S OWN SELECTION
2) IMPORTANT NOT TO TELL ANYONE
a) WILL ID YOU AS WRITER IN COURT
3) RECORD MAINTAINED ON STATION EQUIPMENT AND VERIFIED WHEN A REPORT IS TRANSFERRED
4) ENTERED TWICE TO VERIFY ACCURACY
4. REQUIRED FIELDS
a. DATE, TIME, DIVISION, UNIT
b. ALL PRIMARY OFFICER FIELDS EXCEPT MI
c. IF DATA IS ENTERED IN ANY OF THE SECONDARY OFFICER FIELDS, ALL SECONDARY OFFICER FIELDS EXCEPT MI ARE REQUIRED
5. IF IMPROPER LOGON

a. ERROR MESSAGE
b. CURSOR PLACED AT FIRST FIELD WITH ERROR
6. <F12> TO ACCEPT INFO ENTERED AND EXIT SCREEN
a. SAME FOR ALL DATA ENTRY SCREENS

C. QUIT FOR NOW
1. PRESS AND HOLD <ALT>, THEN PRESS <F12>
2. USED ANY TIME GOING TO QUIT USING THE COMPUTER AFTER LOGGED ON, EXCEPT WHEN YOU ARE GOING TO TURN THE COMPUTER BACK IN

D. RELOGON WINDOW
1. REQUIRES ONLY PASSWORD FOR REENTRY
a. MUST BE SAME AS ORIGINAL LOGON
2. IF PASSWORD IS FORGOTTEN, SEE YOUR MANUAL
3. IF TWO OFFICERS, EITHER PASSWORD WILL WORK

E. LOG OFF
1. USE ONLY WHEN FINISHED FOR THE DAY
2. ALL REPORTS MUST HAVE BEEN TRANSFERRED
3. PRESENTS OFFICER WITH CONFIRMATION WINDOW

F. OVERRIDE PASSWORD
1. ALLOWS AN OFFICER TO GAIN ACCESS TO THE LAPTOP IF HE/SHE:
a. FORGOT HIS/HER PASSWORD
b. ENTERED THE WRONG PASSWORD WHEN HE/SHE LOGGED ON
2. SEE EMERGENCY PROCEDURES

WRITING A REPORT

I. MAIN SCREEN (30 MINUTES THRU CRIME SCREEN)

A. HELP LINE ON TOP
B. MAIN MENUS FOR ALL MAJOR FUNCTIONS
C. 'CREATE' TO START A NEW REPORT
D. 'EDIT PIR' TO CONTINUE OR CHANGE A REPORT ALREADY STARTED
1. TO SELECT A REPORT FOR EDIT:
a. SELECT 'REPORTING' ON THE MAIN SCREEN
b. SELECT 'EDIT PIR' ON THE SUB-WINDOW
c. HIGHLITE THE DESIRED REPORT USING CURSOR KEYS AND PRESS <ENTER>
2. ALL FUNCTIONS DESCRIBED UNDER CREATE WORK EXACTLY THE SAME IN EDIT
E. USE CURSOR KEYS TO HIGHLITE 'REPORTING' AND PRESS <ENTER>
F. USE CURSOR KEYS TO HIGHLITE 'CREATE PIR' AND PRESS <ENTER>

II. SUMMARY SCREEN

A. INTRODUCTION
B. HEADER
1. VERSION NUMBER OF PROGRAM
2. TYPE OF FORM ON THE COMPUTER (PIR ONLY)
3. OFFICERS SIGNED ONTO THE LAPTOP
4. CURRENT DATE AND TIME
C. FOOTER
1. HELP LINE
a. INFORMATION ABOUT THE FIELD ON WHICH THE CURSOR RESTS
ALWAYS LOOK HERE FIRST

2. FUNCTION KEYS
   a. DESCRIBES THE FUNCTIONALITY OF THE 'F' KEYS ON THE TOP ROW OF THE KEYBOARD
3. INSERT/OVER
   a. PRESSING THE <INS> KEY SWITCHES BETWEEN INSERT AND OVER
   b. 'INSERT' PLACES THE CHARACTER TYPED DIRECTLY ON THE LOCATION OF THE CURSOR AND MOVES EVERYTHING OVER ONE SPACE
   c. 'OVER' TYPES OVER EXISTING TEXT

D. MENU SELECTIONS ON LEFT, REPORT SUMMARY INFO ON RIGHT
E. HIGHLITE 'C CRIME' WITH CURSOR AND PRESS <ENTER>

III. <u>MISC INFO</u>

A. ENTER ONLY KNOWN INFORMATION, NOT 'UNK' OR 'NCS' OR A '-'
B. NO SHORT FORM REPORTS- LONG ONLY

IV. <u>CRIME SCREEN</u>

A. INTRODUCTION
B. FOOTER AND HEADER SAME AS SUMMARY SCREEN
C. CRIME 1-4
   1. ONE RQD- REST OPTIONAL
   2. FORCED, 2-LEVEL PICKLIST
      a. PRESSING ANY KEY WHILE IN THAT FIELD BRINGS UP THE PICKLIST OR PRESS <F2>
      b. EXIT
         1) <ENTER>
            a) ACCEPTS CHOICE
            b) CURSOR GOES TO NEXT DATA-ENTRY FIELD
         2) <ESC>
            a) DOES NOT ACCEPT ANY DATA
            b) PREVIOUS PICKLIST LEVEL APPEARS IF THERE WAS ONE. IF NOT, PICKLIST DISAPPEARS AND CURSOR RETURNS TO THE SAME FIELD
      c. 'OTHER/' CHOICES
         1) ALLOWS TEXT INPUT IMMEDIATELY AFTER TH '/'
      d. >> TO THE RIGHT OF PICKLIST CHOICES INDICATES ADDITIONAL PICKLIST LEVEL

D. LOCATION
   1. WINDOW
      a. WINDOWS
         1) IDENTIFICATION
            a) MEMORY
         2) ENTRY & RE-ENTRY
            a) ENTER "Y"
         3) EXIT
            a) <F12>
               i. ACCEPTS INFORMATION IN WINDOW
            b) <ESC>
               i. INFORMATION IN WINDOW IS NOT ACCEPTED
   2. "Y" IN EITHER 'SAME AS' FIELD, INFO COPIED TO VICT #1 SCREEN
   3. TYPE
      a. VERIFIED ABBREVIATION PICKLIST (SEE INITIAL LOGON-DIV OF ASSINGNMENT)
      b. ENTER STREET TYPE ABBREVIATION
   4. APT
      a. APPEARS ONLY IF 'NUMBER' ENTERED

5. APT,2nd STREET, & QUADRANT REQUIRED IF NO ST.#
6. CITY RQD ONLY IF OTHER THAN LA
7. IF ALLEY, ENTER QUADRANT INFO UNDER LOCATION & TYPE "ALLEY" UNDER PREMISES

E. RD
1. VALIDATED BUT NO PICKLIST
2. IF DIV OF ASSIGN, ENTER LAST 2 DIGITS; IF OTHER, BACKSPACE AND RETYPE

F. DATE/TIME OCCURRED
1. 1st DATE/TIME MUST BE BEFORE 2nd DATE/TIME
2. SECOND FIELDS RQD ONLY IF RANGE

G. DATE/TIME REPORTED
1. MUST BE AFTER DATE/TIME OCCURRED

H. PREMISES,ENTRY/EXIT PT, & ENTRY METHOD
1. FORCED, 2-LEVEL PICKLIST (SEE CRIME)

I. INST/TOOL
1. TEXT ENTRY

J. INVEST DIV
1.DEFAULTS TO DIVISION OF ASSINGNMENT, AS PER THE OFCR'S LOGON
2. VERIFIED ABBREVIATION PICKLIST

K. DR NUMBER
1. USED ONLY IF RPT TO BE GIVEN THIS DR #

L. EXIT
1. <F12> TO SAVE
2. <ESC> TO EXIT WITHOUT SAVING

M. TEST

V. <u>VICTIM</u> (30 MINUTES)

A. HIGHLITE VICTIM OR ENTER 'V' ON SUMMARY SCREEN

B. NAME-LAST, FIRST & MIDDLE
1. SCROLLING TEXT (MORE SPACE AVAILABLE THAN SHOWS ON SCREEN)

C. BUSINESS?
1. IF Y, ALL RES & PERSONAL FIELDS AND THE EXISTING BUS NAME FIELDS DISAPPEAR, AND THE LAST NAME FIELD CHANGES TO BUS. NAME

D. NAME-SUFFIX
1. NOT LABELED
2. VERIFIED ABBREVIATION PICKLIST

E. SEX
1. ALLOWS ENTRY OF ONLY VALID CODE (M OR F)

F. DESCENT
1. ENTRY OF SINGLE CHARACTER CODE
2. VALIDATED AGAINST PICKLIST

G. DOB
1. ACCEPTS ONLY VALID DATES
2. RQD IF AGE NOT ENTERED

H. AGE
1. CALCULATED BY DOB, IF ENTERED
2. RQD IF DOB NOT ENTERED

I. ADDRESS-RES.& BUS.
1. NUMBER
a. IF INCLUDES FRACTION, LEAVE 1 SPACE AND USE '/' (1234 1/2)
2. STREET DIRECTION
a. ALLOWS ENTRY OF ONLY VALID CODE
3. STREET NAME

a. SCROLLING FIELD
4. STREET TYPE & STATE
a. ABREVIATION VALIDATED AGAINST PICKLIST
5. COUNTRY
a. IF OTHER THAN USA, DELETE STATE INFORMATION
6. IF TRANSCIENT, INDICATE SAME IN RES STREET NAME FIELD
7. BUSINESS NAME
a. OPTIONAL- NAME OF BUSINESS WHERE VICT WORKS

J. PHONE
1. AREA CODE RQD ONLY IF OTHER THAN THE AREA CODE USED BY DIVISION WRITING REPORT

K. VICTIM'S VEHICLE
1. ENTRY AND RE-ENTRY
a. PRESS <Y> AND <ENTER>
2. YEAR
a. 1st DATE COPIES TO THE SECOND
b. 2nd DATE CAN BE CHANGED IF RANGE
3. MAKE
a. VERIFIED ABBREVIATION PICKLIST
b. ENTER FIRST 3 LETTERS OF VEH MAKE
1) IF WRONG OR ABBREV USED BY 2 OR MORE VEH, PICKLIST APPEARS
4. MODEL
a. TEXT ENTRY- NO PICKLIST
5. TYPE, COLORS, & ST.
a. ABBREVIATION VERIFIED AGAINST PICKLIST
b. IF ORIGIN OF PLATE OTHER THAN USA OR IF US TERRITORY SELECT "XX UNKNOWN/OTHER" AND DESCRIBE IN "ADD'L DESC" FIELD
6. LICENSE
a. IF PARTIAL PLATE, FILL IN WITH "?" MARKS
7. VIN/ADD'L
a. SCROLLING TEXT ENTRY
b. ENTER VIN IF NO LICENSE #
c. ENTER ANY ADDITIONAL INFO NOT FULLY COVERED ABOVE
8. ADDITIONAL VEHICLES
a. PAGE DOWN
9. EXIT VEH WINDOW
a. <F12> TO SAVE
b. <ESC> TO EXIT WITHOUT SAVING

L. INDEMNIFICATION GIVEN?
1. IF 'Y', ADDL FIELDS APPEAR ON SCREEN
2. INFO CAN BE CHANGED IF NOT CORRECT
3. PERSON
a. PERSON NOTIFIED
b. SCROLLING
4. LOCATION
a. LOCATION WHERE INDEMNIFICATION WAS GIVEN
b. SCROLLING
5. DATE AND TIME
a. WHEN WAS INFO GIVEN?
b. DEFAULTS TO DATE/TIME FIELD WAS ENTERED

M. DR NUMBER
1. USED ONLY IF MORE THAN ONE VICT AND EACH HAS OWN DR#

N. ADDITIONAL VICTIMS
1. PAGE DOWN

O. EXIT

1. <F12> TO SAVE
2. <ESC> TO EXIT WITHOUT SAVING

P. TEST

(15 MINUTE BREAK)

VI. SUSPECT (20 MINUTES)

A. HIGHLITE VICTIM OR ENTER 'V' ON SUMMARY SCREEN
B. SEX, DESCENT, HAIR, & EYES
   1. ABBREVIATION VERIFIED AGAINST PICKLIST
C. HT, WT, & AGE
   1. ACCEPTS ONLY NUMBERS
   2. SECOND FIELD USED ONLY IF RANGE
D. AGE
   1. COMPUTED AUTOMATICALLY IF VALID DATE ENTERED IN DOB FIELD OF SUSP IDENTIFIED/ARRESTED FIELD
E. CLOTHING
   1. SCROLLING TEXT FIELD
F. PHYSICAL DESCRIPTORS #1-4
   1. FORCED MULTI-LEVEL PICKLIST
G. PHYSICAL DESCRIPTION NARRATIVE
   1. USED TO PROVIDE ADDITIONAL INFORMATION NOT INCLUDED IN THE PICKLISTS
   2. SCROLLING TEXT FIELD
H. WEAPON
   1. FORCED CHOICE PICKLIST
   2. 2nd WEAPON
      a. LIST PRIMARY USING PICKLIST
      b. ENTER INFORMATION ON 2nd WEAPON IN "ADD'L WEAPON DESC" FIELD
I. ADD'L WEAPON DESC
   1. USED TO PROVIDE ADDITIONAL INFORMATION NOT INCLUDED IN THE PICKLIST
   2. SCROLLING TEXT FIELD
J. SUSPECT IDENTIFIED/ARRESTED
   1. ENTRY AND RE-ENTRY
      a. PRESS <Y> AND <ENTER>
   2. NAME-SEE VICT
   4. AKA
      a. INCLUDE ALIAS AND NICKNAMES
   5. ADDRESSES-SEE VICT
   8. DOB
      a. PARTIAL ENTRY OK
      b. IF FULL DATE ENTERED, AGE CALCULATED AND INSERTED IN AGE FIELD ON FULL SCREEN
   12. EXIT
      a. <F12> TO SAVE
      b. <ESC> TO EXIT WITHOUT SAVING
K. ADD'L INFO
   1. USED TO PROVIDE INFORMATION NOT INCLUDED IN OTHER FIELDS
L. ADDITIONAL SUSPECTS
   1. PAGE DOWN
M. EXIT
   1. <F12> TO SAVE
   2. <ESC> TO EXIT WITHOUT SAVING

VII. <u>SUSPECT VEHICLE</u> (15 MINUTES)

A. HIGHLITE SUSPECT VEHICLE OR ENTER 'T'(FOR TRANSPORTATION) ON SUMMARY SCREEN
B. VEHICLE LICENSE
   1. IF PARTIAL PLATE, FILL IN WITH "?" MARKS
C. BODY & WINDOW FEATURES AND LOCATIONS
   1. FORCED MULTI-LEVEL PICKLIST
D. QUESTION BLOCK
   1. Y/N
   2. FROM CENTER SECTION OF SUSP VEH BLOCK ON PIR
E. ADD'L DESC
   1. USED TO PROVIDE INFORMATION NOT INCLUDED IN OTHER FIELDS
F. ADDITIONAL SUSPECT VEHS
   1. PAGE DOWN
G. EXIT
   1. <F12> TO SAVE
   2. <ESC> TO EXIT WITHOUT SAVING
H. TEST

