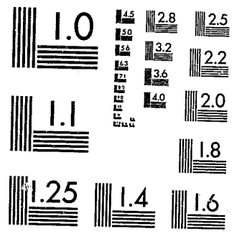

FINAL EVALUATION OF THE AUTOMATED REGIONAL JUSTICE INFORMATION SYSTEM (ARJIS)

LEAA GRANT AWARD NO.
A-2469-5-A-79

San Diego
ASSOCIATION OF GOVERNMENTS

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MAY, 1981

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PREFACE

The Criminal Justice Evaluation Unit of the San Diego Association of Governments was authorized by the San Diego Regional Criminal Justice Planning Board to evaluate the Automated Regional Justice Information System (ARJIS). The development of ARJIS was funded by a five-year grant for $2.4 million from the Law Enforcement Assistance Administration (LEAA).

The purpose of ARJIS is to provide San Diego County law enforcement personnel with regional information to assist in the identification of offenders who cross jurisdictional boundaries to commit crimes. A preliminary evaluation report was prepared by evaluation staff in November, 1980. That report presented the historical development and implementation of ARJIS under grant funding. This final evaluation discusses the status of the system, system usage, user satisfaction with ARJIS, security and privacy considerations, and a comparison with other regional criminal justice information systems. The report also assesses the impact of ARJIS, to date. Since ARJIS is not yet fully operational, the findings presented may not reflect the potential effectiveness of the system.

The Executive Summary presents issues, conclusions, and recommendations. An indepth discussion of the issues follows the summary. This evaluation should be useful for local officials in making decisions regarding funding of ARJIS, law enforcement personnel in maximizing effective use of the system, and ARJIS staff in directing operations.

The assistance of project staff, management committee members and local law enforcement personnel in preparing this report is appreciated.

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NARRATIVE

In 1976, the Automated Regional Justice Information System (ARJIS) was funded by the Law Enforcement Assistance Administration ($2.4 million). The system was designed to assist in the identification and apprehension of suspected criminals by increasing the exchange of information among San Diego County law enforcement personnel. As originally designed, the system contained the following features: the Master Operations Index (MOI) which integrates the crime case, arrest, suspect and property files; personnel; automated worthless document; crime analysis and manpower allocation components.

This report presents changes in the development, use and effectiveness of ARJIS since November, 1980 when the preliminary evaluation was completed. In addition, a cost analysis is presented which compares the cost of ARJIS to potential cost savings. Parts of the system are still not developed, others are being changed, and some are not being utilized by all agencies; so the full impact of ARJIS cannot be measured.

GENERAL CONCLUSIONS

Since November, 1980, the use of ARJIS has increased, as have the benefits received in terms of arrests and crime cases cleared with ARJIS information. It is expected that the effectiveness of ARJIS will increase if officers receive additional training in data access, the quality of information is improved, components are fully utilized by all law enforcement agencies in the region, and proposed development and enhancement of the system occur. These issues were identified as significant problem areas in the November 1980 report and they continue to influence the effectiveness of ARJIS. During the next year, it is suggested that careful monitoring be conducted and periodic reports be submitted to the ARJIS board to ensure that the problem areas are being addressed. These reports should also include cost assessments compared to benefits received. Findings suggest that there may be cost savings associated with ARJIS, but it is not known if savings will outweigh the actual expenditures when the system is fully operational.

ISSUE I: DETERMINE THE STATUS OF THE NINE ARJIS COMPONENTS.

Conclusions

Significant progress has been made by ARJIS staff toward the implementation of ARJIS, with seven of nine components developed. Since November, 1980, the pawned property, crime analysis, traffic and automated worthless document functions have been developed. In addition, enhancements have been made to existing components.

Findings

1. The following components have been developed: Master Operations Index (MOI); field interview; crime case; property; personnel;

crime analysis and automated worthless document index. Six of these components do not meet all the primary design specifications established by users in 1976-1977.

2. The feasibility of implementing the full arrest component is being considered by ARJIS staff and the management committee (e.g., cost vs. benefit).

3. A regional manpower allocation component is not being developed because most departments do not have the necessary computer-aided dispatch systems.

4. The objective to interface ARJIS with local, state and national computer systems has not been met.

Recommendations

The original design specifications for ARJIS should be reevaluated when priorities regarding future enhancements are developed. Considerations should be based on need and current capabilities.

ISSUE II: DETERMINE THE EFFECTIVENESS OF ARJIS BASED ON CURRENT OPERATIONS.

Conclusions

The effectiveness of ARJIS in assisting officers with arrests and case clearances has increased since 1980. It is expected that the impact of ARJIS will be greater in FY 1981-82 if components are fully utilized, officers are trained in accessing data and proposed components are operationalized.

Findings

1. Field officers estimated that ARJIS was useful in making 10% of all patrol arrests in 1981, compared to 5% in 1980. This is equivalent to approximately 9,000 to 11,000 arrests per year regionwide, based on the assumption that patrol officers make 75-90% of all arrests.

2. In 1981, detectives estimated that in 18% of all cases cleared, ARJIS provided useful information, an increase from 13% in 1980.

3. In an additional study of actual reported crime cases closed by arrest or exceptional means, findings indicate that 10% of the cases were cleared using ARJIS. When projected annually, it is estimated that ARJIS is useful in 1,500 case clearances of Part I offenses (12%).

4. It is premature to attribute changes in regional crime trends to the use of ARJIS since the system is not fully operational. Also, it is possible that changes could be due to reporting procedures rather than actual changes in crime patterns.

Recommendations

1. *See Issue IV, page 5.*

2. *Continued assessment of ARJIS is critical to ensure that expected benefits are being received. This should be performed on a regional basis, with regular reports to the ARJIS Board of Directors.*

3. *Crime statistics prepared by ARJIS for the Bureau of Criminal Statistics (BCS) should be standardized to provide comparative trend analysis data (e.g., reporting periods should be consistent).*

ISSUE III: DETERMINE THE COST OF ARJIS COMPARED TO THE BENEFITS RECEIVED.

Conclusions

A definitive cost-benefit analysis of ARJIS is premature because the system is not fully operational. Also, it is difficult to associate dollar values with such benefits as arrests and case closures. Potential cost-savings have been identified, but it is not certain whether these savings will justify projected expenditures. Findings suggest that during the past year, the system has become more cost-effective based on reductions in cost per successful use. Projections for FY1981-82, administrative and utilization costs increased by 24% over FY1980-81 annualized projections. This increase is partly due to certain administrative and overhead costs that will no longer be absorbed by the City of San Diego and additional data processing costs for job development and testing.

Findings

1. It is estimated that the cost per arrest/case closure using ARJIS decreased from $273 in 1980 to $140 in 1981, based on the FY1980-81 ARJIS budget. This cost could be affected by increases in the ARJIS budget for FY1981-82.

2. The cost per inquiry (regionwide) is estimated at $3.15. This figure incorporates computer, development and administrative costs. Comparative trend data are not available because ARJIS is not programmed to summarize inquiry information.

3. The ARJIS budget increased from $1,608,635 in FY1980-81 to $1,998,200 in FY1981-82 based on average estimates for system use. The FY1981-82 budget includes $1,368,319 for on-line utilization based on projections of use in 1980 before the system was fully operational; and $629,881 for JPA administrative costs, personnel and system development (e.g., changes, enchancements).

Recommendations

1. *Cost-effectiveness and cost-efficiency of ARJIS should continue to be monitored.*

2. *Data processing should provide summary information on inquiries made by each agency, by component.*

3. *FY1981-82 budget should be revised to reflect the current estimates of system utilization.*

ISSUE IV: REVIEW THE FACTORS THAT INFLUENCE THE EFFECTIVENESS OF ARJIS.

Conclusions

Specific factors related to the operation and use of ARJIS influence the effectiveness of the system. Although law enforcement administrators are satisfied with the current management of ARJIS, and use of the system has increased, the following problems still exist:

- Users are not adequately trained to access the system.
- ARJIS data are not always accurate, complete, timely and/or easily accessible.
- Data entry personnel have not received sufficient training.

Findings

1. The majority of agency administrators (7 out of 9) state that ARJIS should continue to be administered by the present Joint Powers Agency structure. Most administrators indicate that management staff has been responsive to their concerns.