VIII. <u>INVOLVED PERSONS</u> (20 MINUTES)

A. HIGHLITE INVOLVED PERSONS OR ENTER 'I' ON THE SUMMARY SCREEN
B. TYPE OF INVOLVEMENT
   1. SPACE FOR 3 ENTRIES
   2. ABBREVIATION VERIFIED AGAINST PICKLIST
   3. IF <P>(PARENT) SELECTED, THE FIELD 'PARENT OF__________' FIELD APPEARS ON THE NEXT LINE
C. PARENT OF
   1. APPEARS IN RESPONSE TO P-PARENT ENTRY IN TYPE OF INVOLVEMENT FIELDS
   2. USE CODE OF CORRESPONDING PERSON (i.e. V1) OR SELECTION FROM PICKLIST <F2>
      a. SPECIAL PICKLIST LISTS ALL PERSONS ENTERED SO FAR
D. NAME-SEE VICT
E. ACTION WINDOW <F10>
   1. SAME FOR VICT,VICT VEH, SUSP, & SUSP VEH
   2. COPY
      a) ALLOWS COPYING OF INFORMATION ON ADDRESSES ENTERED PREVIOUSLY FOR ANY VICTIM, INVOLVED PERSON, OR SUSPECT
         1) BOTH RESIDENCE AND BUSINESS
         2) RESIDENCE ONLY
         3) BUSINESS ONLY
      b) WILL COPY OVER ANY EXISTING INFORMATION
      c) PRESS <F10>
      d) HIGHLITE THE APPROPRIATE SELECTION USING THE DOWN ARROW KEY AND PRESS <ENTER>
      e) A LIST OF ALL PEOPLE ENTERED SO FAR WILL APPEAR; USING THE DOWN ARROW KEY, HIGHLITE THE PERSON FROM WHOM THE ADDRESS INFORMATION IS TO BE COPIED AND PRESS <ENTER>
      f) VERIFY THE PROPER INFORMATION WAS COPIED AND MAKE ANY DESIRED CHANGES
   3. DELETE
      a) DELETES ALL INFO ENTERED IN THE SCREEN WHERE THE <F10> KEY

WAS PRESSED
b) MOVE TO THE SCREEN TO BE DELETED
c) PRESS <F10>
d) HIGHLITE THE 'DELETE' COMMAND USING THE DOWN ARROW KEY AND PRESS <ENTER>
e) HIGHLITE 'YES' IN THE CONFIRMATION WINDOW USING THE DOWN ARROW KEY
f) THE RECORD IS DELETED AND ALL SUBSEQUENT RECORDS ARE RENUMBERED

4. MOVE
a) ALLOWS RENUMBERING OF THE SEQUENCE, SUCH AS CHANGING IP #3 TO IP #1 (ALL RECORDS FOLLOWING IT ARE ALSO RENUMBERED AS NECESSARY BY THE COMPUTER)
b) MOVE TO THE RECORD TO BE MOVED
c) PRESS <F10>
d) HIGHLITE THE 'MOVE' COMMAND USING THE DOWN ARROW KEY AND PRESS <ENTER>
e) HIGHLITE THE LOCATION TO WHERE THE RECORD IS TO BE MOVED AND PRESS <ENTER>
1) MOVING A RECORD UP THE LIST PLACES IT BEFORE THE RECORD HIGHLITED
2) MOVING THE RECORD DOWN PLACES IT AFTER THE RECORD HIGHLITED
f) VERIFY THE MOVE WAS MADE CORRECTLY BY PAGING UP OR DOWM

F. ADDITIONAL INVOLVED PERSONS
1. PAGE DOWN

G. EXIT
1. <F12> TO SAVE
2. <ESC> TO EXIT WITHOUT SAVING

H. TEST

IX. <u>PROPERTY</u> (45 MINUTES)

A. HIGHLITE PROPERTY OR ENTER 'P' ON THE SUMMARY SCREEN
B. DATA-ENTRY POSSIBLE ONLY IN AREAS NOT BOXED-IN
C. EACH DATA-ENTRY SCREEN REPRESENTS ONE ITEM
D. VICTIM NO.
1. NUMBERS ONLY
2. CAN ENTER ANY NUMBER, EVEN IF CORRESPONDING VICT INFO NOT YET ENTERED
3. IF VICT NUMBER ENTERED FOR WHOM THERE IS NO VICT INFO, A WARNING MESSAGE WILL APPEAR

E. DISPOSITION
1. TYPE (i.e. TAKEN, RECOVERED, DAMAGED)
2. ACCEPTS ONLY VALID ONE-LETTER ABBREVIATIONS, VALIDATED AGAINST A PICKLIST
3. RECOVERED ITEMS
a. WHEN R-RECOVERED IS SELECTED, A WINDOW APPEARS LISTING ALL TAKEN PROPERTY ENTERED TO THAT TIME
b. HIGHLITE THE ITEM RECOVERED AND PRESS <ENTER>
c. THE ITEM SELECTED WILL NOW SHOW ON THE SCREEN AS RECOVERED
1) PRESS <PGDN> TO ACCEPT AS IS
2) FOR PARTIAL RECOVERIES, MAKE WHATEVER CHANGES ARE NECESSARY AND PRESS <ENTER>

F. #
1. ITEM NUMBER (BY VICT)
2. SEQUENTIAL NUMBER AUTOMATIC; NOT CHANGABLE BY OFFICER

G. QUAN
   1. QUANTITY
   2. NO PLACE-HOLDER 0s RQD
H. ARTICLE, SN/OTHER, BRAND, MODEL, MISC
   1. SCROLLING FIELDS
I. SN/OTHER
   1. ANY MARKING THAT MAKES IT IDENTIFIABLE
   2. INCLUDE ANY OWNER APPLIED ID
J. VALUE
   1. DECIMAL NOT REQUIRED; IF NO DECIMAL ENTERED, IT IS AUTOMATICALLY INSERTED AFTER LAST DIGIT
   2. IF VALUE UNKNOWN, LEAVE BLANK AND TYPE "UNK VALUE" IN "MISC" FIELD
K. TOTALS BOX
   1. PROVIDES RUNNING TOTALS BY VICTIM AND OVERALL
   2. VICTIM FIGURES CHANGE WITH VICTIM NUMBER, BUT TOTALS REMAIN ON SCREEN
   3. USED TO AUTOMATICALLY INSERT THE AMOUNTS STOLEN/LOST, RECOVERED, & DAMAGED ON THE FINAL REPORT
L. PROPERTY SUMMARY BOX
   1. PROVIDES A RUNNING INDEX OF PROPERTY ITEMS ENTERED TO THAT POINT.
   2. INDICATES WHICH PROPERTY ITEM IS BEING DISPLAYED IN THE DATA-ENTRY AREA
   3. DISPLAYS VICTIM NUMBER, ITEM NUMBER, ARTICLE, AND BRAND-TRUNCATED
   4. DISPLAYS A MESSAGE WHEN WORKING ON A NEW ITEM
M. ACTION WINDOW
   1. COPY COMMANDS
      a. COPIES ARTICLE THROUGH VALUE ON PREVIOUSLY ENTERED PROPERTY ITEMS TO THE CURRENT SCREEN;DOES NOT COPY VICTIM NO., DISPOSITION, OR #.
      b. MUST BE ON CLEAR SCREEN- WILL WRITE OVER EXISTING INFO
      c. SELECT COPY
      d. HIGHLITE THE ITEM YOU WANT COPIED
      e. PRESS <ENTER>
      f. THE HIGHLITER STAYS ON NEW ITEM, WHICH STAYS ON SCREEN UNTIL <PGDN>
   2. DELETION OF
      a.DELETES ALL INFO ENTERED ON THE SCREEN WHERE DELETE WAS SELECTED
   3. MOVE
      a. RENUMBERS THE SEQUENCE OF ITEMS ALREADY ENTERED, SUCH AS CHANGING ITEM #3 TO ITEM #1 (ALL RECORDS FOLLOWING IT ARE ALSO RENUMBERED AS NECESSARY BY THE COMPUTER)
      b. THE ITEM TO BE MOVED MUST BE ON THE SCREEN
      c. SELECT MOVE
      d. HIGHLITE THE LOCATION WHERE THE ITEM IS TO MOVE TO
      e. PRESS <ENTER>
      f. THE ITEM THAT WAS IN THE LOCATION WHERE THE ITEM WAS MOVED-TO WILL MOVE TOWARD THE LOCATION WHERE THE ITEM WAS MOVED FROM.
N. ADDITIONAL ITEMS OF EVIDENCE TO BE ENTERED
   1. PAGE DOWN
O. RETURN TO PREVIOUSLY ENTERED ITEM
   1. PAGE UP
P. EXIT
   1. <F12> TO SAVE

2. <ESC> TO EXIT WITHOUT SAVING

Q. TEST

(LUNCH)

X. METHOD OF OPERATION (10 MINUTES)

A. HIGHLITE INVOLVED PERSONS OR ENTER 'I' ON THE SUMMARY SCREEN
B. M.O. 1-3
   1. ONE RQD- REST OPTIONAL
   2. FORCED, 2-LEVEL PICKLIST
C. M.O. NARRATIVE
   1. OPEN TEXT ENTRY
   2. INPUT INFORMATION NOT INCLUDED IN THE ABOVE PICKLISTS OR TO EXPAND ON PICKLIST ENTRIES
   3. WORD WRAPS AUTOMATICALLY
D. EXIT
   1. <F12> TO SAVE
   2. <ESC> TO EXIT WITHOUT SAVING
E. TEST

XI. EVIDENCE (10 MINUTES)

A. HIGHLITE EVIDENCE OR ENTER 'E' ON THE SUMMARY SCREEN
B. DATA-ENTRY POSSIBLE ONLY IN AREAS NOT BOXED-IN
C. EACH DATA-ENTRY SCREEN REPRESENTS ONE ITEM
D. NO LIMIT ON NUMBER OF ITEMS THAT CAN BE ENTERED
E. ITEM NUMBER
   1. SEQUENTIAL NUMBER AUTOMATICALLY ASSIGNED BY COMPUTER; NOT CHANGABLE BY OFFICER
F. TYPE
   1. EVIDENCE TYPE (i.e. NARCOTICS, CURRENCY, FIREARMS, OR OTHER)
   2. ABBREVIATION VALIDATED AGAINST PICKLIST
   3. ALL REMAINING DATA-ENTRY FIELDS CHANGE WITH THE TYPE ENTERED
   4. IF TYPE CHANGED AFTER DATA ENTERED, THE FIELD TYPES WILL ALSO CHANGE AND THE DATA ENTERED WILL BE IN THE WRONG PLACE(S)
   5. 10.10 GIVEN?
      a. DEFAULTS TO N
      b. IF CHANGED TO Y, STAYS Y FOR ALL SUBSEQUENT ITEMS UNTIL CHANGED AGAIN
   6. LOCATION EVIDENCE BOOKED
      a. DIVISIONAL NUMBER VERIFIED AGAINST PICKLIST
      b. DATA ENTERED STAYS IN FIELD FOR ALL SUBSEQUENT ITEMS UNTIL CHANGED
   7. PRELIMINAY DRUG TEST?
      a. DEFAULTS TO N
      b. ANSWER STAYS IN FIELD FOR ALL SUBSEQUENT NARCOTICS ITEMS UNTIL CHANGED
G. EVIDENCE SUMMARY BOX
   1. PROVIDES A RUNNING INDEX OF EVIDENCE ITEMS ENTERED TO THAT POINT.
   2. INDICATES WHICH EVIDENCE ITEM IS BEING DISPLAYED IN THE DATA-ENTRY AREA

3. DISPLAYS VARIOUS INFORMATION, DEPENDING ON EVIDENCE TYPE
4. DISPLAYS A MESSAGE WHEN WORKING ON A NEW ITEM

H. ACTION WINDOW- SAME AS PROPERTY
I. ADDITIONAL ITEMS OF EVIDENCE TO BE ENTERED
1. PAGE DOWN

J. RETURN TO PREVIOUSLY ENTERED ITEM
2. PAGE UP

K. EXIT
1. <F12> TO SAVE
2. <ESC> TO EXIT WITHOUT SAVING

L. TEST

XII. <u>NARRATIVE</u> (40 MINUTES)

A. HIGHLITE NARRATIVE OR ENTER ENTER 'N' ON THE SUMMARY SCREEN
B. SIMPLIFIED WORD PROCESSOR
C. UNFORMATTED, OPEN TEXT ENTRY
D. TWO LINES AT BOTTOM GIVE MOST OFTEN USED COMMANDS
1. USE <F1> FOR ADDITIONAL COMMANDS AND HELP

E. FUNCTIONS
1. ENTER
a. COMPLETES A LINE AND MOVES CURSOR TO THE BEGINNING OF THE NEXT LINE
b. MUST BE IN THE 'INSERT' MODE
TO THE NEXT
2. TO GO BACK ONE FIELD, USE THE REVERSE TAB (PRESS AND HOLD <SHIFT>, THEN PRESS <TAB>)
3. CURSOR KEYS (ARROWS)
a. UP/DOWN: VERTICLE MOVEMENT ON SCREEN
b. LEFT/RIGHT: MOVEMENT WITHIN A FIELD ONLY
4. <HOME> TAKES CURSOR TO BEGINNING OF A FIELD
5. <END> TAKES CURSOR TO END OF A FIELD
6. TO ERASE CHARACTERS:
a. BACK SPACE <BkSp>: MOVES CURSOR LEFT AND ERASES CHARACTERS TO THE LEFT OF IT
b. DELETE <Del>: ERASES CHARACTERS UNDER THE CURSOR AND MOVES THE REST OF THE LINE TO THE LEFT
TO FILL THE VACATED SPOT
7. TO ERASE A LINE, PRESS AND HOLD THE <ALT> KEY AND PRESS <DEL>
8. CURSOR
a. MOVES CURSOR TO AND ON ANY LINE WHERE TEXT HAS BEEN WRITTEN
9. REFORMAT PARAGRAPH
a. RE-ALIGNS TEXT TO TAKE UP AVAILABLE SPACE
b. ONLY THAT PART OF PARAGRAPH PAST THE CURSOR WILL BE REFORMATTED
c. PRESS <ALT><1>

F. MISC INFO
1. SEPARATE PARAGRAPHS USING TWO BLANK LINES
2. MARK SUBJECT HEADINGS USING THE <*> KEY - NO UNDERLINING IS AVAILABLE
3. SAVE AND CONTINUE <F11>
a. USED ON LONGER DOCUMENTS TO ENSURE WORK IS NOT LOST IF:
1) POWER IS LOST OR
2) RAPIDSAVE <ALT><F12> IS USED
b. SAVES ALL INFORMATION TYPED TO THAT POINT

G. SUMMARY PICKLIST

1. AVAILABLE USING <F5>
2. PROVIDES SUMMARY INFO REGARDING DATA INPUTTED INTO THE COMPUTER THUS FAR FOR:
   a. VICTIMS
   b. VICT VEHICLES
   c. SUSPECTS
   d. SUSPECT VEHICLES
   e. INVOLVED PERSONS

H. EXIT
   1. <F12> TO SAVE
   2. <ESC> TO EXIT WITHOUT SAVING

I. TEST

XIII. ADD'L/MISC/NOTIF (15 MINUTES)

A. HIGHLITE ADD'L/MISC/NOTIF OR ENTER 'A' ON THE SUMMARY SCREEN

B. QUESTION FIELDS
   1. Y OR N REQUIRED
   2. PRINTS ATTEMPTED?
      a. IF N, THE WHY NOT FIELD APPEARS TO THE RIGHT
   3. WHY NOT?
      a. FORCED PICKLIST
   4. NARCOTICS STOLEN?/FIREARMS STOLEN?
      a. IF 'Y' TO EITHER, INFORMATION AUTOMATICALLY APPEARS IN THE EXTRA COPIES FIELDS

C. CONNECTED REPORTS
   1. ENTER ONLY THOSE REPORTS NOT CONNECTED INSIDE THIS COMPUTER
   2. ENTER "UNK" IN THE DR NUMBER FIELD IF THERE IS A CONNECTED REPORT, BUT THE DR# IS UNKNOWN