2. The percentage of officers who have received ARJIS information has increased to 87% regionwide, from 75% in 1980.

3. Estimates of inquiries to the system on a yearly basis indicate a variance from 49 to 339 inquiries per officer among agencies. Agencies in which investigators are the primary users of ARJIS, tend to have the lowest average use per officer.

4. More officers have been trained in data access in 1981 (55% vs. 47% in 1980), but there is an expressed need for additional training by 80% of the officers surveyed.

5. Although only a minority of officers mentioned a need for training in report preparation, findings indicate that errors are occurring in report writing that affect accuracy of information in ARJIS.

6. More than half of the agency administrators (6) state that data entry personnel need training in the new components.

7. Three agencies are selectively entering crime cases and field interviews. Also, two agencies are not entering crime cases. These factors limit the value of the regional data base.

8. The average time between a crime incident report being completed and entry into ARJIS is 6.3 days. The time lapse for field interviews is 9.5 days. The range varies from the same day to 57 days for crime cases, and the same day to 55 days for field interviews.

9. The goal of 24-hour access to ARJIS has not been achieved. The problems of computer downtime and response time on inquiries are being addressed by data processing personnel.

10. Thirty-six percent (36%) of the officers surveyed state that ARJIS terminals are not easily accessible, and 61% state that it is difficult to obtain ARJIS information while on patrol.

Recommendations

1. *The ARJIS Board of Directors should require that the operating agency be accountable for fiscal and program matters through regular reports to protect the interests of all member agencies and increase the effectiveness of the system.*

2. *Officers in both investigative and patrol divisions should receive formal training in data access. Since Police Officer Standards and Training (P.O.S.T.) did not support ARJIS advanced officer training at the regional academy, the responsibility lies with individual agencies and ARJIS staff. Training should emphasize the value of MOI, the various uses of the search parameters for all components and the specific uses for different officer assignments (patrol, investigations and traffic).*

3. *Use of ARJIS should be encouraged by agency administrators and line supervisors.*

4. *Data entry personnel should receive additional training, especially in components that have been operational for a short time, to increase the accuracy and timeliness of data entry.*

5. *A policy regarding selective entry of documents should be developed as soon as possible. If documents are to be entered selectively, standardized criteria should be established.*

6. *The need for 24-hour availability of ARJIS should be evaluated. Also, ARJIS staff should continue to address the problems of unscheduled downtime and response time on inquiries.*

7. *ARJIS information should be made accessible to all officers on all shifts, either through personal access or an operator. Agencies should provide access to terminals for dispatchers to increase ARJIS use by field officers.*

ISSUE V: DISCUSS THE SECURITY AND PRIVACY ISSUES OF CRIMINAL JUSTICE INFORMATION SYSTEMS IN RELATION TO ARJIS.

Conclusions

ARJIS is in compliance with security and privacy statutes and regulations pertaining to information currently in the system. To date, there has been no known breach of the ARJIS security system.

Findings

1. Most information in ARJIS, except for personnel and field interview files, is public record information.

2. State statutes regarding criminal offender record information (CORI) will not apply to ARJIS until the arrest component is operational.

3. There are differing opinions regarding the advisability of entering investigative and intelligence information, such as field interviews, into criminal justice information systems, but no statutes address this issue.

4. Security of ARJIS is protected through a personnel clearance system which requires a user to enter an identification code before information can be obtained.

5. Physical security is protected by the secured location of both the computer and the ARJIS terminals.

Recommendations

1. *If intelligence and investigative information, such as field interviews, is to be retained in ARJIS, the following measures should be maintained to ensure privacy:*

   a. *Field officers should be trained to conduct only valid field interviews (i.e., an individual is suspected of criminal activity, but insufficient grounds exist for arrest).*

   b. *Supervisors should screen field interviews before entry into ARJIS to ensure the validity of each report.*

   c. *The six-month purge cycle for field interviews should be retained.*

   d. *Terminal security in each agency should be strictly maintained.*

   e. *Printouts containing field interview information should be stored in a secure location, or destroyed.*

2. *All personnel receiving clearance to access ARJIS should be trained in local policies and statutes pertaining to security and privacy.*

3. *ARJIS staff should change the personnel codes to enhance system security.*

ISSUE VI: COMPARE ARJIS TO OTHER REGIONAL CRIMINAL JUSTICE INFORMATION SYSTEMS.

Conclusions

The benefits received from ARJIS and the problems encountered are similar to other regional justice information systems. In addition, the cost of ARJIS is within the range of other systems. The administrative structures differ among the agencies studied. The variety of

organizational configurations suggest options that can be explored by the ARJIS Board of Directors.

Findings

1. The most frequently mentioned benefits of the eight systems studied are: (1) speed of access to files, (2) shared information in a centralized system, and (3) improved processing of paper/records.

2. The problems cited most often by respondents are data processing staff turnover and inadequate training of users.

3. ARJIS has the fourth highest budget of the systems studied which range in cost from $581,507 to $2,550,763 in FY1980-81. The variations in system complexity and number and nature of users affect cost comparisons.

4. Policy and budget decisions for these systems are made by any one, or a combination, of the following: (1) policy committee; (2) police administrators; (3) Chief Administrative Officer, and/or (4) elected officials.

Recommendations

None.

THE CITY OF
SAN DIEGO
CITY ADMINISTRATION BUILDING • 202 C STREET • SAN DIEGO, CALIF. 92101

OFFICE OF THE
CITY MANAGER
236-6363

May 21, 1981

Susan Pennell, Director
Criminal Justice Evaluation Unit
San Diego Association of Governments
Suite 524
Security Pacific Plaza
1200 Third Avenue
San Diego, California 92101

Dear Ms. Pennell:

Thank you for the opportunity to review your final evaluation report concerning the Automated Regional Justice System. I think it important to respond to a few areas of the report.

I would have to agree that training of the region's law enforcement officers in the use and capabilities of the ARJIS system is a task yet to be fully accomplished. It is unfortunate that we were not able to adequately train each and every one of the more than 2,100 law enforcement officers in the region in the use of the system as each component was made available. Such an undertaking coupled with the many ongoing training needs of law enforcement agencies in this area would be an extraordinary task at best. However, during the past few months the San Diego Police Department has developed a complete training program for ARJIS. Despite the fact that reimbursement was not approved by Peace Officers Standards and Training (P.O.S.T.) we are moving ahead to initiate region-wide ARJIS training soon after the start of the new fiscal year in July, 1981. The Regional Training Academy has equipped a training classroom with necessary telephone lines, and computer terminals for training purposes are ordered and upon arrival will be installed. A manual for use by ARJIS system users has been written by Lt. Jack McQueeney, who has been serving as ARJIS Project Manager, and has been disseminated through the San Diego Police Department's Crime Analysis Unit. This manual provides easy reference for complete use of the available ARJIS components. I am sure that as the upcoming fiscal year unfolds these training efforts should result in even more ARJIS use in the future and many more "success" stories as ARJIS becomes a mandatory tool for each and every investigation.

I would caution any attempt at definitive use of the figures noted on Page 3 of your executive summary concerning costs per arrest/case closure and cost per inquiry. This attempt at somehow evaluating the cost-benefit of ARJIS could be very misleading. As you point out in the same section of your report, these figures incorporate costs for computer service, job development testing, administrative costs and technical personnel to continue development and refinement of

the system. Hopefully, as the last two of the ARJIS components are put "online" and development can be minimized, the overall cost of the ARJIS system to each of its users can be evaluated on its own merits.

Budget figures, particularly those which indicate a 24% increase from Fiscal 1981 to Fiscal 1982 are misleading. These figures must be examined in their entirety and the following considered:

- Projections for January - June (Fiscal 1981) were developed at a point when the ARJIS systems were not yet completed or in some cases components untested. Faced with the end of the LEAA Grant it was necessary to make some reasonable estimates of costs and pass these costs along to each participating agency in order that the system could make a smooth transition from grant funding to agency funding. In order to keep these costs as low as possible yet provide budget estimates to allow ample funds for system utilization, the City of San Diego agreed to absorb certain administrative and overhead costs, including that of project management. In addition, the Data Processing Corporation absorbed costs associated with office space, on-site training, clerical and other support.

- Projections for Fiscal 1982, the first full fiscal year of agency funding, while showing an increase over the half-year Fiscal 1981 costs, include costs formerly absorbed by the City of San Diego and reflect a more accurate picture of total ARJIS costs for each of the region's participants. Any attempt then to compare it directly to Fiscal 1981 must be viewed with a full understanding of the differences in funding in the two years. In fact, it is interesting to note that the original estimates provided in November of 1980 to each of the ARJIS participant agencies showed a maximum cost of $2,016,292. As you know, the current budget for Fiscal 1982 is $1,998,200 which is a <u>decrease</u> from the November, 1980 maximum estimate.

Again, thank you for the opportunity of offering my comments on this evaluation. I would compliment you and your staff on a thorough and objective evaluation which I am sure will add to the information available concerning ARJIS and further aid us in making ARJIS the most cost-effective, crime fighting tool in the nation.

Sincerely,

Ray T. Blair, Jr.
City Manager

KNF:js

SAN DIEGO **DPC**

May 22, 1981

Ms. Susie Pennell, Director
Criminal Justice Evaluation Unit
Suite 524, Security Pacific Plaza
1200 Third Avenue
San Diego, CA 92101

Dear Ms. Pennell:

Thank you for the opportunity to review and comment on your evaluation of the Automated Regional Justice Information System (ARJIS). As you know, the San Diego Data Processing Corporation assumed responsibility for the technical aspects of the system on January 1, 1981. Since that time, we have attempted to adhere to the adopted FY80-81 work plan for new development while also attempting to improve existing system capabilities and responsiveness.

In particular, I would like to comment on items contained in the evaluation report regarding ARJIS availability and responsiveness. Most of these concerns can be attributed to the fact that the ARJIS computer processing workload increased by over 500% in the first four months of 1981. This necessitated numerous changes in equipment, software and procedures in order to assimilate such a significant increase in demand. The required changes at times lead to a condition where ARJIS was not available for processing. We have made significant progress in this regard as evidenced by the greater system availability attained over the past several months. We are also working toward having the system available on a 24 hour basis. Achieving greater system availability and 24 hour access will, however, require fundamental changes to existing ARJIS programs and operating procedures and will not be achieved in the immediate future.

In the area of system responsiveness, we have done whatever is possible to optimize the system by setting priorities and dedicating significant resources toward the processing of the ARJIS workload. This has had a marked improvement in the response time for most ARJIS operations. Any further improvements, will again require the expenditure of personnel resources to improve upon the existing design and programs within ARJIS. These changes will be realized in small increments and will continue to improve ARJIS responsiveness.

SAN DIEGO DATA PROCESSING CORPORATION
1200 THIRD AVENUE, SUITE 1000, SAN DIEGO, CALIFORNIA 92101, (714)236-6659

I would again like to thank you for the opportunity to review and comment on items of obvious concern to the member agencies of ARJIS. We share their concern and are continuing to improve conditions as rapidly as possible.

Very truly yours,

Robert J. Metzger
Executive Vice President
San Diego Data Processing Corp.

cc: Ken Fortier

RJM:mt

CHAPTER 1
STATUS OF THE SYSTEM

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ISSUE I: DETERMINE THE STATUS OF THE NINE ARJIS COMPONENTS.

SUMMARY

Significant progress has been made by ARJIS staff toward implementation of ARJIS components, with seven of nine components developed. The work-plan for FY 1981 was accomplished on schedule. Since November, 1980, the pawned property, crime analysis, traffic and automated worthless document functions have been developed. In addition, enhancements have been made to existing components.

DISCUSSION

The original design of ARJIS contained nine automated system components to be shared by the eleven law enforcement agencies in the San Diego region.

1. Field Interview
2. Crime Case
3. Property (pawned, stolen and wanted)
4. Arrest
5. Master Operations Index (MOI)
6. Personnel
7. Automated Worthless Document Index (AWDI)
8. Crime Analysis
9. Manpower Allocation

The Master Operations Index (MOI) was developed to provide simultaneous access to four components (field interview, crime case, property and arrest). The personnel component provides system security and detailed information on employees. The AWDI component contains information on worthless documents, such as forged checks. The crime analysis function aggregates crime case information to be used in tactical and operational planning, and management. The manpower allocation component was intended to computerize the assignment of officers to specific areas and shifts.[1] (See page 71 for a description of components)

COMPONENT STATUS

To date, seven of the nine ARJIS components have been developed (see

[1]For a more detailed discussion of the historical development of ARJIS, see Evaluation of the Automated Regional Justice Information System, Susan Pennell and Christine Curtis, SANDAG, November, 1980.

Table 1). An application is considered developed if it is available to users for data entry, even though all agencies may not be using a particular component. In addition, since November, 1980, enhancements have been made to most components.

TABLE 1

ARJIS COMPONENT IMPLEMENTATION
May, 1981

Component	Developed	Not Developed
MOI	X	
Field Interview	X	
Crime Case	X	
Property	X	
Personnel	X	
Crime Analysis	X	
Automated Worthless Document	X	
Arrest		X
Manpower Allocation		X

Original Design Specifications

In 1976, ARJIS staff and representatives from user agencies developed design specifications for each of the nine components. These objectives were given a priority based on whether they were critical or essential to system development, or just "nice to have". During the process of development, some objectives were revised or further refined. Six of the seven components that are operational do not fully meet all of the critical or essential objectives (field interview, crime case, property, personnel, crime analysis and automated worthless document index). Enhancements would be needed to satisfy the priority design specifications. These specifications should be reevaluated in developing priorities for future enhancements to determine if there is still a need, based on current capabilities of the components. (See Appendix D, page 82, for a listing of original design specifications.)

Workplan (FY 1980-81)

Since November, 1980, all tasks identified in the FY 1980-81 workplan have been accomplished. The most significant advances in system development are as follows:

1. The addition of the pawned property capability to the property component.

2. The implementation of the crime analysis component.

3. The development of the automated worthless document index and traffic citation functions.

As originally designed, the property component contains three parts: (1) stolen property; (2) pawned property; and (3) a glossary to identify non-serialized property. Currently, all portions of the property component are operational. The new pawn capability automatically correlates information on pawned property entered into ARJIS with stolen property in the system. In addition, inquiries can be made on factors such as pawnor's name, property description, and property identification numbers. Also, property information is now being used to prepare statistical reports.

A limited crime analysis function was available on-line prior to November, 1980. This allowed request of crime cases by geographic area. Since then, on-line crime analysis features have been added including a "solvability factor" that evaluates the potential for solving a case and a technique for identifying crime series. In addition, two crime analysis reports are being generated on a regular basis. One report automatically correlates cases entered into ARJIS with those in the system and provides information on matches of specific variables such as suspect name, suspect description, property or location of the crime. The other report compares trends in specific crime types for each agency.

The automated worthless document index was developed as of May, 1981. As yet, there has not been sufficient time to train users in data entry and inquiry. The component has the capability of providing a computerized index of cases involving fraudulent and stolen documents. The traffic citation portion of the arrest component has also been programmed, and ARJIS staff is in the process of training users.

Systems Not Developed

The feasibility of implementing the full arrest component (misdemeanor and felony arrests) is being considered by ARJIS staff and the management committee. Any arrest component must meet the security and privacy requirements for criminal offender record information (CORI) before it is operationalized. The cost of meeting these requirements, in addition to the development costs, must be compared against the expected benefits. The Sheriff's Department currently is responsible for a booking system which provides limited information on arrests.

The manpower allocation component is not being developed. At this time, it is not appropriate to develop a regional manpower allocation component because most departments do not have the computerized dispatch systems needed to provide data on calls for service.

System Interface

The objective of ARJIS interface with local (County), State (CLETS) and National (NCIC) computer systems has not been met. The estimated date for completion is 1982. This interface would eliminate the need for multiple terminals at law enforcement agencies; therefore, reducing equipment costs. Many representatives from user agencies feel that this interface should be a priority.

CHAPTER 2
EFFECTIVENESS OF ARJIS

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ISSUE II: DETERMINE THE EFFECTIVENESS OF ARJIS BASED ON CURRENT OPERATIONS.

SUMMARY

The effectiveness of ARJIS in assisting officers with arrests and case clearances has increased since 1980. It is expected that the impact of ARJIS will be greater in FY 1981-82 if components are fully utilized, officers are trained in accessing data and proposed components are operationalized. Continued assessment of ARJIS, on a regional basis, is necessary to determine if the expected benefits are achieved.