D. EXTRA COPIES
   1. SCROLLING TEXT FIELD
   2. SOME FIELDS MAY HAVE INFO ALREADY IN THEM; SEE QUESTION FIELDS ABOVE

E. NOTIFICATIONS
   1. SCROLLING TEXT FIELDS
   2. NAME OF PERSON & SERIAL NUMBER NOTIFIED IN FIRST FIELD

F. EXIT
   1. <F12> TO SAVE
   2. <ESC> TO EXIT WITHOUT SAVING

G. APPLICATION

(BREAK- 15 MINUTES)

XIV. SIGNATURE (15 MINUTES)

A. HIGHLITE SIGNATURE OR ENTER '1' ON THE SUMMARY SCREEN

B. INTRODUCTION
   1. PURPOSE
      a. INTEGRITY OF DATA
      b. SECURITY OF SYSTEM

C. VALIDATION (PIR ENTRY ANOMOLIES, OMMISIONS OR OTHER ERRORS)
   1. VERIFIES THAT CERTAIN REQUIRED FIELDS CONTAIN DATA
      a. FIELDS IN WHICH DATA IS ALWAYS REQUIRED
      b. FIELDS IN WHICH DATA IS ONLY REQUIRED IF CERAIN INFORMATION

IS ENTERED ELSEWHERE IN THE REPORT

2. WINDOW APPEARS UPON:
   a. SELECTION OF 'SIGNATURE' OR <F7> ON THE SUMMARY SCREEN
   b. COMPLETION OF ALL NECESSARY DATA-ENTRY SCREENS IN 'AUTO ENTRY'
3. ENSURES THAT FIELDS REQUIRING DATA DO SO
   a. INCLUDES FIELDS THAT ARE ALWAYS MANDATORY AND FIELDS THAT ARE MANDATORY BASED ON DATA ALREADY ENTERED
4. VALIDATION PROCEDURE
   a. SELECTION MADE BY HIGHLIGHTING THE DESIRED LINE AND PRESSING <ENTER>
   b. THE CURSOR GOES TO THE SCREEN AND FIELD TO BE CORRECTED
   c. ONCE THE ERROR OR OMISSION IS CORRECTED, <F12> IS PRESSED AND THE VALIDATION WINDOW REAPPEARS
   d. THE ITEM CORRECTED DISAPPEARS FROM THE WINDOW AND ANOTHER SELECTION CAN BE MADE UNTIL ALL ARE

D. SIGNATURE WINDOW
   1. APPEARS ONLY AFTER THE VALIDATION PROCESS IS COMPLETE
   2. TAKES THE PLACE OF HAND-PRINTED SIGNATURE
   3. PART OF THE SECURITY SYSTEM
   4. PASSWORD USED TO SIGN MUST MATCH THE PASSWORD USED IN THE LOGON
      a. IF CORRECT:
         1) THE MAIN SCREEN REAPPEARS
         2) THE STATUS OF THE REPORT CHANGES TO 'SIGNED'
      b. IF INCORRECT:
         1) A MESSAGE INFORMS SUCH
         2) <ESCAPE> RETURNS TO THE SUMMARY SCREEN
            a) SELECT <SIGNATURE> FOR ANOTHER ATTEMPT
         3) CONTACT SUPERVISOR FOR SUPERSECRET PASSWORD
            a) SEE LOGON

E. VALIDATION WITHOUT THE SIGNATURE BLOCK AVAILABLE USING THE <F7> KEY
   1. CALLABLE ONLY IN THE SUMMARY SCREEN
   2. DOES EVERYTHING ABOVE VALIDATION DOES EXCEPT END WITH THE SIGNATURE WINDOW

F. TEST

XV. <u>CANCEL REPORT</u>   15 MINUTES THRU SUMMARY WINDOW)

A. COMPLETELY ERASES A REPORT FROM MEMORY
B. REQUIRES A CONFIRMATION
   1. HIGHLITER MOVES ONLY BY USING CURSOR KEYS
C. APPLICATION

XVI. <u>AUTO REVIEW</u>

A. BRINGS UP ALL SCREENS IN THE ARS AND ALL THE WINDOWS IN WHICH DATA WAS ENTERED
B. USE <F12> TO PROCEED THROUGH THE REPORT
C. ADDITIONAL DATA CAN BE ENTERED OR DATA CHANGED, BUT ADDITIONAL PERSONS OR VEHICLES CANNOT BE ENTERED
D. <ALT><ESC> TO DISCONTINUE BEFORE ALL DATA REVIEWED
E. TEST

XVII. AUTO ENTRY

A. AUTOMATIC MODE WINDOW APPEARS
   1. CRIME, VICTIM, M.O., NARRATIVE, AND ADD'L/MISC/NOTIF SCREENS ARE ALWAYS REQUIRED AND ARE NOT PART OF THE CHOICES
   2. A 'Y' IN FRONT OF ANY QUESTION CAUSES THE ASSOCIATED SCREEN TO APPEAR; A 'N' CAUSES THAT SCREEN TO BE BIPASSED
   3. ONCE 'Y' IS ENTERED TO INITIATE THE AUTOMODE, THE RELEVANT SCREENS AUTOMATICALLY APPEAR
      a. STARTS WITH CRIME SCEEN
      b. PROCEEDS IN THE ORDER IN WICH THE SCREENS ARE LISTED ON THE SUMMARY SCREEN

B. WHEN <F12> IS PRESSED TO ACCEPT A SCREEN, THE NEXT SCREEN AUTOMATICALLY APPEARS
   1. CONTINUES UNTIL ALL RELEVANT SCREENS HAVE BEEN ACCEPTED, INCLUDING THE SIGNATURE SCREEN, OR UNTIL AUTOMODE IS OTHERWISE DISCONTINUED

C. <ALT><ESC> TO DISCONTINUE BEFORE ALL SELECTED SCREENS VISITED

D. TEST

XVIII. NOTES

A. FIELD SPECIFIC
   1. PROVIDES ABILITY TO WRITE OR READ A NOTE ATTACHED TO A SPECIFIC FIELD, BUT NOT PART OF THE REPORT
      a. ERASED FROM MEMORY WHEN THE REPORT IS APPROVED/PRINTED
   2. ACCESS BY <F8>
   3. WINDOW POPS UP WITH SAME WORD PROCESSING AS THE NARRATIVE
   4. ACCEPT INPUT AND RETURN TO THE FULL SCREEN BY <F12>
   5. ERASE BY PRESSING <F8> AGAIN WHILE STILL IN THE NOTE WINDOW
   6. IF ACCEPTED, A MUSICAL NOTE APPEARS TO THE LEFT OF THE RESPECTIVE FIELDS
   7. APPLICATION

B) GENERAL NOTES
   1. PROVIDES ABILITY TO WRITE OR READ A NOTE, ATTACHED TO THE REPORT INSTEAD OF A SPECIFIC FIELD; NOT PART OF REPORT
      a. ERASED FROM MEMORY WHEN THE REPORT IS APPROVED/PRINTED
   2. USED THE SAME AS THE FIELD SPECIFIC NOTES
   3. CAN BE ACCESSED ANYWHERE IN THE REPORT
   4. THE MUSICAL NOTE APPEARS TO THE LEFT OF THE 'GENERAL NOTES' BLOCK ON THE LOWER RIGHT OF THE SUMMARY SCREEN
   5. APPLICATION

XIX. SUMMARY WINDOW

A. PROVIDES SUMMARY INFORMATION ON ALL PEOPLE AND VEHICLES ENTERED INTO A REPORT

B. PURPOSE IS TO SERVE AS A MEMORY AID WHEN COMPLETING THE REST OF THE REPORT

C. ACCESS BY <F5>

D. EXIT BY <ESC>

E. APPLICATION/TEST

KICKBACKS

I. MANUAL NOTIFICATION BY SUPERVISOR
II. DIRECTIONS AND COMMENTS FROM SUPERVISOR IN FIELD AND GENERAL NOTES
III. CORRECT ON THE STATION SYSTEM OR DOWNLOAD TO DISKETTE AND UPLOAD TO THE OFFICER'S LAPTOP
   A. AFTER CORRECTIONS ARE COMPLETED,TYPE "CORRECTED AND RESUBMITTED" AFTER THE SUPERVISOR'S NOTES IN THE GENERAL NOTE FIELD
   B. IF CORRECTED ON THE LAPTOP, TRANSFER BACK TO THE STATION SYSTEM
IV. NOTIFY A SUPERVISOR OF RESUBMITTAL

DELETING A REPORT (15 MINUTES THRU WORD PROCESSOR)

I. INTRODUCTION
II. TO SELECT A REPORT FOR DELETION:
   A. SELECT 'REPORTING' ON THE MAIN SCREEN
   B. SELECT 'DELETE PIR' ON THE SUB-WINDOW
   C. HIGHLITE THE DESIRED REPORT USING CURSOR KEYS AND PRESS <ENTER>
III. THE REPORT WILL BE ERASED FROM THE STATUS SCREEN, BUT WILL BE AVAILABLE IN MEMORY FOR RETRIEVAL
   a. REQUIRES A SUPERVISOR
IV. TEST/APPLICATION

CONNECTING A REPORT

I. THIS ALLOWS 2 OR MORE REPORTS IN ONE COMPUTER TO BE CONNECTED
II. TO SELECT REPORTS TO BE CONNECTED
   A. SELECT 'REPORTING' ON THE MAIN SCREEN
   B. SELECT 'CONNECT PIRs' ON THE SUB-MENU
   C. HIGHLITE THE REPORTS TO BE CONNECTEDUSING THE UP AND DOWN DURSOR KEYS AND PRESS <ENTER>
      1. A CHECK MARK WILL APPEAR TO THE LEFT OF EACH REPORT SELECTED
   D. PRESS <F12>
III. THE PIR STATUS WILL INDICATE WHICH REPORTS ARE CONNECTED BY PLACING THE SAME NUMBER IN THE CONN COLUMN OF EACH CONNECTED REPORT
IV. TO UN-CONNECT A CONNECTED REPORT, CONNECT THE REPORT TO ITSELF
V. APPLICATION

WORD PROCESSOR

I. INTRODUCTION: PROVIDES THE ABILITY TO PRODUCE WORD-PROCESSED DOCUMENTS SEPARATE FROM ANY SPECIFIC REPORT (i.e. ARREST REPORT NARRATIVE)
II. NOT AVAILABLE YET, WAY TO PRINT NOW

TRANSFER FUNCTIONS (15 MINUTES)

I. INTRODUCTION

   A. REPORTS WRITTEN ON LAPTOPS AND APPROVED ON THE DESKTOPS
   B. HAVE TO GET THE REPORTS FROM ONE TO ANOTHER
   C. TWO METHODS
      1. VIA TELEPHONE
         a. NOT AVAILABLE YET
         b. WILL HOOK UP TO VICT TELE IF AVAILABLE AND THE MACHINE WILL TRANSFER THE REPORTS YOU SELECT AUTOMATICALLY

2. VIA DISKETTE
   a. LAPTOP WORKS SAME AS DESKTOP

II. TRANSFER PIRS TO DISKETTE

A. INSERT DISKETTE
B. SELECT 'TRANSFERRING' ON THE MAIN SCREEN
C. SELECT 'DOWNLOAD PIRS TO DISKETTE' ON THE SUB-MENU
D. HIGHLIGHT EACH PIR YOU WISH TO TRANSFER AND PRESS ENTER ON EACH
   1. A CHECK MARK WILL APPEAR TO THE RIGHT OF EACH REPORT SELECTED
E. PRESS <F12>
F. MARKED REPORTS ARE:
   1. TRANSFERRED TO THE DISKETTE
   2. ELIMINATED FROM THE COMPUTER'S ACTIVE MEMORY
      a. NOT AVAILABLE TO THE OFFICER
   3. SAVED IN A COMPRESSED FORM IN LAPTOP MEMORY
      a. SEE A SUPERVISOR FOR ACCESS
G. WHEN "DISK IN USE" LIGHT GOES OUT REMOVE DISKETTE

III. TRANSFER PIR'S FROM DISKETTE

A. INSERT DISKETTE
B. SELECT 'TRANSFERRING' ON THE MAIN SCREEN
C. SELECT 'UPLOAD PIRS FROM DISKETTE' ON THE SUB-MENU
D. ALL PIR'S ON DISKETTE ARE TRANSFERRED TO LAPTOP AND DISPLAYED ON THE STATUS SCREEN
   1. REPORTS ARE ERASED FROM THE DISKETTE
E. WHEN "DISK IN USE" LIGHT GOES OUT REMOVE, DISKETTE

PRINT FUNCTIONS (10 MINUTES)

I. INTRODUCTION

A. WHY PRINT
   1. IF MAIN SYSTEM GOES DOWN
   2. IF WANT A DRAFT COPY, WITH OR WITHOUT NOTES, FOR A PROBATIONER'S NOTEBOOK

II. PRINT FINAL PIR (NOTE:PIR SHOULD BE SIGNED)

A. IF USING ANYTHING OTHER THAN A LASERJET SERIES II PRINTER
   1. SELECT "PRINT' ON MAIN SCREEN
   2. SELECT 'PRINTER SETUP' ON SUB-MENU
   3. HIGHLITE THE NAME OF THE PRINTER TO BE USED AND PRESS <ENTER>
B. ATTACH PRINTER CABLE TO PRT/FDD PORT ON LAPTOP (LABELED ON INSIDE OF PLASTIC DOOR
C. SELECT 'PRINT' ON MAIN SCREEN
D. SELECT 'PRINT FINAL PIR' ON SUB-MENU
E. HIGHLIGHT EACH PIR YOU WISH TO PRINT AND PRESS ENTER ON EACH
   1. A CHECK MARK WILL APPEAR TO THE RIGHT OF EACH REPORT SELECTED
F. PRESS F12
G. WHEN PRINTING IS COMPLETE, THE STATUS OF THE PRINTED REPORT CHANGES TO 'PRINTED' ON THE MAIN SCREEN
H. REMOVE THE CABLE FROM THE LAPTOP

III. PRINT DRAFT PIR

A. SAME AS ABOVE, BUT:

1. SELECT 'PRINT DRAFT COPY' ON THE SUB-MENU
2. THE STATUS OF THE REPORT DOES NOT CHANGE

IV. PRINT FIELD/GENERAL NOTES

A. SAME AS ABOVE, BUT:
1. SELECT 'PRINT FIELD NOTES' OR 'PRINT GENERAL NOTES' ON THE SUB-MENU
2. THE STATUS OF THE REPORT DOES NOT CHANGE

SPECIAL FUNCTIONS (10 MINUTES)

I. SPECIAL MENU; INFORMATION AND FUNCTIONS OF NO VALUE OR WHICH CANNOT BE USED BY THE OFFICERS

II. SYSTEM POP-UP WINDOW

A. PRESS BOTH THE <ALT> AND <FN> KEYS AT SAME TIME
1. USING THE DOWN ARROW KEY, SHIFT THE INICATOR ARROW DOWN TO THE DESIRED SELECTION
a. MORE SELECTIONS AVAILABLE BY:
1) CONTINUING TO PRESS THE DOWN ARROW KEY OR
2) <PGDN>
2. USE THE RIGHT ARROW KEY TO MAKE A CHANGE
B. USE ONLY TO CHANGE:
1. SPEAKER
2. BATTERY ALARM
3. DISPLAY AUTO OFF
a. AUTOMATICALLY TURNS OFF SCREEN BACK-LIGHTING IF NO KEYS ARE PRESSED IN THE INDICATED TIME PERIOD
b. CHANGES OR TURNS OFF IN 3 MINUTE INCREMENTS
B. PRESS THE <ALT><FN> KEYS AGAIN TO LEAVE

III. RAPID CHANGE BETWEEN SCREENS: HIT <F12> THEN THE FIRST LETTER OF THE SCREEN YOU WANT TO GO TO

USE IN A PATROL ENVIRONMENT (10 MINUTES THRU END)

I. OFFICER SAFETY

A. HANDLED IN SAME MANNER AS A NORMAL NOTEBOOK

II. RESPONSIBILITY

A. RESPONSIBLE IN SAME MANNER AS OTHER EQUIPMENT ASSIGNED TO YOU
B. ON HOT DAYS , DON'T STORE IN TRUNK IF POSSIBLE
1. INTENSE HEAT OF TRUNK PUSHES TOLERENCE OF EQUIPMENT

III. VICTIMS REPORT MEMO

A. MUST STILL BE DISTRIBUTED TO VICTIMS
B. USE FORM 3.17, AVAILABLE IN RECORDS UNIT

TROUBLESHOOTING

I. OFFICERS SHOUL REFER TO THEIR FIELD MANUAL
II. IF NOT SUCCESSFUL, LAPTOP WILL BE EXCHANGED

III. SUPERVISOR WILL HAVE MORE DETAILED KNOWLEDGE (SOFTWARE RE-LOAD, ETC.)
IV. ALL TROUBLE WILL BE LOGGED FOR DOCUMENTATION PURPOSES

EMERGENCY PROCEDURES

I. STATION SYSTEM DOWN

A. PRINT FINAL COPY
1. CONNECT CABLE TO BACK OF LAPTOP
2. CHOOSE "PRINT FINAL PIR" ON MAIN SCREEN PRINT MENU
3. DOWNLOAD REPORT TO YOUR DISKETTE
4. PROCESS REPORT USING THE MANUAL SYSTEM
5. KICKBACKS
a. UPLOAD REPORT FROM YOUR DISKETTE
b. REVISE REPORT AND REPRINT FINAL
c. DOWNLOAD BACK TO DISKETTE

II. IF THE FOLLOWING MESSAGE APPEARS ON A LAPTOP, CONTACT A SUPERVISOR OR RETURN THE COMPUTER TO THE KIT ROOM IN EXCHANGE FOR ANOTHER:

"MEMORY TEST 640 KD

WARNING: DATA IN HARD RAM WAS LOST.
YOU MUST FORMAT HARD RAM BEFORE USE.
PRESS ANY KEY TO CONTINUE."