DISCUSSION

The primary objective of the ARJIS project is the provision of useful information for identifying suspects, making arrests, cancelling crime cases and recovering stolen property. The usefulness of such information can vary, ranging from providing leads to direct responsibility for an arrest or case closure. For the most part, ARJIS information is used in conjunction with other evidence to establish probable cause for an arrest or to close a crime case.

The degree to which ARJIS information is useful in a particular instance is a subjective question; therefore, officer feedback is an essential element in evaluating the effectiveness of ARJIS. The procedures for examining the impact of ARJIS include:

1. Questionnaire responses of officers estimating the utility of ARJIS in contributing to arrests or case closures.

2. A three-month study of all cases closed by investigators.

3. A trend analysis of reported crimes, clearances, and property recoveries.

USER SURVEYS

Patrol officers, detectives and line supervisors in the ten local law enforcement agencies completed surveys which addressed the value and impact of ARJIS. The surveys were administered in July, 1980 and April, 1981.

Field officers estimate that ARJIS was useful in 10% of all patrol arrests in 1981, compared to 5% in 1980 (see Table 2). Survey data also indicate that 7% of all arrests would not have been made without ARJIS, up from 4% in 1980.

Assuming that field officers are responsible for 75 - 90% of all arrests, it is projected that ARJIS is useful in 9,000 to 11,000 arrests per year in the region. Further, approximately 6,000 to 7,500 arrests per year would not be made without ARJIS. This does not include arrests made by detective divisions.

The impact of ARJIS on patrol arrests has been greater in the San Diego Police Department than in other agencies. Field officers in other agencies are still not using ARJIS to its full potential. The emphasis in some agencies has been on ARJIS as primarily an investigative tool, but data indicate that patrol officers can benefit from using ARJIS. Therefore, field officers should be trained to access ARJIS, and ARJIS information should be available through dispatch, if possible.

It should be noted that the use of ARJIS is not necessary in all arrests. For example, a patrol officer may arrest a suspect based on observed behavior, or a witness may provide sufficient information regarding a suspect to make an arrest. In addition, other sources of information can be used as a basis for arrest, such as want/warrant inquiries. In these instances, an ARJIS inquiry may not be necessary.

Also, ARJIS may be more useful in certain types of crimes. The survey questions do not differentiate between seriousness of offenses; therefore, misdemeanors and felonies are included in the estimate.

TABLE 2

IMPACT OF ARJIS ON PATROL ARRESTS*
USER SURVEYS
July, 1980 and April, 1981

Of The Last Ten Arrests:	1980	1981
% of patrol arrests in which ARJIS was useful		
San Diego Police Department	7%	13%
Other Agencies	2%	4%
All Agencies	5%	10%
% of patrol arrests that would not have been made without ARJIS		
San Diego Police Department	6%	9%
Other Agencies	2%	2%
All Agencies	4%	7%

* Based on estimates by patrol officers.

Case Clearances

Detectives surveyed estimated the value of ARJIS in clearing crime cases by arrest or exceptional means. The questions did not differentiate between the type of crime. In 1981, detectives estimated that 15% of all cases closed would have been unworkable without ARJIS. This is an increase from 10% in 1980 (see Table 3). A case is considered unworkable if there are no leads to investigate (e.g., suspect information, witnesses).

Detectives indicate that ARJIS was useful in approximately 18% of all cases closed by arrest or exceptional means, up from 13% in 1980. In addition, 9% of the case closures would not have been made without ARJIS (7% in 1980). The most significant increase in the impact of ARJIS in closing cases was experienced by agencies other than San Diego Police Department. This increase could be the result of training efforts focused primarily on investigators in these agencies and use of new components.

TABLE 3

IMPACT OF ARJIS ON CASE CLOSURES*
USER SURVEYS
July, 1980 and April, 1981

Of The Last Ten Case Clearances	1980	1981
% of cases that would have been unworkable without ARJIS		
San Diego Police Department	12%	16%
Other Agencies	5%	13%
Total	10%	15%
% of case closures in which ARJIS was useful		
San Diego Police Department	14%	18%
Other Agencies	10%	19%
Total	13%	18%
% of case closures that would not have been made without ARJIS		
San Diego Police Department	9%	9%
Other Agencies	5%	7%
Total	7%	9%

*Based on detectives' estimates.

CRIME CASE FOLLOW-UP STUDY

Another method for evaluating the impact of ARJIS is the three-month crime case follow-up study. Detectives in nine agencies provided feedback on ARJIS "hits" for each case closed by arrest, or exceptional means and unfounded or filed cases (no further follow-up, suspended). A hit is an instance in which ARJIS information received actually assisted in an arrest or property recovery. If information was received on an inquiry that did not provide the investigator with any leads, it was not considered a hit. Similar data were collected for the county and state computer systems as well.

According to the crime case follow-up study, ARJIS information was of

assistance in 10% of all cased closed by arrest or exception (see Table 4). Survey results indicate that detectives perceive the success rate of ARJIS to be higher than this (18%). Methodological differences, such as sample and research design may have affected the findings. Also, differing results may be partially attributed to the fact that officers are beginning to see the results of ARJIS; and therefore, tend to overemphasize the benefits received.

The successful use of ARJIS varies by the type of crime investigated. ARJIS assisted in 12% of all Part I crime cases closed[2]. Of these cases, ARJIS was most useful in crimes against property (13%). It is estimated that approximately 1,500 Part I offenses would be cleared with the use of ARJIS information during a year. (See Appendix D, page 86 for results by agency.)

Data indicated that detectives made inquiries to state and local computer systems in 42% of the cases assigned for investigation. The information received from these systems was useful in making an arrest or recovering property in 25% of the cases closed by arrest or exceptional means. The use of computers has been established as an essential aspect of crime case investigations in the region.

The results may slightly underrepresent the use of ARJIS in cases where a patrol officer searched the system prior to submitting a case to detectives. The survey of patrol officers gives information regarding their use of ARJIS in making arrests which augments the case study results.

For comparative purposes, only cases closed by arrest or exception are used in this analysis. These data were more consistently reported by jurisdictions, and ARJIS is most useful in these cases. The criteria and timetable for suspending a case as unworkable vary among jurisdictions, influencing data reliability. Therefore, cases closed as unworkable or unfounded were not presented here. Compilation including unworkable and unfounded cases is presented by jurisdiction in Appendix D, page 87.

[2]Homicides, rape, robbery, aggravated assault, burglary, theft and motor vehicle theft.

TABLE 4

PERCENT OF CASES CLOSED WITH ARJIS ASSISTANCE
BY CRIME TYPE
CRIME CASE FOLLOW-UP SUPPLEMENT
January - March, 1981

	Cases	Hits	%
Crimes Against Persons	283	27	10%
Crimes Against Property	683	86	13%
Other Felony	298	17	6%
Misdemeanor	582	59	10%
Status Offense	12	1	8%
Total	1,858	190	10%

REGIONAL CRIME DATA

As stated in the November, 1980 report, the regional effects of ARJIS will not be apparent until the entire system has been operational for an extended period of time. Regional data need to be examined over the next few years to determine the extent to which ARJIS has impacted the ability of law enforcement to solve crimes. Ultimately, the success of ARJIS must be evaluated on a regional basis due to the nature of the system. The value to all the region may be greater than the measurable benefits realized by any one agency.

The crime rate for major offenses for member jurisdictions increased slightly when comparing January - March of 1980 (41.7 crimes per 1,000 population) and 1981 (42.6), the most recent data available. These data may be affected by changes in reporting procedures. Since January, 1981, five agencies began preparing portions of Bureau of Criminal Statistics (BCS) reports through ARJIS. Changes in cut-off dates for preparation of monthly crime reports could affect the comparability of the data, unless the figures are adjusted. It is essential that crime data continue to be reported using the same criteria over time, or trend analysis of reported crimes for the region will not be valid.

A measure of effectiveness of law enforcement in addressing crime problems is the clearance rate. This is the number of Part I crime cases cleared by arrest or exceptional means during a given time period, divided by the reported crimes. The overall clearance rate for member agencies decreased when comparing the first quarter of 1980 and 1981 (from 21.0% to 20.5%). The trend in the clearance rate over the past five years has been a decrease in the percent of cases cleared. This has not changed since the ARJIS components were implemented.