III. IF, WHEN POWERING UP THE COMPUTER (DESKTOP OR LAPTOP), THE FOLLOWING MESSAGE APPEARS, REMOVE THE DISKETTE FROM THE DISK DRIVE:

"NON-SYSTEM DISK OR DISK ERROR
REPLACE AND STRIKE ANY KEY WHEN READY"

IV. WHEN THE OFFICER ATTEMPTS TO RE-LOGON WITH A PASSWORD THAT DOES NOT MATCH THE NUMBER THAT HE/SHE USED TO LOGON, A WINDOW WILL APPEAR THAT STATES, "WARNING, NO MATCH WITH EITHER OFFICER"
A. CONTACT A SUPERVISOR FOR AN OVERRIDE PASSWORD
B. ENTER THE NUMBER IN THE RE-LOGON SCREEN, JUST LIKE A NORMAL PASSWORD
C. THE COMPUTER WILL DISPLAY YOUR PASSWORD AND ALLOW YOU TO ACCEPT IT AND CONTINUE OR CHANGE IT

V. IF THE CURSOR WILL NOT MOVE AND YOU'VE EXHAUSTED EVEY WAY TO RESOLVE THE PROBLEM , PRESS <DELETE> WHILE HOLDING DOWN <CTRL> AND <ALT>. THE LAPTOP WILL RESTART ITSELF.

KITROOM PROCEDURES

I. CHECKING IN AND OUT

A. HANDLED BY THE KIT ROOM
B. ONE UNIT ISSUED TO EACH FIELD UNIT AT THE BEGINNING OF WATCH, CONSISTING OF:
1. ONE CASE (WITH AUTO ADAPTER)
2. ONE LAPTOP COMPUTER (WITH BATTERY)
3. TWO SPARE, FULLY CHARGED BATTERIES

a. TAKEN FROM FRONT OF STORAGE RACK, NOT CHARGERS

C. TURNED IN AT EOW

D. EQUIPMENT TO BE LOGGED IN AND OUT, USING THE LAPTOP NUMBER, THE SAME AS OTHER EQUIPMENT

E. OFFICERS SHOULD CHECK THE COMPUTER BEFORE LEAVING THE STATION TO ENSURE THAT THE LOGON SCREEN APPEARS CORRECTLY AND THE MACHINE IS WORKING CORRECTLY

1. IF NOT:
   a. COMPLETE A REPAIR REQUEST (PROVIDED IN KIT ROOM) LISTING THE PROBLEM
   b. ATTACH THE REQUEST TO THE COMPUTER
   c. EXCHANGE THE COMPUTER FOR ANOTHER

II. <u>STORAGE</u>

A. COMPUTERS, CASES, AND BATTERIES STORED SEPARATELY
   1. AUTO ADAPTER TO BE STORED IN THE CASES

B. COMPUTERS TO BE STORED PLUGGED INTO THA AC CHARGERS
   1. NECESSARY TO PREVENT MEMORY LOSS AND TO CHARGE THE BATTERY

C. BATTERIES
   1. THERE SHOULD BE BATTERIES IN ALL 30 CHARGING POSITIONS AT ALL TIMES
   2. EACH OF THE 10 CHARGERS HAS A CAPACITY OF 3 BATTERIES
      a. CHARGES ONE AT A TIME
      b. EACH BATTERY TAKES ABOUT 2 HOURS TO FULLY CHARGE
   3. FULLY CHARGED BATTERIES STORED IN THE RACKS PROVIDED
      a. FIRST-IN, FIRST-OUT

III. <u>PROBLEMS</u>

A. THE KIT ROOM OFFICER IS RESPONSIBLE
   1. FOR NOTIFYING A SUPERVISOR OF ANY UNRESOLVED EQUIPMENT PROBLEMS
   2. LOGGING ALL PROBLEMS ON A LOG PROVIDED FOR THAT PURPOSE

<u>FINAL TEST</u>

APPENDIX E SYSTEM DOCUMENTATION

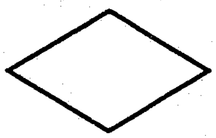
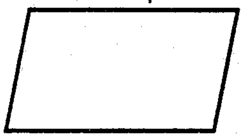
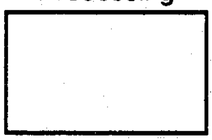
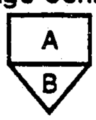
SYSTEM DOCUMENTATION

This appendix is designed to provide the reader with a basic understanding of the available functions provided by the ARS on the field and station systems. The field system is comprised of laptop computers, used by police officers to enter information for the Preliminary Investigation Reports (PIRs). The station system is comprised of a Local Area Network, used by the station officers to enter telephonically reported PIRs and to approve all PIRs. The accompanying data flowchart provides a detailed overview of the ARS software.

The following numbered items refer to the accompanying data flowchart. This documentation is generally intended to follow the logical steps that a user normally takes when operating the ARS software on either the field or station system. The page number in parenthesis following each item reference the corresponding page number on the data flowchart.

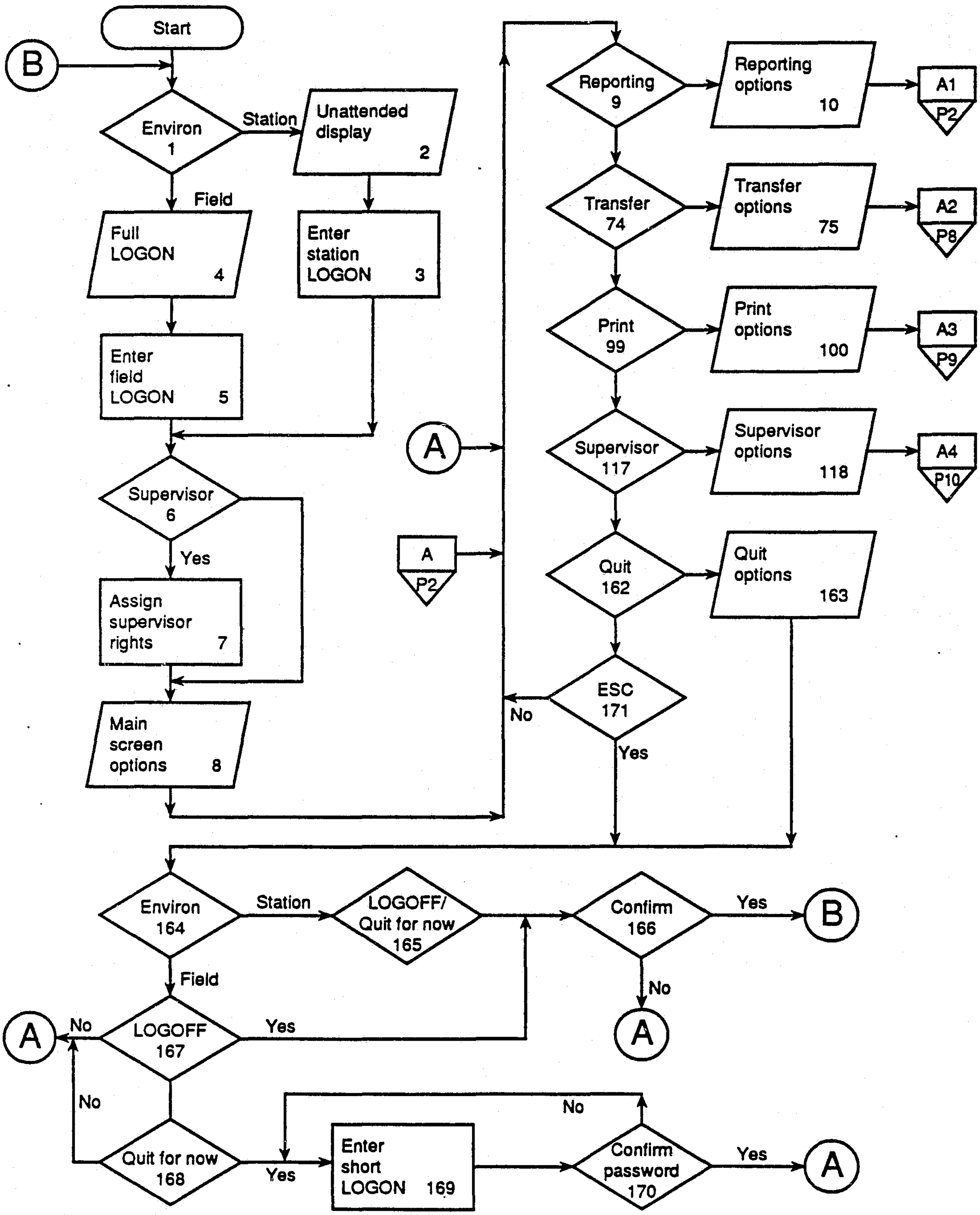
1. **ENVIRONMENT:** Depending on the operating environment (station or field system), the program will behave differently. (Page 1)
2. **UNATTENDED DISPLAY:** Station system only. This is the first screen encountered by the officers in their use of the ARS. This screen displays all PIRs currently on the system

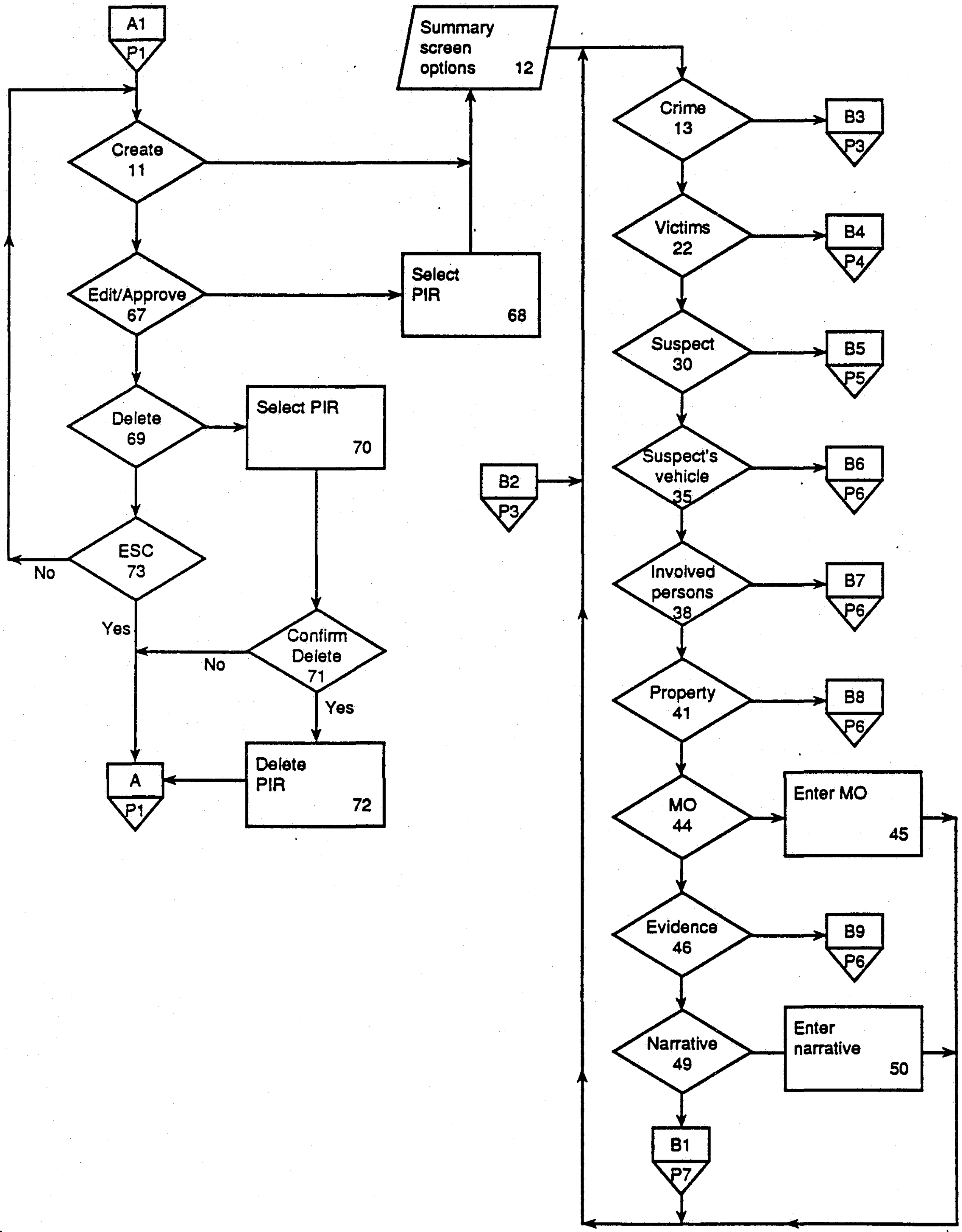
Flow Chart Legend

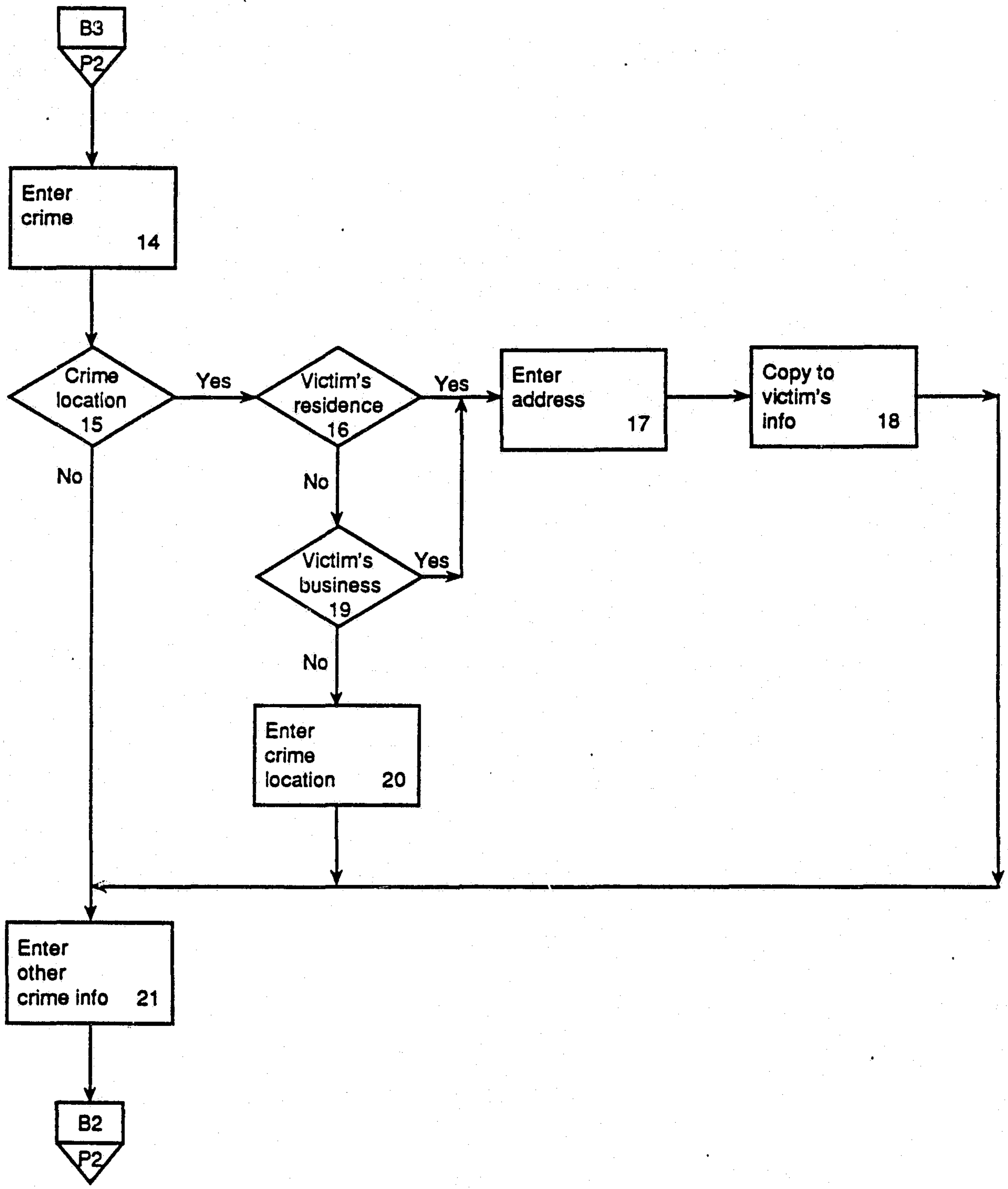
Start/End 	Beginning or ending points of the flow chart.
Decision Point 	Symbolizes a user's menu choice or a program's decision point. Depending on the results of the choice or decision, the program will branch in a given direction.
Screen Options 	Symbolizes a screen display. This symbol is usually used prior to displaying user's menu choices.
Processing 	Symbolizes the processing or action by either the user or the program.
On-Page Connector 	References a branch connection on the same page.
Off-Page Connector 	References the connection to a branch on a different page. The top (A) half of the symbol is the label or unique identifier for a particular off-page connector. The bottom (B) half of the symbol is the flow chart page number where the program branched to or from.
Logic Flow 	Used to reference the logical flow of the program.

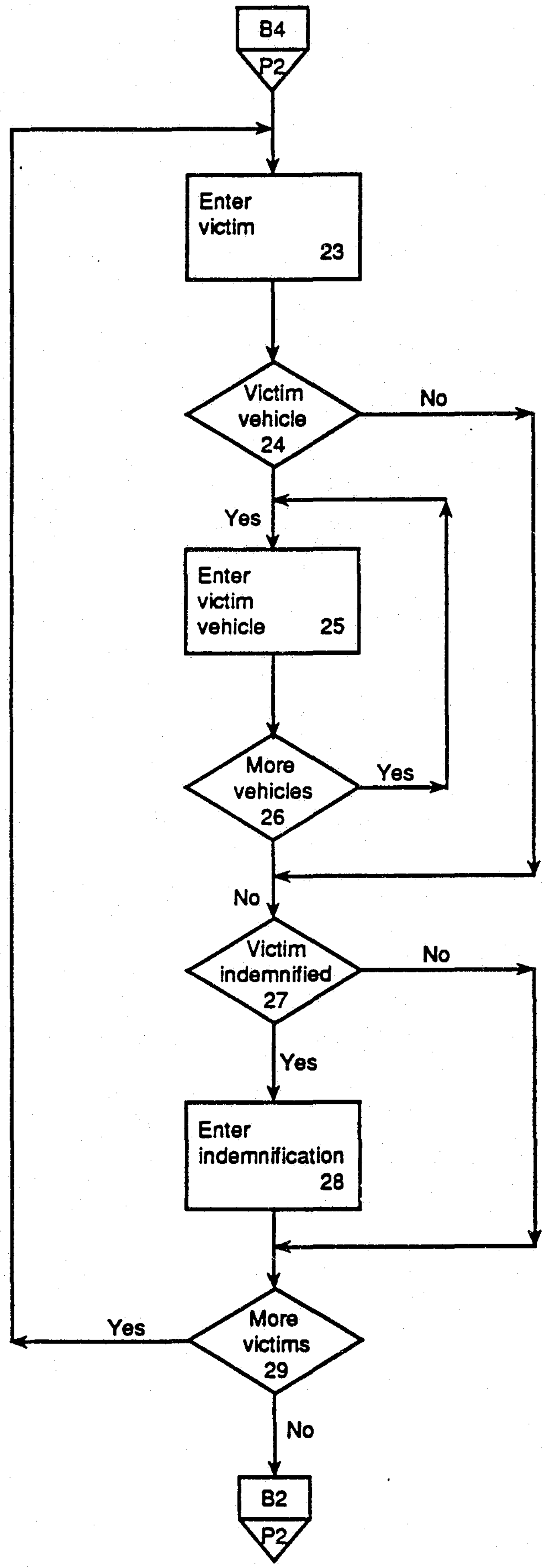
Los Angeles Police Department
Automated Reporting System

Final System Design

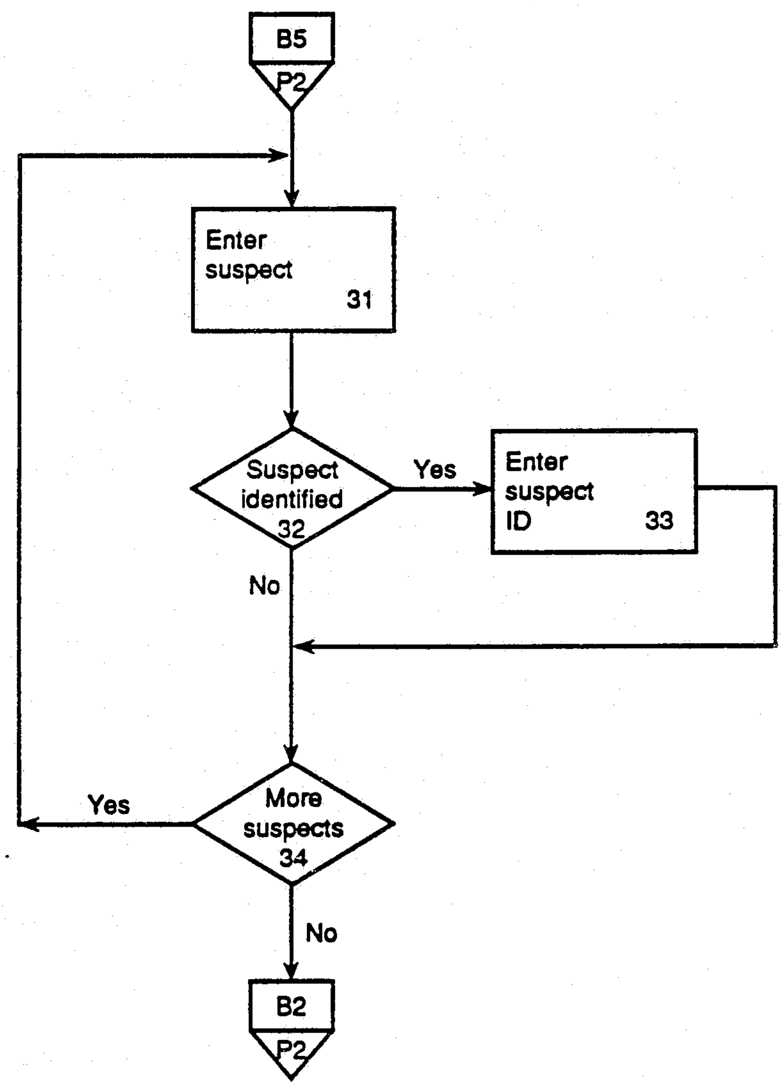


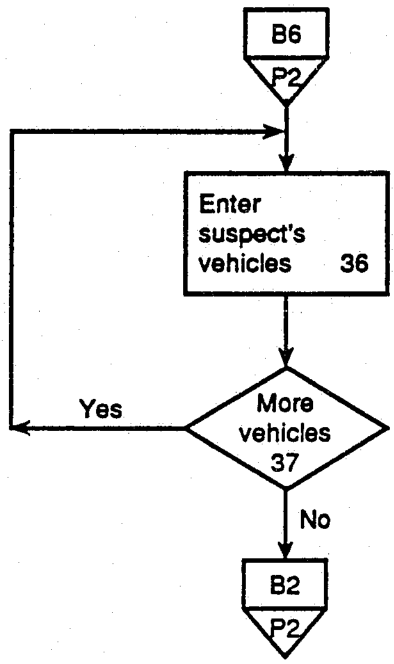

A1
P1
Create
11
Edit/Approve
67
Delete
69
ESC
73
No
Yes
Summary
screen
options 12
Select
PIR
68
Select PIR
70
Confirm
Delete
71
No
Yes
Delete
PIR
72
A
P1
B2
P3
Crime
13
B3
P3
Victims
22
B4
P4
Suspect
30
B5
P5
Suspect's
vehicle
35
B6
P6
Involved
persons
38
B7
P6
Property
41
B8
P6
MO
44
Enter MO
45
Evidence
46
B9
P6
Narrative
49
Enter
narrative
50
B1
P7

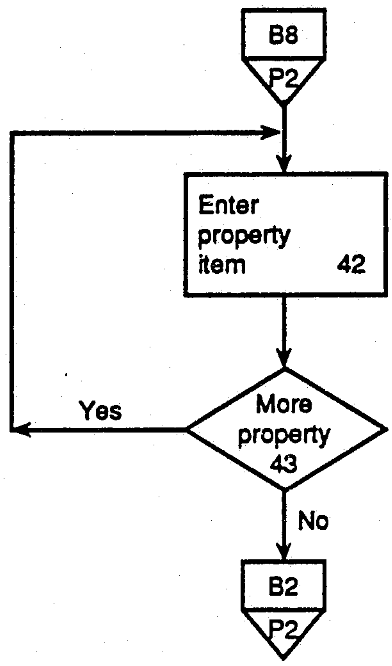

B3
P2
Enter crime 14
Crime location 15
Yes
No
Victim's residence 16
Yes
No
Enter address 17
Copy to victim's info 18
Victim's business 19
Yes
No
Enter crime location 20
Enter other crime info 21
B2
P2

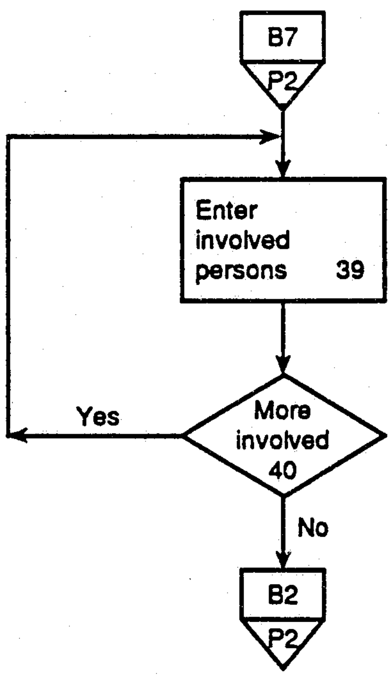


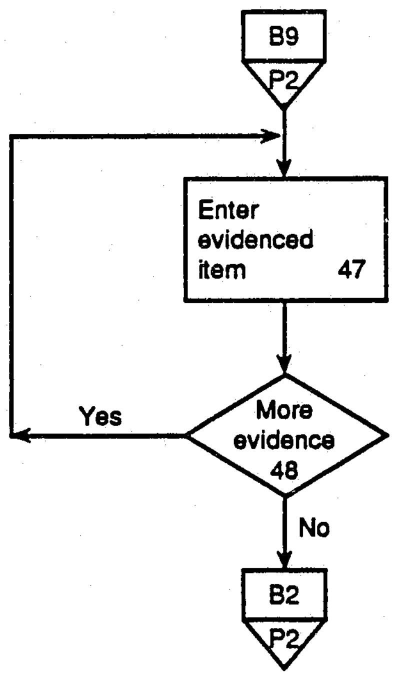
B4
P2
Enter
victim
23
Victim
vehicle
24
No
Yes
Enter
victim
vehicle
25
More
vehicles
26
Yes
No
Victim
indemnified
27
No
Yes
Enter
indemnification
28
Yes
More
victims
29
No
B2
P2

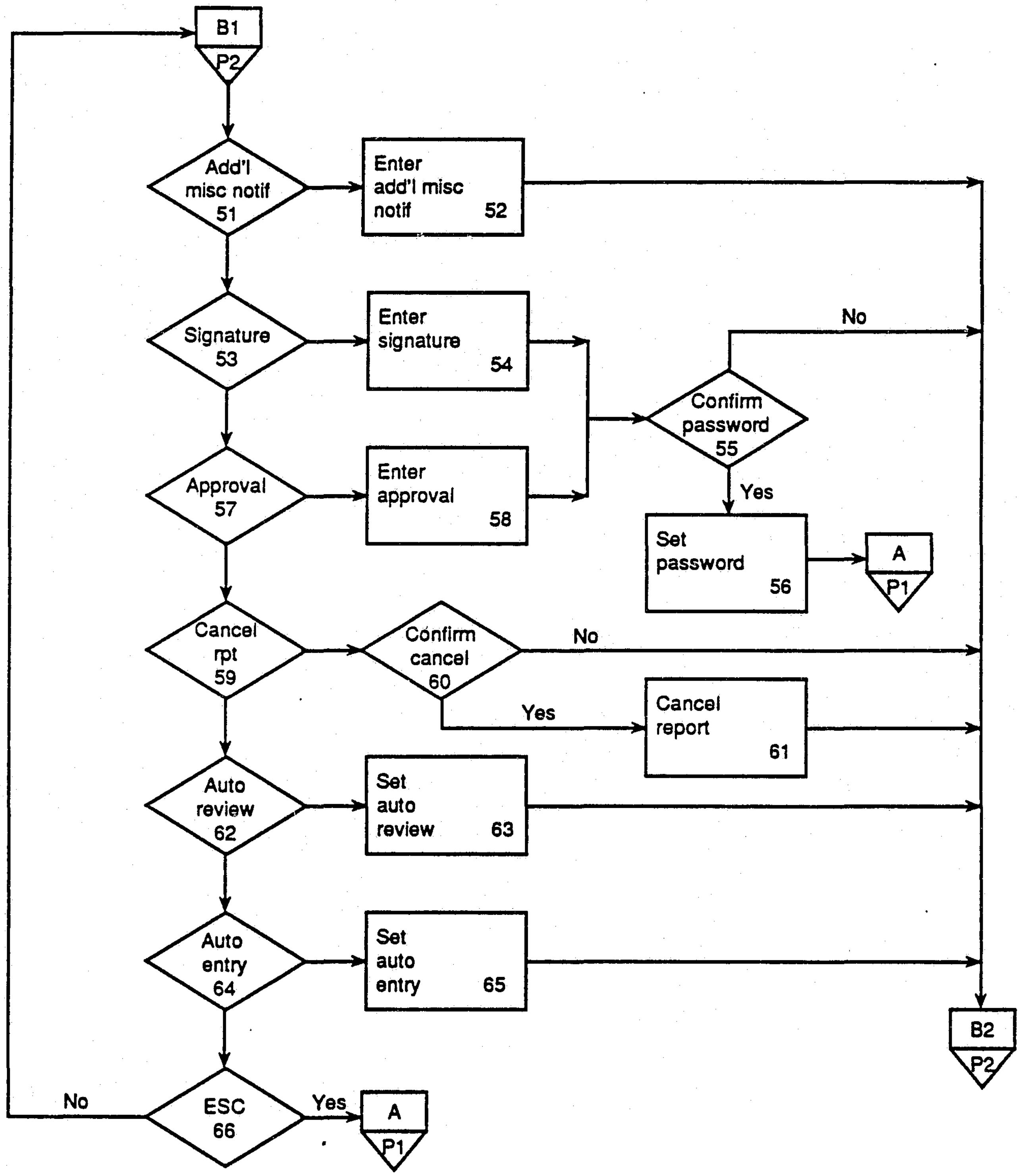

B5
P2
Enter suspect 31
Suspect identified 32
Yes
Enter suspect ID 33
No
More suspects 34
Yes
No
B2
P2