An expected benefit of ARJIS is an increased ability to recover and return stolen property. In member jurisdictions, the property recovery rate has decreased between January - March 1980 and 1981 (34.0% to 30.4%). The property component has only been operational for a few months, and is not being utilized by all agencies. Therefore, the regional effects are limited. Two agencies, Chula Vista and Escondido,

have experienced an increase in property recovery rates.

The most recent data regarding regionwide arrests (1980) showed a 6% increase compared to 1979. Although survey estimates indicate that ARJIS Information can assist in making arrests, it is difficult to corrolate an increase in arrests to ARJIS use. It is not known how many arrests would have been made using other types of information.

The impact of ARJIS on regional crime data requires review over the next few years. This review should include the potential effects of other variables on arrests, e.g., number of personnel, changes in reporting procedures, special short-term task forces, etc.

CHAPTER 3
COST ANALYSIS

ISSUE III: DETERMINE THE COST OF ARJIS COMPARED TO THE BENEFITS RECEIVED.

SUMMARY

Potential cost-savings have been associated with ARJIS, but it is not certain whether these will justify projected expenditures. Findings suggest that during the past year, the system has become more cost-effective based on reductions in cost per successful use.

Projections for FY 1981-82 administrative and utilization costs increased by 24% over FY 1980-81. This increase is partly due to certain administrative and overhead costs that are no longer being absorbed by the City of San Diego and additional data processing costs for job development and testing.

DISCUSSION

There is a question among law enforcement administrators concerning whether or not the usefulness of ARJIS justifies the potential cost in FY 1981-82. Only two administrators stated that ARJIS is currently cost-effective. It is premature at this time to evaluate the cost-benefit ratio of a system that is not fully operational. In addition, a valid cost-benefit analysis is difficult because a dollar value is not associated with benefits received such as arrests and case closures. Areas can be identified as potential time savings for staff (e.g., a reduction in manual searches), but it is unknown if these cost-savings will be offset by the added expense of ARJIS when the system is being fully utilized (i.e., administrative, utilization, data entry and equipment costs). However, the benefits received, such as arrests, property recovery and case closures, may justify the expense of ARJIS.

Agency administrators identified the benefits/savings associated with ARJIS. Most cannot be given a dollar value.

POTENTIAL COST SAVINGS

1. Save clerk time on manual searches/files (8).
2. Save clerk time on BCS report preparation (6).
3. Save officer time during investigations (3).
4. Save on equipment and supply costs (1).

OPPORTUNITY BENEFITS

1. Increase property recovery (5).
2. Increase arrests (4).
3. Increase case closures (3).

4. Provide statistics/crime analysis (2).

5. Maximize information available (1).

6. Provide leads (1).

7. Standardize data (1).

8. Increase regional interaction (1).

9. Increase citizen satisfaction with police (1).

10. Improve job satisfaction/morale (1).

Cost Effectiveness

ARJIS has become more cost effective since the successful use of the system by patrol and investigative officers has increased. A measure of this is the cost per arrest/case closure in which ARJIS information was useful. Table 5 shows changes in the cost per successful use of ARJIS based on study results and the FY 1980-81 ARJIS budget (see page 33). Findings project that approximately 9,000 to 11,000 arrests and 1,500 case clearances are being made using ARJIS in 1981. Comparable figures for 1980 are 4,500 to 5,500 arrests and 900 case clearances. Based on these figures, it is estimated that the cost per arrest/closure using ARJIS decreased from $273 in 1980 to $140 in 1981. The objective of ARJIS should be to maximize the cost effectiveness of ARJIS by reducing the cost per successful use of the system. This measure is used to indicate changes in cost-effectiveness and should not be used in estimating budget expenditures. In addition, the cost per successful use of ARJIS can only be maximized and would be expected to level off when system utilization reaches the optimum level and development of the system is completed.

TABLE 5

COST PER SUCCESSFUL USE OF ARJIS
Projected From 1980 and 1981 Study Results

	1980	1981
Average number of arrests made with ARJIS assistance	5,000	10,000
Approximate number of case closures made with the assistance of ARJIS	900	1,500
Total successful uses	5,900	11,500
Annualized ARJIS budget* FY 1980-81	$1,608,635	$1,608,635
Cost per successful use	$273	$140

*Excluding equipment costs and data entry personnel costs.

Cost Efficiency

Cost efficiency can be measured by the cost per inquiry to the system. Ideally, this cost should be minimized without jeopardizing the effective use of ARJIS. For example, if an agency does not enter certain crime cases in an effort to reduce computer utilization costs, the cost per inquiry would decrease, but the effectiveness of ARJIS may suffer.

The current regional cost per inquiry (MOI, crime case, property and field interview files) is $3.15 based on an estimated 510,224 inquiries per year. This measure includes computer, development and administrative costs, but does not account for data entry personnel and equipment rental in individual agencies. Since data on inquiries are not available on a periodic basis through ARJIS, trend data are not available. This measure should be monitored to evaluate efficiency of ARJIS use.

Current and Future Cost

The cost estimates for ARJIS consist of two elements:

1. Projected base costs and proposed member assessments.

2. Estimated system utilization costs.

The base costs include Board of Directors' expense, the contracted services of San Diego Data Processing Corporation, computer costs for program development, testing and storage, and a project manager. These costs have been apportioned to individual cities based on population as provided for in the Joint Powers Agreement.

The utilization costs were projected based on use of the components operational in 1980 and the potential volume of transactions when additional components were on-line. A range of costs has been established based on minimum and maximum projected usage, but for purposes of analysis, agency fees are based on the average amount.

The annualized cost of ARJIS in FY 1980-81 is $1,608,635, excluding data entry and equipment costs. Actual billings for January - April, 1981 indicate that system utilization costs are lower than expected. Projected and actual costs may differ due to the following factors:

1. Components that were expected to be implemented during FY 1980-81 are not operational (e.g., traffic).

2. On-line components are not being utilized to their maximum capacity. Utilization estimates were based on the assumption that all documents would be entered.

3. Costs for certain batch functions have not been billed to date.

Another factor which affects individual agency estimates is the fact that the proportional distribution of the actual utilization costs is not consistent with the estimates. For example, SDPD is currently responsible for more than the estimated 61% of the system usage.

The projected costs were based on the data available on utilization of a system that was only partially implemented. Since that time, the crime case, pawned and stolen property have been operationalized. Utilization of these components has not reached the maximum level, with the number of transactions still increasing. Actual costs may not differ substantially from projected estimates when and if all components are operational and the system is fully utilized.

The cost for ARJIS in FY 1981-1982 ($1,998,200) includes $1,368,319 for system utilization and $629,881 for administrative costs under the JPA (see Table 6). This represents a 24% increase over the FY 1980-81 annualized budget ($1,608,635) with system utilization estimated as the average between the minimum and maximum use projections for <u>both</u> fiscal years.

Certain administrative costs, including the salary of the project manager, will no longer be provided by the City of San Diego in FY1981-82. In addition, cost estimates for data processing have increased (e.g., job development and testing).

The budgets for FY1980-81 and FY81-82 are based on the same assumptions regarding system utilization which were developed before some components were operational. Therefore, the FY 1981-82 figures for utilization should be revised to reflect current data available. Some components are not being used at the expected frequency in terms of data entry and inquiry, and some agencies are not responsbile for the proportion of system usage that was originally estimated.

TABLE 6

ARJIS BUDGET BY AGENCY
FY 1980-81 and FY 1981-82

	Annualized Budget projected from 6-month budget 1980 - 1981			Proposed Budget 1981 - 1982			% increase
	JPA Base Costs*	System Utilization**	TOTAL	JPA Base Costs*	System Utilization**	TOTAL	
Carlsbad	$11,278	$10,419	$21,697	$12,535	$13,683	$26,218	20.8%
Chula Vista	26,070	31,257	57,327	28,975	41,050	70,025	22.2%
Coronado	6,574	10,419	16,993	7,307	13,683	20,990	23.5%
El Cajon	22,840	31,257	54,097	25,384	41,050	66,434	22.8%
Escondido	19,836	41,674	61,510	22,046	54,733	76,779	24.8%
La Mesa	16,152	31,257	47,409	17,952	41,050	59,002	24.5%
National City	14,906	31,257	46,163	16,565	41,050	57,615	24.8%
Oceanside	24,654	41,674	66,328	27,399	54,733	82,132	23.8%
SDPD	267,116	635,543	902,659	296,862	834,674	1,131,536	25.4%
SDSO	157,334	166,699	324,033	174,856	218,930	393,786	21.5%
U.S. Marshal	-0-	10,419	10,419	-0-	13,683	13,683	31.3%
TOTAL	$566,760	$1,041,875	$1,608,635	$629,881	$1,368,319	$1,998,200	24.2%

* Includes administrative, personnel, disk storage, batch processing, data entry/update, inquiry costs

** Based on the average of minimum and maximum utilization estamates

CHAPTER 4
FACTORS INFLUENCING EFFECTIVENESS

ISSUE IV: REVIEW THE FACTORS THAT INFLUENCE EFFECTIVENESS OF ARJIS.