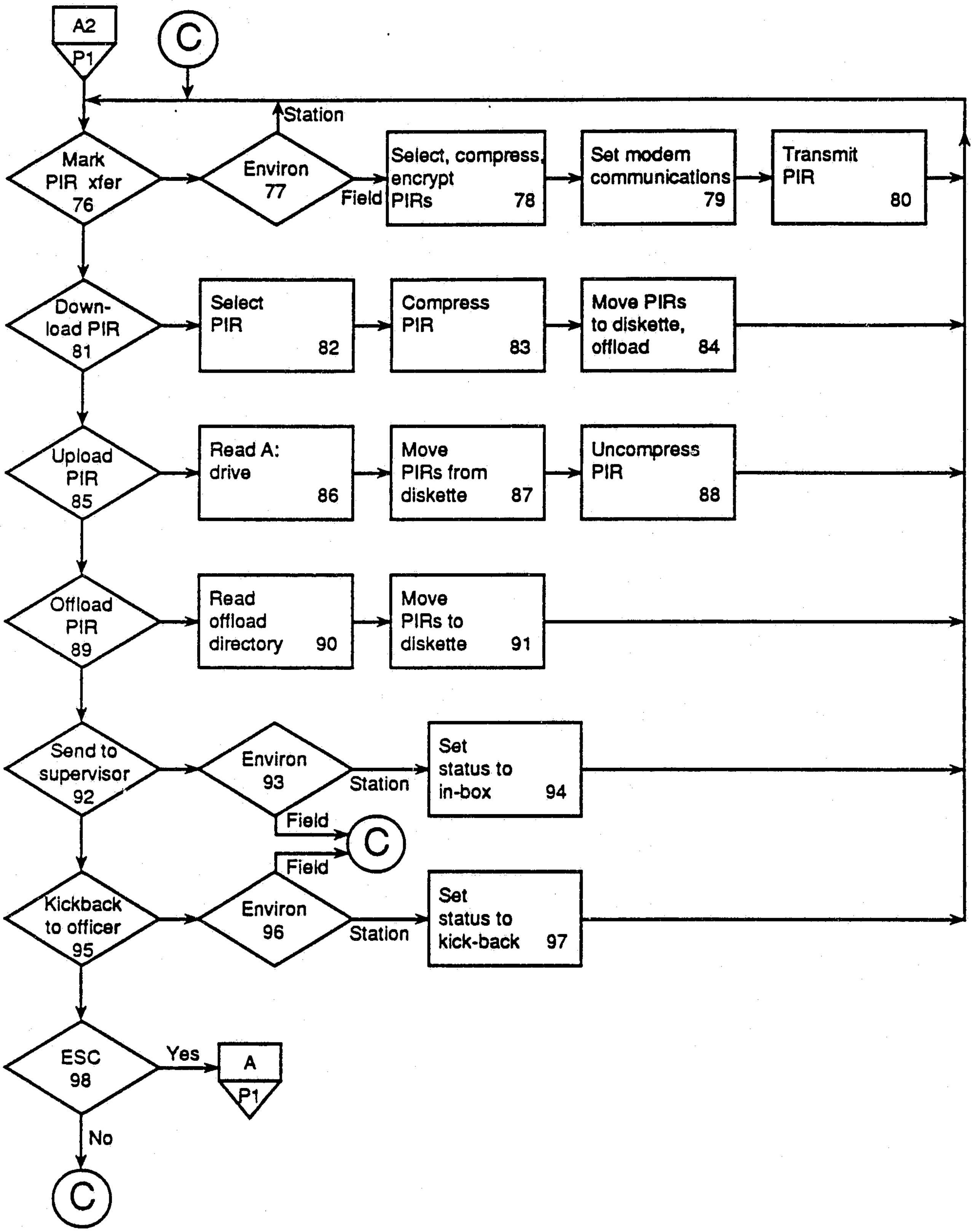

B6
P2
Enter suspect's vehicles 36
More vehicles 37
Yes
No
B2
P2


B8
P2
Enter property item 42
More property 43
Yes
No
B2
P2

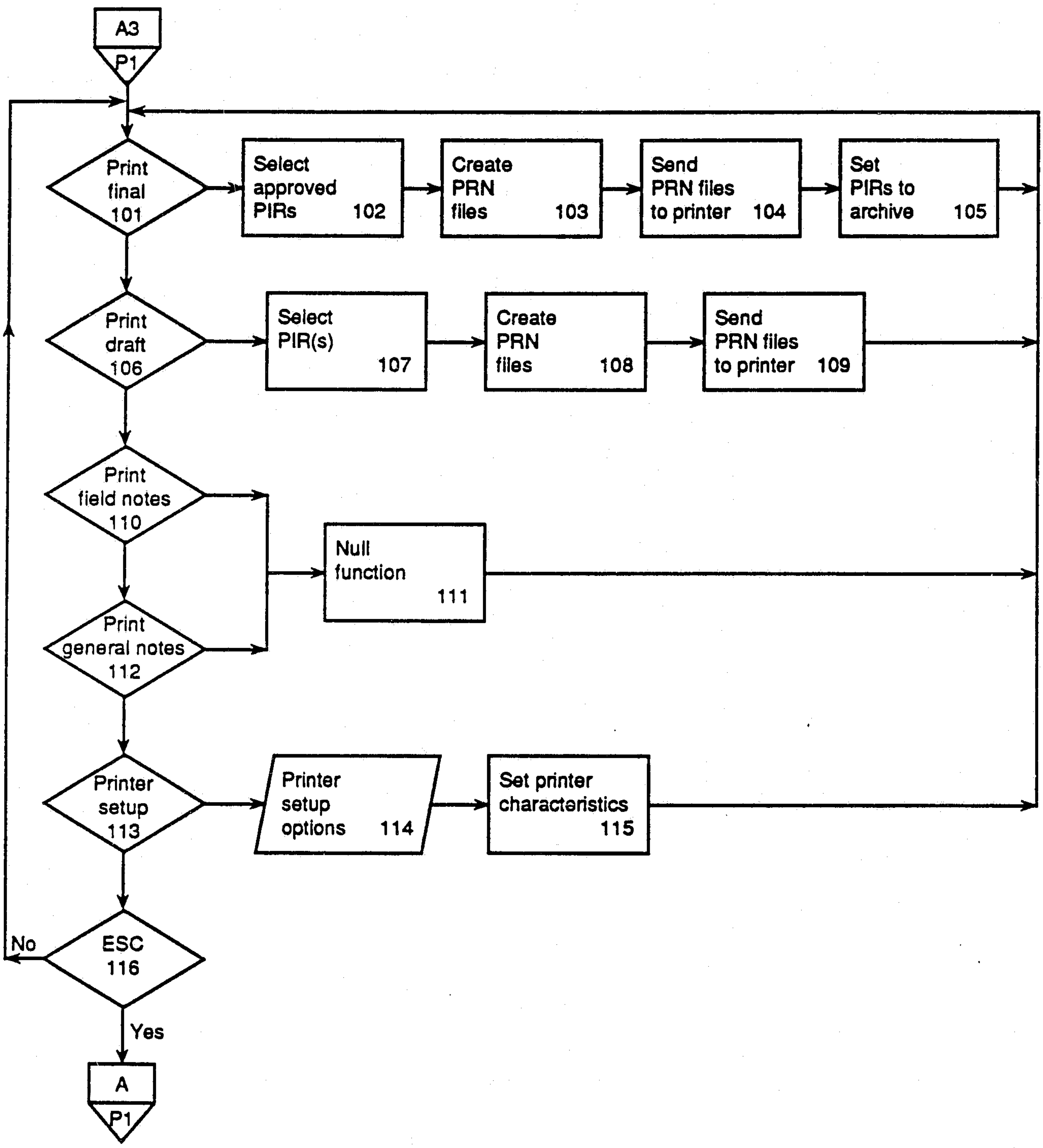

B7
P2
Enter involved persons 39
More involved 40
Yes
No
B2
P2


B9
P2
Enter evidenced item 47
More evidence 48
Yes
No
B2
P2

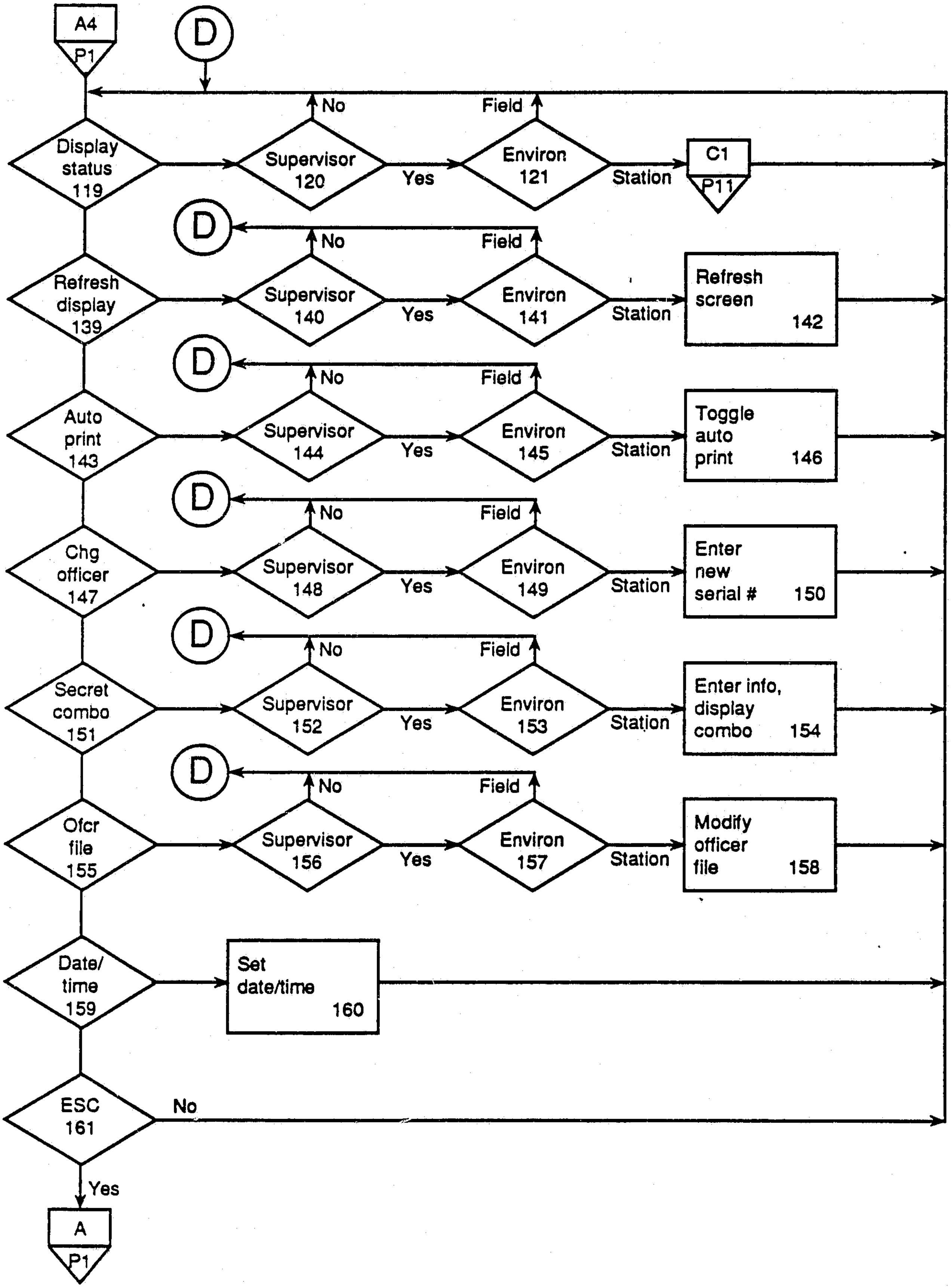

B1
P2
Add'l misc notif 51
Enter add'l misc notif 52
Signature 53
Enter signature 54
Approval 57
Enter approval 58
Confirm password 55
No
Yes
Set password 56
A
P1
Cancel rpt 59
Confirm cancel 60
No
Yes
Cancel report 61
Auto review 62
Set auto review 63
Auto entry 64
Set auto entry 65
B2
P2
No
ESC 66
Yes
A
P1