SUMMARY

Certain factors related to the operation and use of ARJIS affect the value of the system. Law enforcement administrators are satisfied with the current management structure of ARJIS, and system use has increased, but the following problems still exist: ARJIS data are not always accurate, complete, timely or easily accessible, users are not adequately trained in data access and data entry personnel have not been sufficiently trained. These problem areas were also identified in November, 1980. Response of ARJIS staff and individual agencies in addressing these issues should be monitored by the ARJIS Board of Directors and the Executive Director.

DISCUSSION

Preliminary analysis (November, 1980) revealed that the effectiveness of ARJIS can be influenced by the following factors:

1. Efficiency of ARJIS administration and operation.

2. Timeliness, accuracy, completeness and accessibility of information.

3. Adequacy of user training in data access, report preparation and data entry.

4. Nature of system usage by law enforcement personnel.

Since earlier findings suggested these as significant problem areas, evaluation efforts addressed the extent to which changes have occurred. To evaluate these issues, surveys, interviews and special studies were conducted. Pre and post test user surveys were distributed to all patrol officers, investigators and line supervisors. The response rate was 55% in July, 1980 and 61% in April, 1981, with questionnaires received from all law enforcement agencies participating in ARJIS. Chiefs of police, the Sheriff or their representatives were interviewed. Additionally, special studies were conducted of the accuracy of report preparation and data entry, the timeliness of entering data into ARJIS and system inquiries.

Organizational Structure

Administrative and organizational problems during development of ARJIS under the federal grant hindered timely implementation of the system and created dissatisfaction among users. Initially, a lack of coordination between City of San Diego Data Processing and the San Diego Police Department precluded a single line of authority for project activities. To resolve this, the Police Department took responsibility for ARJIS. Later, retention of qualified systems analysts under the City's classification system and salary range became a critical

problem. To overcome this, at the request of the City, the San Diego Association of Governments (formerly CPO) became the subgrantee (May, 1978). SANDAG was able to contract with the systems analysts at a more competitive rate. This, in addition to incentive programs offered by SANDAG, contributed to the ability of ARJIS staff to develop the majority of the ARJIS components prior to termination of grant funding (December 31, 1980).

After grant funding ended, it was recommended by evaluation staff that: 1) a single line of authority for management of ARJIS be established, 2) a staff person be assigned to perform a liaison function among users, and 3) personnel from all user agencies have the opportunity for input regarding ARJIS activities. All these conditions have been met under the current Joint Powers Agency (JPA) that governs ARJIS.

The JPA was formed January 1, 1981 to administer ARJIS. Consensus was reached on the JPA structure by member jurisdictions after several alternatives were reviewed by the ARJIS management committee and the Board of Directors of the San Diego Association of Governments (SANDAG). The San Diego County Supervisors chose to join the JPA when the City was appointed the operating agency (January 21, 1981). Imperial Beach is the only local law enforcement jurisdiction that is not a member agency. The U.S. Marshal can use ARJIS, but is not a voting member of the JPA.

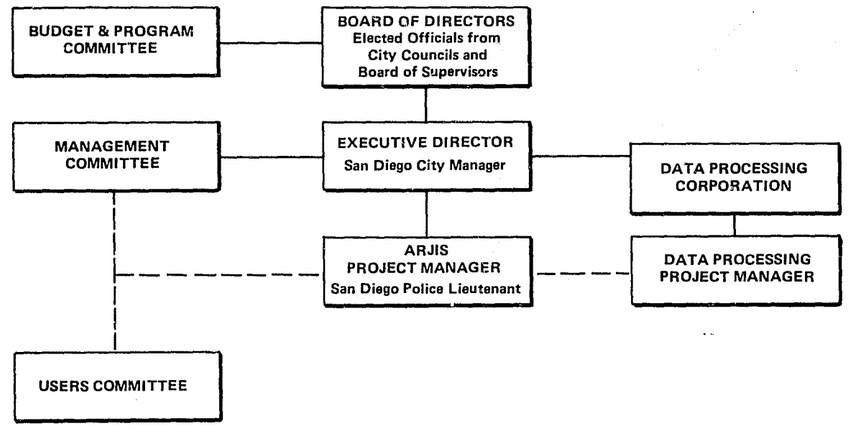
With the City of San Diego as the operating agency for the JPA, there is a single line of authority for the administration of ARJIS (see Figure 1). The ARJIS Board of Directors sets policy for ARJIS and approves the budget. The Board consists of elected officials from the ten member jurisdictions.

The Executive Director of ARJIS is the San Diego City Manager. The City of San Diego contracts with the San Diego Data Processing Corporation to provide system development and maintenance.

The management committee acts in an advisory capacity to the ARJIS Board and the Executive Director. This committee is comprised of the police chiefs, the Sheriff or their designates. Functionally, the chairperson of the management committee (the designate from SDPD) has taken an active role in administering ARJIS operations as the representative of the City Manager. He also supervises a San Diego Police Department Lieutenant, who serves as a liaison to the user agencies and chairs the user committee. The committee members include data entry supervisors and line officers who advise the management committee and San Diego Data Processing Corporation regarding user needs.

The Budget and Program Committee is a subcommittee of the ARJIS Board which advises the Board of Directors on budget issues.

FIGURE 1
ORGANIZATION CHART
ARJIS JOINT POWERS AGENCY



Police Administrator's Survey

Of the law enforcement administrators interviewed, the majority (7) stated that ARJIS should continue to be administered by the JPA. The following qualifications were mentioned:

1. The present structure should continue to be examined on a trial basis (1).

2. The Board of Directors should consist of police chiefs and the Sheriff (1).

3. The City of San Diego should not be the operating agency. Such an arrangement could hinder accountability to the ARJIS Board in fiscal and operational matters by placing too much authority in one agency (1).

One respondent felt that the structure of the JPA should be changed. The alternative mentioned was administration of ARJIS by the County of San Diego and funded by tax dollars, like CLETS (the state computer system).

Most administrators were satisfied with the operation of ARJIS (6). These operational problems were noted:

1. Downtime/24-hour access (4);

2. Slow response time (2);

3. Inexperienced (newly hired) data processing staff (1);

4. Confusion regarding the billing process since actual charges have been lower than projected costs (1).

AVAILABILITY OF INFORMATION

The information in ARJIS has to be readily available for use by officers before ARJIS can be effective. The following factors affect the availability of information:

1. Downtime.

2. Response time on inquiries.

3. Timeliness of data entry.

4. Selective entry of documents.

5. Accessibility of terminals of officers.

Downtime and Response Time

A continuing problem, according to 69% of the ARJIS users, is excessive downtime/unavailability of the system. There are two types of downtime:

1. Scheduled maintenance and batch processing that occur from 2:00-7:00 a.m. Monday through Friday, and midnight to 7:00 a.m. on weekends;

2. Unscheduled downtime during normal operating hours.

Throughout the development of ARJIS, 24-hour computer availability has been an objective of users. There has been a misunderstanding regarding when and if this could be accomplished. This is not a priority of data processing because of problems inherent in making the conversion to 24-hour access. Currently, ARJIS staff is trying to minimize scheduled downtime to the extent possible.

Unscheduled downtime and slow response time on inquiries have also been noted as problems by users. Three reasons have been identified as causes for these difficulties:

1. The volume of activity increased.

2. The program was not efficiently executing the transactions.

3. Telephone lines were overloaded (line contention).

Program changes were made, and line contention is being monitored in an attempt to identify solutions for improving response time. The major effort to address the problems of downtime and response time has been to increase memory and install a new operating system.

Implementation of this system has contributed to downtime and response time.

Timeliness of Data Entry

It is important that data be entered into ARJIS in a timely manner to make information available to officers as soon as possible. Backlog in the workload of data entry clerks can result in delays in entering documents. A one-day study was conducted of all crime case and field interview reports entered into ARJIS. Findings indicate that it currently takes an average of 6.3 days for a crime case and 9.5 days for a field interview to be entered into ARJIS. The number of days to enter a crime case range from the same day to 57 days. The corresponding range for field interviews is from the same day to 55 days. Obviously, some cases are not being entered in a timely manner, and this varies by agency.

Selective Entry

To receive the maximum benefit from ARJIS, all documents should be entered into the system. This is not occurring in all agencies because of concerns over data entry costs and staffing limitations. According to agency administrators, some agencies are either not entering crime incident reports (2) or are entering them selectively (3). These criteria are used to select which cases to enter:

1. All felony cases and misdemeanor cases with follow-up investigation needed.

2. All felony cases and some misdemeanors (e.g., sex crimes).

3. Part I crimes with Modus Operandi (MO), suspect or property information.

Three agencies are not entering all field interviews. Criteria for screening include:

1. Elimination of duplicates or unverified field interviews.

2. Entry of field interviews with a mobile suspect or a specific crime (burglary, theft).

3. Entry of field interviews that would be useful to other agencies in the region (e.g., suspect is from another area or there is vehicle information).

The ARJIS management committee is in the process of setting a policy regarding selective entry of data to increase consistency throughout the region.

Acccessibility of Information

ARJIS information must be easily accessible to officers if it is to be

useful. Over one-third (36%) of the officers surveyed state that accessibility of ARJIS terminals is a problem. Additionally, 61% stated that it is difficult to obtain ARJIS information while on patrol. Accessibility has been a continuing problem since July, 1980. Each agency should maximize the availability of ARJIS terminals. This includes providing terminal access to dispatchers, where possible. Evidence indicates that ARJIS can be effectively used by patrol officers and they should be able to obtain information without returning to the station (see page 21).

TRAINING

The effective use of ARJIS is dependent on the extent to which law enforcement personnel are trained in data access, report writing and data entry. Survey data indicate that the proportion of officers trained in accessing data from the ARJIS terminal has increased to 55% in 1981 from 47% in 1980 (see Table 7). But the percentage who need additional training has also increased from 73% to 80% during the same period. The results can be attributed to the fact that officers have not received training in all the new functions available since July, 1980. The training needs for San Diego Police Department and other agencies do not vary significantly.

Training in data access continues to be a problem as new applications become operational. Training should be on-going while ARJIS is in a developmental stage. ARJIS training at the regional academy did not receive financial support from the Police Officers Standards and Training Agency (P.O.S.T.); therefore, the cost and responsibility of training falls on the individual agencies.

TABLE 7

ARJIS TRAINING RECEIVED AND TRAINING NEEDED
USER SURVEYS
July, 1980 and April, 1981

	Training Received		Training Needed	
ACTIVITY	1980	1981	1980	1981
Accessing Information	47%	55%	73%	80%
Preparing FI Reports	50%	65%	29%	20%
Preparing Regional Crime Reports	43%	62%	33%	23%
Number of Respondents	1060	1212	1060	1212

Report Preparation

Most officers have received training in report preparation and do not indicate a need for additional training. Despite this, problem areas exist in report writing which should be addressed through in-house training (e.g., review at squad conference or line-up). In March, 1981, the accuracy of field interview and crime incident reports completed by officers was examined in five agencies. Table 8 lists the types of errors found, in order of frequency. The most common errors on field interviews were in the crime type or beat information. On crime incident reports, the most frequent errors were in the M.O. (Modus Operandi) or victim/witness sections. Information was either incomplete or omitted.

Although most agencies have developed a procedure for reviewing crime incident and field interview reports, improvement is needed in the review process to ensure the accuracy and completeness of report preparation.

TABLE 8

ERRORS IN REPORT PREPARATION
FIELD INTERVIEW AND CRIME INCIDENT REPORTS
IN FIVE AGENCIES
March 26, 1981

FIELD INTERVIEW

Type of Error

1. Crime Type
2. Beat
3. Vehicle Year
4. Field Interview Number
5. Officer Information

N = 32

CRIME INCIDENT REPORT

Type of Error

1. M.O. Information
2. Victim/witness Information
3. Property Information
4. Suspect Information
5. Evidence
6. Location
7. Crime
8. Date/Time

N = 56

Data Entry Training

More than half of the agency administrators (6) surveyed state that data entry personnel need additional training. This is partially because training has not been received for the newer ARJIS components. Accuracy of data entry was studied in five agencies (March, 1981). The most common errors found in entry of field interviews were in physical descriptions and street addresses. For crime cases, the problem areas were Modus Operandi (M.O.) information and suspect description. Errors by officers in report writing are compounded by mistakes made in data entry which ultimately affect the quality of information. The data presented suggest topics to be emphasized in training (see Table 9).

TABLE 9

ERRORS IN DATA ENTRY
FIELD INTERVIEWS AND
CRIME INCIDENT REPORTS
Five Agencies
March 26, 1981

ERRORS ON
FIELD INTERVIEWS

1. Physical Descriptions
2. Street Address
3. Vehicle Description
4. Crime Potential
5. Remarks
6. Suspect Name

N = 27

ERRORS ON
CRIME CASES

1. Modus Operandi (M.O.)
2. Suspect Description
3. Address
4. Vehicle Description
5. Victim Information
6. Beat
7. Crime

N = 51

SYSTEM USAGE

More officers were using ARJIS in April, 1981 (87%) compared to July, 1980 (75%). The increase is primarily because of changes in the San Diego Police Department where the percentage of officers who have used ARJIS increased from 77% to 92% (See figure 2).

Investigative officers continue to be the most likely to receive ARJIS information (96%), followed by patrol (86%) and traffic officers (63%). Usage in all divisions has increased since 1980 (see Table 10). The high use by investigators can be attributed to the emphasis placed on training investigators in most departments and the fact that terminals are more accessible to investigators compared to field officers. In addition, computer downtime is usually less during the daytime hours worked by most investigators. During the early morning hours, the computer is routinely down for data base maintenance and batch operations.

Use by patrol and traffic officers is limited in some departments because dispatchers do not have a terminal, or the terminal is not available for officers to personally access during all shifts. Also, some departments have chosen to restrict ARJIS use to investigators.

FIGURE 2
PERCENT OF OFFICERS RECEIVING INFORMATION
FROM ARJIS
USER SURVEYS
JULY, 1980 and APRIL 1981

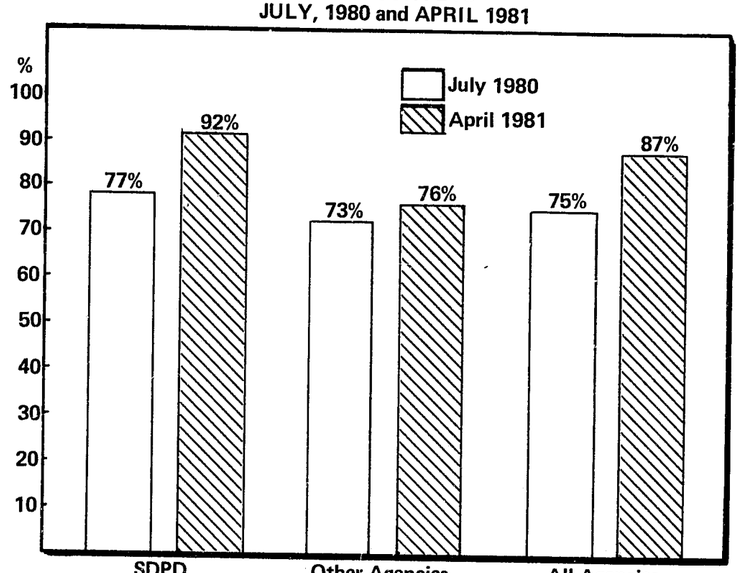


TABLE 10

PERCENT OF OFFICERS WHO HAVE RECEIVED
ARJIS INFORMATION BY ASSIGNMENT
USER SURVEYS
July, 1980 and April, 1981

	July, 1980	April, 1981	% Difference
Investigators	89%	96%	+7%
Patrol	76%	86%	+10%
Traffic	45%	63%	+18%
	N = 1040	N = 1212	

Use of Components

Table 11 shows the proportion of officers who have used each of the components accessible through the Master Operations Index (MOI). The majority of the files in ARJIS can be accessed through MOI. Additionally, MOI is the most efficient means of accessing crime case, field interview and property data, unless information is needed on variables not available on the MOI inquiry screen (e.g., crime type and vehicle description). Despite the increase in the use of MOI since 1980, use is still low compared to other components. Approximately one-third (37%) of the officers have accessed MOI. The value of MOI inquiries should be stressed in officer training.