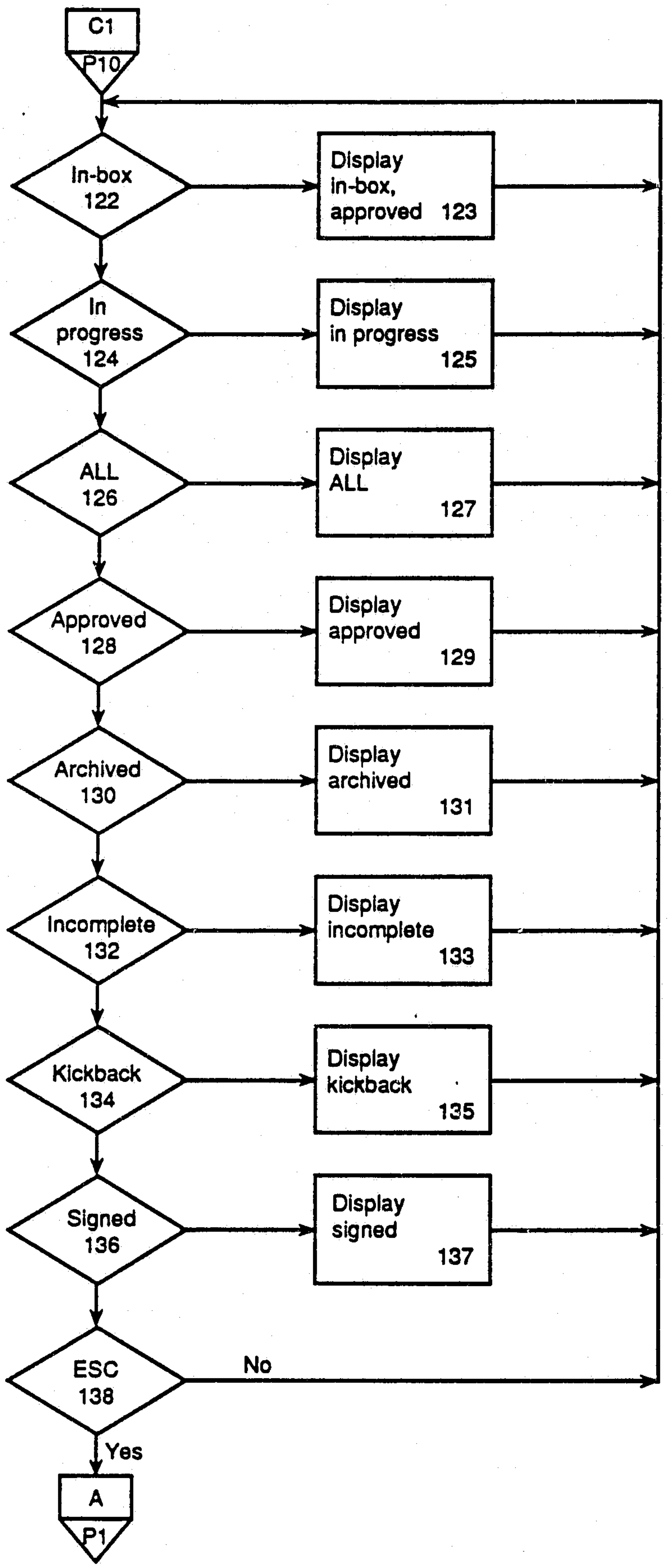


A2
P1
C
Station
Mark PIR xfer 76
Environ 77
Field
Select, compress, encrypt PIRs 78
Set modem communications 79
Transmit PIR 80
Down-load PIR 81
Select PIR 82
Compress PIR 83
Move PIRs to diskette, offload 84
Upload PIR 85
Read A: drive 86
Move PIRs from diskette 87
Uncompress PIR 88
Offload PIR 89
Read offload directory 90
Move PIRs to diskette 91
Send to supervisor 92
Environ 93
Station
Set status to in-box 94
Field
C
Field
Kickback to officer 95
Environ 96
Station
Set status to kick-back 97
ESC 98
Yes
A
P1
No
C



A3
P1
Print final 101
Select approved PIRs 102
Create PRN files 103
Send PRN files to printer 104
Set PIRs to archive 105
Print draft 106
Select PIR(s) 107
Create PRN files 108
Send PRN files to printer 109
Print field notes 110
Null function 111
Print general notes 112
Printer setup 113
Printer setup options 114
Set printer characteristics 115
ESC 116
No
Yes
A
P1


A4
P1
D
Display status 119
No
Supervisor 120
Yes
Field
Environ 121
Station
C1
P11
D
Refresh display 139
No
Supervisor 140
Yes
Field
Environ 141
Station
Refresh screen 142
D
Auto print 143
No
Supervisor 144
Yes
Field
Environ 145
Station
Toggle auto print 146
D
Chg officer 147
No
Supervisor 148
Yes
Field
Environ 149
Station
Enter new serial # 150
D
Secret combo 151
No
Supervisor 152
Yes
Field
Environ 153
Station
Enter info, display combo 154
D
Ofcr file 155
No
Supervisor 156
Yes
Field
Environ 157
Station
Modify officer file 158
Date/ time 159
Set date/time 160
ESC 161
No
Yes
A
P1


C1
P10
In-box
122
Display
in-box,
approved 123
In
progress
124
Display
in progress
125
ALL
126
Display
ALL
127
Approved
128
Display
approved
129
Archived
130
Display
archived
131
Incomplete
132
Display
incomplete
133
Kickback
134
Display
kickback
135
Signed
136
Display
signed
137
ESC
138
No
Yes
A
P1

with the exception of archived PIRs. An officer or supervisor can quickly determine by viewing this screen whether any PIRs have been kicked back or are in need of approval. (Page 1)

3. **ENTER STATION LOGON:** Station system only. Logging on to the station system, requires that the officer enter his or her serial number and network password. A password file is used to verify user access rights. (Page 1)

4. **FULL LOGON:** Field system only. This is the first screen encountered by the officers in the field system. (Page 1)

5. **ENTER FIELD LOGON:** This screen provides logon capability for up to two officers. Each officer logging on must provide complete information, including name, serial number, rank, and password. As a precautionary feature, passwords must be retyped once. This helps minimize the chance of a typing error when the password is first entered. (Page 1)

6. **SUPERVISOR:** Depending on the password used, the ARS software determines whether supervisor rights will be allowed. An encrypted password file is used on the field system to do the necessary lookup. (Page 1)

7. **ASSIGN SUPERVISOR RIGHTS:** Supervisor rights are assigned to allow the user to approve reports and provide some of the necessary maintenance functions used by ARS. The PIR approval process normally takes place on the station system. Hence, supervisor rights are not often used on the field system. (Page 1)

8. **MAIN SCREEN OPTIONS:** This screen provides the single reference point from which all top level ARS options are called. These are report, transfer, print, supervisor and quit. (Page 1)

9. **REPORTING:** A user will normally select this option when first capturing PIR data. If selected, this option leads the user into the reporting options. (Page 1)

10. **REPORTING OPTIONS:** These are the basic report writing functions available to the user. They include create, edit/approve and delete. (Page 1)

11. **CREATE:** Selecting this choice, indicates to the program that the user wishes to enter new data for a PIR, and therefore leads to the summary screen options. (Page 2)

12. **SUMMARY SCREEN OPTIONS:** This screen provides the single reference point from which all PIR components are called. (Page 2)

13. **CRIME:** Although a user can select to enter PIR data in virtually any order that he or she wishes, crime data is normally entered first. (Page 2)

14. **ENTER CRIME:** Crime data are entered with the use of free flowing text fields and pick-list items. (Page 3)

15. **CRIME LOCATION:** The user can select to enter data for the crime's location by responding to an entry from within the crime screen. (Page 3)

16. **VICTIM'S RESIDENCE:** In the event that the crime occurred at the victim's residence, the user can notify the program of this by responding to an entry from within the crime location screen. (Page 3)

17. **ENTER ADDRESS:** The street address where the crime occurred is recorded. (Page 3)

18. **COPY TO VICTIM'S INFO:** The street address of either the victim's residence or business is copied automatically to the victim's record. (Page 3)

19. **VICTIM'S BUSINESS:** In the event that the crime occurred at the victim's place of business, the user can notify the program of this by responding to an entry from within the crime location screen. (Page 3)

20. **ENTER CRIME LOCATION:** In the event that the crime occurred outside of the victim's residence or place of business, the user will record the street address where the crime occurred. (Page 3)

21. **ENTER OTHER CRIME INFO:** Other pertinent information related to the crime include premises, entry point, exit point, entry method and instrument or tool. (Page 3)

22. **VICTIMS:** Victim data are normally entered next. (Page 2)

23. **ENTER VICTIM:** Victim data are entered in a similar manner as crime data. Pick-list items allow the user to quickly and accurately record the victim's information. (Page 4)

24. **VICTIM VEHICLE:** The user can select to enter data for the victim's vehicle by responding to an entry from within the victim's screen. (Page 4)

25. **ENTER VICTIM VEHICLE:** The victim's vehicle information is recorded at this point. (Page 4)

26. **MORE VEHICLES:** Multiple vehicles for the victim can be recorded by pressing a predefined key on the keyboard. (Page 4)

27. **VICTIM INDEMNIFIED:** If the victim has been indemnified, the user can select to record this information by responding to an entry from within the victim's screen. (Page 4)

28. **ENTER INDEMNIFICATION:** Indemnification information for the victim can be recorded at this point. (Page 4)

29. **MORE VICTIMS:** Multiple victims' information can be recorded by pressing a predefined key on the keyboard. (Page 4)

30. **SUSPECT:** Choosing this menu option will lead the user to the suspects' screen. (Page 2)

31. **ENTER SUSPECT:** Suspect data are entered at this point. (Page 5)

32. **SUSPECT IDENTIFIED:** In the event that the suspect has been identified, the user can select to record this information by responding to an entry from within the suspect's screen. (Page 5)

33. **ENTER SUSPECT ID:** Information such as the suspect's name or booking number can be recorded at this point. (Page 5)

34. **MORE SUSPECTS:** Multiple suspects' information can be recorded by pressing a predefined key on the keyboard. (Page 5)

35. **SUSPECTS VEHICLE:** This menu choice leads the user to the suspect's vehicle screen. (Page 2)

36. **ENTER SUSPECTS VEHICLE:** Data pertaining to a suspect's vehicle description are recorded at this point. (Page 6)

37. **MORE VEHICLES:** Multiple suspects' vehicle descriptions can be recorded by pressing a predefined key on the keyboard. (Page 6)

38. **INVOLVED PERSONS:** Choosing this menu choice will lead the user to the involved persons' screen. (Page 2)

39. **ENTER INVOLVED PERSONS:** Enter any involved individuals for this crime occurrence at this point. An involved person can be categorized as a witness, reporting person, securing person, discovering person, parent, contact person or any combination of these. (Page 6)

40. **MORE INVOLVED:** Multiple involved persons can be recorded by pressing a predefined key on the keyboard. (Page 6)

41. **PROPERTY:** Choosing this menu item will allow the user to enter any property items pertaining to this report. (Page 2)

42. **ENTER PROPERTY:** Property items can be recorded here. These are categorized by type and include taken, damaged, lost and recovered items. Property items are electronically tied to the victims' entity so as to create a one to many relationship between victims and property items. (I.e. each victim can have multiple property items taken, lost, etc.) (Page 6)

43. **MORE PROPERTY:** Multiple property items can be recorded by pressing a predefined key on the keyboard. (Page 6)

44. **M.O.:** Choosing this menu item will allow the user to record the method of operation (MO) for this particular PIR. (Page 2)

45. **ENTER MO:** A user can record the method of operation in this section of the program using a series of pick-list items and a narrative. (Page 2)

46. **EVIDENCE:** Evidence items are accessed via this menu choice. (Page 2)

47. **ENTER EVIDENCE:** Evidence items are entered in this section. These are categorized as narcotics, currency, firearms or other. Unlike property items, evidence items are not tied to any specific person. (Page 6)

48. **MORE EVIDENCE:** Multiple evidence items can be recorded by pressing a predefined key on the keyboard. (Page 6)

49. **NARRATIVE:** A PIR's narrative section is accessed via this menu choice. (Page 2)

50. **ENTER NARRATIVE:** The narrative portion of a PIR is entered with the use of a basic word processing program. An added feature is the ability to copy a narrative from another PIR with the use of a programmed function key. (Page 2)

51. **ADD'L MISC NOTIF:** This menu choice allows the user to access the additional miscellaneous and notifications portion of the PIR. (Page 7)

52. **ENTER ADD'L MISC NOTIF:** The user can record any required additional notes which include whether fingerprints were attempted, notifications to other divisions, and connected report information. (Page 7)

53. **SIGNATURE:** The signature portion of the PIR is accessed via this menu choice. (Page 7)

54. **ENTER SIGNATURE:** By entering his or her password, the user is able to electronically "sign" the PIR. Prior to signing it, a screen appears which warns the user of any omissions or errors made in other parts of the PIR. (Page 7)

55. **CONFIRM PASSWORD:** The password entered at this point must coincide with the original password recorded at the time the user logged on. (Page 7)

56. **SET PASSWORD:** Once the password has been confirmed, the officer's name and serial number are permanently recorded on with the current PIR. (Page 7)

57. **APPROVAL:** The approval process is accessed via this menu choice. (Page 7)

58. **ENTER APPROVAL:** Only supervisors have the ability to approve reports. By entering his or her password, a supervisor will permanently record his or her name and serial number with the data for the current PIR. Although this process is normally performed on the station system, it could be done on the field system as a backup procedure. The approval process follows the same logic as the signature process. (Page 7)

59. **CANCEL REPORT:** This menu selection leads the user to the cancel report process of the program. (Page 7)

60. **CONFIRM CANCEL:** Due to the potential for data loss, the user is asked to confirm whether or not to continue prior to discarding the current PIR. (Page 7)

61. **CANCEL REPORT:** Once the user responds to continue with the cancel report process, the report is erased. (Page 7)

62. **AUTO REVIEW:** This menu selection allows the user to set auto review for the program. (Page 7)

63. **SET AUTO REVIEW:** Auto review allows a reviewer of the PIR, normally a supervisor, to sequentially visit each of a PIR's components with minimal effort. (Page 7)

64. **AUTO ENTRY:** This menu choice leads the user to the auto entry portion of the program. (Page 7)

65. **SET AUTO ENTRY:** In auto entry, the program allows the user to automatically visit only those components of a PIR which are pertinent to a particular crime occurrence and to deselect those that are not. This process can save valuable time during data entry. (Page 7)

66. **ESC:** Pressing the ESC key allows the user to return to the main screen. (Page 7)

67. **EDIT/APPROVE:** This menu choice is available from the reporting options. As its name implies, it provides the means by which users are able to edit and, in the case of supervisors, approve PIRs. (Page 2)

68. **SELECT PIR:** This process allows the user to select a PIR from the main screen for the purpose of editing or approving a PIR. The program next follows the same logic as the create function. (Page 2)

69. **DELETE:** The delete option is available from the reporting options. (Page 2)

70. **SELECT PIR:** The program will next the user to select the PIR that he or she wishes to delete. (Page 2)

71. **CONFIRM DELETE:** Due to the potential for data loss, the user is prompted to confirm with the continuation of the delete process. (Page 2)

72. **DELETE PIR:** This process will discard the selected PIR. (Page 2)

73. **ESC:** Pressing the ESC key allows the user to return to the main screen. (Page 2)

74. **TRANSFER:** Selecting this choice from the main screen will lead the user to the transfer options screen. (Page 1)

75. **TRANSFER OPTIONS:** The transfer options provide the means by which data can be migrated between the field and the station systems. A report can be transferred to a supervisor for review (sent to IN-BOX; station system only) or a report can be sent back to an officer for correction (Kicked-back; station system only). (Page 1)

76. **MARK PIR XFER:** This menu choice leads the user to the modem transfer process. (Page 8)

77. **ENVIRONMENT:** This option is not available on the station system. (Page 8)

78. **SELECT, COMPRESS, ENCRYPT PIRs:** PIRs to be transferred from the field system are selected, compressed, and encrypted. (Page 8)

79. **SET MODEM COMMUNICATION:** The internal Hayes compatible modem located within the laptop is initialized and set to dial the station system. (Page 8)

80. **TRANSMIT PIR:** PIR data are transmitted via telephone to the station system. A copy of the report is then copied to a backup directory. This is done to provide the means of

retrieving the PIR data in the event of a failure with the transmission. (Page 8)

81. **DOWNLOAD PIR:** This menu choice leads the user to the transfer of PIR data from a computer to diskette. (Page 8)

82. **SELECT PIR:** PIRs to be transferred are selected. (Page 8)

83. **COMPRESS PIR:** PIR data are compressed prior to being migrated to diskette. (Page 8)

84. **MOVE PIRs TO DISKETTE, OFFLOAD:** Compressed PIR data are copied to diskette as well as to a separate portion of the disk (OFFLOAD subdirectory). This latter part is done to provide the means of retrieving the PIR data in the event of a failure with the diskette. (Page 8)

85. **UPLOAD PIRs:** PIR data is moved from a diskette to a computer with the use of this option. (Page 8)

86. **READ A DRIVE:** Reading the diskette drive ensures that the device is ready to perform the required operation. This entails making certain that a diskette is loaded into the unit. (Page 8)

87. **MOVE PIRs FROM DISKETTE:** All PIR data on the diskette are transferred to the station system. All data on the diskette is erased in order to allow future use of the diskette. (Page 8)

88. **UNCOMPRESS PIRs:** This is basically a reversal of the previous compression process, and it allows the PIR to become available for ARS processing. (Page 8)

89. **OFFLOAD PIRs:** This menu choice serves to copy previously transferred PIR data from a special portion of the laptop's internal disk (OFFLOAD subdirectory) to diskette. This is available to retrieve PIR data which was damaged during transfer via diskette or modem. (Page 8)

90. **READ OFFLOAD DIRECTORY:** The OFFLOAD subdirectory's contents are read. (Page 8)

91. **MOVE PIRs TO DISKETTE:** PIR data are moved from the OFFLOAD subdirectory to diskette. Data were already compressed while stored in the subdirectory. (Page 8)

92. **SEND TO SUPERVISOR:** This option allows an officer to transfer a completed report to a supervisor for approval. (Page 8)

93. **ENVIRONMENT:** This option is only applicable to the station system. (Page 8)

94. **SET STATUS TO IN-BOX:** PIRs are send for supervisor approval on the station system by setting their status flag to IN-BOX. (Page 8)

95. **KICKBACK TO OFFICER:** This option allows a supervisor to return a report to an officer for corrections. (Page 8)

96. **ENVIRONMENT:** This option is only applicable to the station system. (Page 8)

97. **SET STATUS TO KICKBACK:** PIRs are rejected from approval on the station system by setting their status flag to KICKBACK. (Page 8)

98. **ESC:** Pressing the ESC key allows the user to return to the main screen. (Page 8)

99. **PRINT:** Selecting this choice from the main screen will lead the user to the print options screen. (Page 1)

100. **PRINT OPTIONS:** The print options enable a user to produce printed copies of the PIRs. This function is normally performed at the station system, but it is also available on the field system as a backup procedure. (Page 1)

101. **PRINT FINAL:** This menu choice allows the user to print final selected approved PIRs. Printing final is allowed only once on a PIR. Subsequent print final requests on a PIR will cause the word DUPLICATE to appear on the printed output. (Page 9)

102. **SELECT APPROVED PIRs:** The program will next allow the user to select the approved PIRs that he or she wishes to print final. (Page 9)

103. **CREATE PRN FILES:** The print process first creates a formatted text file with the DOS (Disk Operating System) file extension of PRN. This text file includes all printer control codes necessary for the printer to interpret the output. (Page 9)

104. **SEND PRN FILES TO PRINTER:** PRN files are sent to the printer. (Page 9)

105. **SET PIRs TO ARCHIVE:** Once printed, PIRs are archived. The archive process compresses PIRs in order save disk space on the network. On the field system, PIRs are left uncompressed and available for the user's view. (Page 9)

106. **PRINT DRAFT:** This menu choice allows the user to select those PIRs that he or she wishes to print draft. Printing draft will cause the word DRAFT to appear on the printed output. (Page 9)

107. **SELECT PIRs:** The program will next allow the user to select those PIRs that he or she wishes to print draft. (Page 9)

108. **CREATE PRN FILES:** The print process first creates a formatted text file with the DOS (Disk Operating System) file extension of PRN. This text file includes all printer control codes necessary for the printer to interpret the output. (Page 9)

109. **SEND PRN FILES TO PRINTER:** PRN files are sent to the printer. (Page 9)

110. **PRINT FIELD NOTES:** This function is not available. (Page 9)

111. **NULL FUNCTION:** This means that no processing occurs. (Page 9)

112. **PRINT GENERAL NOTES:** This function is not available. (Page 9)

113. **PRINTER SETUP:** Selecting this menu option will lead the user to the available printer setup options. (Page 9)

114. **PRINTER SETUP OPTIONS:** These options are available for the user to select the type of printer that he or she wishes to output the print to. (Page 9)

115. **SET PRINTER CHARACTERISTICS:** Depending on the printer type choice selected, the output will be formatted according to the hardware specifics for that type of printer. ARS supports nine different types of printers. (Page 9)

116. **ESC:** Pressing the ESC key allows the user to return to the main screen. (Page 9)

117. **SUPERVISOR:** Selecting this choice from the main screen will lead the user to the supervisor options screen. (Page 1)

118. **SUPERVISOR OPTIONS:** These options provide the supervisor with a variety of functions which allow him or her to provide support to the ARS. These options are not normally used on the field system. (Page 1)

119. **DISPLAY STATUS:** This menu option allows the user to display PIRs with varying status types. This in turn allows the supervisor to review or print the displayed reports. (Page 10)

120. **SUPERVISOR:** ARS determines whether the user has supervisor rights. (Page 10)

121. **ENVIRONMENT:** This option is only applicable to the station system. (Page 10)

122. **IN-BOX:** This menu option is used to display PIRs with a status flag of IN-BOX or APPROVED. This is the default display presented to supervisors after they log on to ARS. The availability of these reports notifies the supervisor of the need for their attention. (Page 11)

123. **DISPLAY IN-BOX, APPROVED:** PIRs with a status flag of IN-BOX or APPROVED are made available for display. (Page 11)

124. **IN PROGRESS:** This menu option is used to display PIRs which are in progress. (Page 11)

125. **DISPLAY IN PROGRESS:** PIRs with a status flag of SIGNED, INCOMPLETE, KICKBACK or IN-BOX are displayed. (Page 11)

126. **ALL:** This menu option is used to display PIRs with all status flags with the exception of ARCHIVED. (Page 11)

127. **DISPLAY ALL:** PIRs with status flags of INCOMPLETE, SIGNED, APPROVED, KICKBACK, IN-BOX and IN-USE are displayed. (Page 11)

128. **APPROVED:** This menu option is used to display only approved PIRs. (Page 11)

129. **DISPLAY APPROVED:** PIRs with a status flag of APPROVED are selected for display. These are PIRs which have been approved by a supervisor. (Page 11)

130. **ARCHIVED:** This menu option is used to display archived PIRs. (Page 11)

131. **DISPLAY ARCHIVED:** PIRs with a status flag of ARCHIVED are selected for display. These are PIRs which have been approved, printed final, and stored in the archive directory. (Page 11)

132. **INCOMPLETE:** This menu option is used to display incomplete PIRs. (Page 11)

133. **DISPLAY INCOMPLETE:** PIRs with a status flag of INCOMPLETE are selected for display. Incomplete PIRs are those which have not been signed by an officer. (Page 11)

134. **KICKBACK:** This menu option is used to select for display PIRs kicked back to reporting officers. (Page 11)

135. **DISPLAY KICKBACK:** PIRs with a status flag of KICKBACK are selected for display. These are PIRs which have not been approved by a supervisor due to errors or omissions by the reporting officer and which have been electronically sent back to the officer for correction. (Page 11)

136. **SIGNED:** This menu option is used to display signed PIRs. (Page 11)

137. **DISPLAY SIGNED:** PIRs with a status flag of SIGNED are selected for display. Signed PIRs are those that have only been signed by an officer, but not yet sent for approval. (Page 11)

138. **ESC:** Pressing the ESC key allows the user to return to the main screen. (Page 11)

139. **REFRESH DISPLAY:** This menu option is used to allow the user to refresh the screen. That is information displayed on the screen is updated with the use of this option. (Page 10)

140. **SUPERVISOR:** ARS determines whether the user has supervisor rights. (Page 10)

141. **ENVIRONMENT:** This option is only applicable to the station system. (Page 10)

142. **REFRESH SCREEN:** The screen, which displays available PIRs, is updated at this point. The screen is also updated automatically every thirty seconds, without the need for a user request. (Page 10)

143. **AUTO PRINT:** This menu option is used to enable or disable the automatic final print of PIRs following their approval. (Page 10)

144. **SUPERVISOR:** ARS determines whether the user has supervisor rights. (Page 10)

145. **ENVIRONMENT:** This option is only applicable to the station system. (Page 10)

146. **TOGGLE AUTO PRINT:** This process will set an internal program switch which causes PIRs to print final following approval. Selecting this option a second time, causes this option to be disabled. The default is the disabled option. (Page 10)

147. **CHG OFFICER:** This option can be used by a supervisor to change a PIR's reporting officer to a new officer. (Page 10)

148. **SUPERVISOR:** ARS determines whether the user has supervisor rights. (Page 10)

149. **ENVIRONMENT:** This option is only applicable to the station system. (Page 10)

150. **ENTER NEW SERIAL #:** This process prompts the supervisor to enter the new officer's serial number, which is then assigned to the PIR. (Page 10)

151. **SECRET COMBO:** This option can be used by a supervisor to help an officer regain use of his or her laptop computer on the field. Normally, this option is used when an officer forgets or incorrectly enters a password on the field system. (Page 10)

152. **SUPERVISOR:** ARS determines whether the user has supervisor rights. (Page 10)

153. **ENVIRONMENT:** This option is only applicable to the station system. (Page 10)

154. **ENTER INFO, DISPLAY COMBO:** A supervisor will need to enter the reporting officer's serial number and laptop id. The program will then display a sequence of numbers, which when entered on the laptop's short logon screen, will display the reporting officer's original password for a brief period of time. (Page 10)

155. **OFCR FILE:** This option can be used by a supervisor to modify the station system's password file. This password file is used to allow access and set the security level of the station system's ARS users. (Page 10)

156. **SUPERVISOR:** ARS determines whether the user has supervisor rights. (Page 10)

157. **ENVIRONMENT:** This option is only applicable to the station system. (Page 10)

158. **MODIFY OFFICER FILE:** This process allows the supervisor to enter modifications to the password file. It should be noted that the supervisor will not be able to view any of the existing officers' passwords, but will be able to reset them allowing officers to enter new passwords. (Page 10)

159. **DATE/TIME:** This option is available to all users and operates on both station and field systems. It leads the user to the setting of date and time without the need to logoff. (Page 10)

160. **SET DATE/TIME:** This process sets the date and time on the computer. This is an important feature since PIRs rely on the accuracy of this information. If an officer forgets to verify the date and time at logon, he or she can use this process to update the date and time, without needing to logoff and logon again. (Page 10)

161. **ESC:** Pressing the ESC key allows the user to return to the main screen. (Page 10)

162. **QUIT:** Selecting this choice from the main screen will lead the user to the quit options screen. (Page 1)

163. **QUIT OPTIONS:** These options are available to allow the user to either suspend ARS processing (only on field system) or to terminate processing entirely. (Page 1)

164. **ENVIRONMENT:** Depending on the operating environment (station or field system), the program will behave differently. (Page 1)

165. **LOGOFF/QUIT FOR NOW:** Selecting either the logoff or quit for now will lead the user to terminate ARS processing; they both perform the same function. (Page 1)

166. **CONFIRM:** The user will be prompted to confirm the intent to logoff. Deciding not to continue with logoff will lead the user back to the main screen. Deciding to continue, on the other hand, will lead the user to the logon process. (Page 1)

167. **LOGOFF:** Selecting this option on the field system will lead the user to terminate ARS processing. (Page 1)

168. **QUIT FOR NOW:** This option is used to suspend ARS processing. This differs from a complete logoff because the user will only need to enter his or her password to regain access to the field system. (Page 1)

169. **ENTER SHORT LOGON:** The short logon will only prompt the user for his or her password. (Page 1)

170. **CONFIRM PASSWORD:** The password is confirmed if it matches the one used at the initial logon screen. A match will lead the user to the main screen options. A no match will prompt the user again for his or her password. (Page 1)

171. **ESC:** Pressing the ESC key prompts the user whether he or she wishes to logoff the system. A positive response will lead the user to the logon procedure. A negative response will bring the user back to the main screen options. (Page 1)

APPENDIX F SAMPLE OF ARS-GENERATED REPORT

[DUPLICATE]

Los Angeles Police Department
PRELIMINARY INVESTIGATION of
BURGLARY / COUNTERFEITING

DR 90-0643000
Inv Div: 06 HOLLYWOOD

Crime Detail Information
Date Occurred: 03/06/1991
Time Occurred: 0700 to 1700
Date & Time Reported: 03/06/1991 1830
Prints Attempted: YES
Prints Obtained: NO

Crime Location [Same as Victim's Residence] RD: 0666
1358 N WILCOX AV
Los Angeles, CA 90028
Premises:
Entry/Exit Pt: WINDOW-FRONT / DOOR-FRONT
Entry Method: FORCED ENTRY
Inst/Tool: SCREWDRIVER

Conn. Rpts

Notifications Div:

Telephonic Report: NO

Extra Copies:

MISC
Motiv Hate/Prejudice: NO
Domestic Violence: NO
Use of Force: NO
Shots Fired: NO
Gang Related: NO

Reporting Employees Signed: 03/07/91 06:55
Name: SMITH, J.D. (SN 12345)
Partner: JONES, A.A. (SN 54321)
Unit: 06A45
Reviewed/Approved by Signed: NO
Name: ASSISTANT, W.C. (SN 01111)
Div: 06 HOLLYWOOD Rank: SGT 2

Date & Time Reproduced: Clerk:

MO: 1: VICTIM WAS-VICTIM IN LAST 12 MONTHS
THIS IS WHERE THE OFFICER WILL TYPE THE M.O. NARRATIVE. THE OFFICER WILL BE ABLE TO PICK UP TO THREE M.O.'S (AS ONE EXAMPLE ABOVE) FROM THE CHOICES AVAILABLE IN PACMIS.

VICTIM(S) 1 Victim Stln: $700.0 3.4 Given?: NO

V-1 DOE, JAMES
Res: 1358 N WILCOX AV
Los Angeles, CA 90028
Res Ph: 213/555-5555 Bus Ph: 213/555-5555 x55555 (DAYS)
Bus: ACME STEEL FACTORY
789 W WILLOW AV
BELL GARDENS, CA 90023
Indemn: NO

Sex/Desc: M CAUCASIAN/WHITE
Language:
Age/DOB: 46 (02/23/1945)
DL/Other: N7777777 (CA)
Occup: SUPERVISOR
Prop Stln: STEREO/VCE
Amt Stln: $700.00
Amt Rcvd: $0.00
Est. Damage: $0.00

SUSPECT VEHICLE(S)

SV-1
Yr: 1976-79
Make: CHEVROLET
Model: CAMARO
Type: 2D 2 DOOR
Color: BLU/
Lic/St/VIN: 034NGG (CA)
Add'l Desc:

Body Features:

Window Features:

Interior:
CRM
Exterior:

SUSPECT(S) NONE SEEN

INVOLVED PERSON(S)

WIT-1 CITIZEN, JANE
Res: 1359 N WILCOX AV
LOS ANGELES, CA 90028
Res Ph213/555-5555 (DAYS) Bus Ph: / -
Bus: NONE

Inv. Type: WIT
Sex/Desc: F HISPANIC
Language:
Age/DOB: 27 07/30/1963
DL/Other: N1111111 (CA)
Occup: HOME MAKER

PROPERTY Taken: $700.00 Rec'd: $0.00 Dam: $0.00 Lost: $0.00

V-1 Taken: $700.00 Rec'd: $0.00 Dam: $0.00 Lost: $0.00

#	Quan	Article	Serial Num	Brand	Model	$ Amt
TAKEN						
1	1	STEREO	UNKNOWN	SANSUI	XJ2000	500.00
	Misc:	SCRATCH ON LEFT SIDE				
2	1	VCE	UNKNOWN	SONY	MX45	200.00
	Misc:	NONE				

NARRATIVE

THIS IS AN EXEMPLAR REPORT ONLY!
THIS IS THE NARRATIVE SECTION OF THE AUTOMATED P.I.R. THE VICTIM(S), SUSPECT VEHICLE(S), SUSPECT(S), INVOLVED PERSON(S), PROPERTY, NARRATIVE, AND EVIDENCE SECTIONS WILL EXPAND AS ADDITIONAL INFORMATION IS ADDED TO A P.I.R.

EVIDENCE NONE