The regional crime case component became operational in August, 1980. Prior to this time, only S.D.P.D. crime case information was available through the ARJIS terminal. As a result, the proportion of officers who have used crime case information increased from July, 1980 (38%) to April, 1981 (53%). This function has been used by both patrol and investigative officers (50% and 67%, respectively).

The field interview component continues to be accessed by most officers (78%). This component has been operational for the longest period of time so that the majority of officers have received training in its use.

Use of the property component has not increased substantially since it became regional in November, 1980. The regional stolen property and pawn functions are relatively new and not all officers have received training. The property applications have been used primarily by investigators.

TABLE 11

PERCENT OF RESPONDENTS HAVING USED
ARJIS COMPONENTS
USER SURVEYS
July, 1980 and April, 1981

	July, 1980	April, 1981	% Difference
MOI	20%	37%	+17%
Field Interview	69%	78%	+9%
Crime Case	38%	53%	+15%
Property	32%	37%	+5%
Pawn	N/A	38%	---

Actual Inquiries

Inquiries by agency were computed for a one-week period (April 6-12, 1981) by ARJIS staff. The results do not account for weekly fluctuations in inquiries. A sample was used because the computer is not yet programmed to summarize inquiry and update/entry transactions. The data are in a format that is time consuming to tabulate manually.

Table 12 shows that the greatest number of inquiries are made to the MOI component (35%) followed by the field interview function (33%). Although the actual number of inquiries is similar for these two components, survey data indicate that field interview inquiries are being made by 78% of the officers, but only 37% perform MOI searches. The crime case and property inquiries represent 16% and 17% of the transactions, respectively.

TABLE 12

SUMMARY OF ACTUAL INQUIRIES BY COMPONENT
April 6 - 12, 1981

	Number of Inquiries	Percent of Total Inquiries
Field Interview	3227	33%
Crime Case	1538	16%
MOI	3399	35%
Property	1648	17%
TOTAL	9812	

Note: Percentages do not equal 100 due to rounding

When projected for a year, an estimated 510,224 inquiries are made to these four ARJIS components, based on current usage. This translates to 258 inquiries per officer in a year. The measure of the average number of inquiries per officer is used for comparing the extent to which agencies utilize ARJIS to its full capacity, and may not reflect frequency of use by all officers in an agency.

San Diego, National City and Oceanside are the agencies with the highest number of inquiries per officer (see Table 13). Agencies with a small number of inquiries per officer tend to be those in which the primary ARJIS user is the investigator.

Variations in use of ARJIS could occur from week to week; therefore, inquiries should be monitored regularly. If this information is not to be provided by the computer, manual studies should be conducted on a periodic basis.

TABLE 13

ESTIMATED INQUIRIES PER OFFICER BY AGENCY PROJECTED FOR ONE YEAR BASED ON CURRENT USAGE

	Inquiries Per Year	Inquiries Per Officer*
Carlsbad	2,288	48.7
Chula Vista	19,916	221.3
El Cajon	7,956	102.0
Escondido	5,928	92.6
La Mesa	3,536	76.9
National City	18,148	297.5
Oceanside	27,248	293.0
Sheriff	69,784	198.8
San Diego Police Department	349,336	304.0
U.S. Marshal	6,084	N/A

*Based on total number of patrol officers, detectives and line supervisors, the primary users of ARJIS.

Inquiry Parameters

A special study of search parameters was conducted in five agencies. The detectives in these agencies printed a copy of the inquiry format

each time they performed an ARJIS search. Data indicate the officers are not using the inquiry parameters to their full potential, which could be a function of insufficient training.

Inquiries to MOI tend to be limited primarily to searches on name (93%) and demographic characteristics (37%). Time, location and physical description were rarely used by the participants in this study.

Field interview inquiry is used predominantly for vehicle license information (91%), whereas inquiries can be made by vehicle description and crime potential. All are searches that cannot be performed through MOI.

Information was insufficient on crime case and property inquiries to draw any conclusions regarding nature of use.

CHAPTER 5
SECURITY AND PRIVACY ISSUES

ISSUE V: DISCUSS THE SECURITY AND PRIVACY ISSUES OF CRIMINAL JUSTICE INFORMATION SYSTEMS IN RELATION TO ARJIS.

SUMMARY

ARJIS is in compliance with security and privacy statutes and regulations pertaining to information currently in the system. To date, there has been no known breach of the ARJIS security system.

DISCUSSION

The Crime Control Act of 1973 requires that information systems developed with federal funds incorporate safeguards which protect the privacy and security of criminal justice information.[3] Privacy refers to the protection of the interests of individuals whose names appear in criminal justice systems. The National Advisory Commission on Criminal Justice Standards and Goals (NAC) suggests that specific data on individuals should only be maintained in a system if the potential benefits for its use outweigh the potential injury to privacy. Measures to ensure privacy of information include: 1) validating the accuracy of information in the system and 2) limiting access to those with both a right and a need to know.

Security relates to the protection of the system from unauthorized access, alteration or damage. Threats to security can be either accidental or intentional. Therefore, systems must be secured against natural elements, such as floods and fire, as well as human errors and interference. The need for security in the system should be balanced against the additional cost of implementing security measures.[4]

PRIVACY OF INFORMATION

The level of security required depends, in part, on the nature of the information in a criminal justice computer system. Records of reported crimes, arrests, hearings, trials, convictions and sentences are all public documents.[5] Most information now contained in ARJIS is public record, except for field interview and personnel files. However, the fact that certain records are public does not preclude the need for security and privacy protections. Factors other than the type of information in the data base determine sensitivity:

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[3]Law Enforcement Assistance Administration, An Analysis of Privacy Issues, Department of Justice, 1978

[4]Peterson, Russell W., Criminal Justice System, National Advisory Commission on Criminal Justice Standards and Goals, Washington DC, 1973

[5]Ibid

1. Amount and quality of content.

2. Where data are located.

3. Who has access.

4. How it is stored.

5. Speed and format of retrieval.

6. How and to whom it is desseminated.[6]

The nature and use of information regarding an individual can be altered by linking criminal justice records, such as arrests. The potential for linking events increases when criminal offender and suspect data are computerized. Also, the information becomes more readily accessible and easily disseminated to other agencies in an automated regional system such as ARJIS.

Arrests

The legal responsibilities of criminal justice agencies regarding retention, computerization, use and dissemination of information are defined by state statutes for criminal offender record information. As stated in Penal Code Section 13102, this information consists of "records and data compiled by criminal justice agencies for purposes of identifying criminal offenders and a summary of arrests, pretrial proceedings, the nature and disposition of criminal charges, sentencing, incarceration, rehabilitation and release. Such information (is) limited to that which is recorded as a result of a criminal proceeding or of any consequent proceedings related thereto...". This does not include records of complaints, investigative or intelligence information or security procedures (Section 13300 PC).

While ARJIS does not currently contain criminal offender record information, an arrest component is being developed. This application cannot be implemented until all state requirements for security and privacy are met. The following discussion summarizes related state statutes.

The State Department of Justice regulations limit access to criminal offender records not only to those individuals with a right to know, but also a need to know information in order to execute official responsibilities. Additionally, a records check must be conducted on personnel hired after July 1, 1975 who have access to a computer system or its terminals, or the stored criminal offender record information (CAC 707). Penal Code Section 13300 delineates those individuals to whom a local agency shall disseminate criminal history information. This includes peace officers and district and city attorneys who currently

[6] Ibid

have access to ARJIS. An employee of a local agency who knowingly furnishes information to an unauthorized person is guilty of a misdemeanor (Section 13302 PC).

To control dissemination of information from a computerized system, Penal Code Section 11078 requires that an agency keep a listing of agencies to which it releases or communicates criminal history information. These records must be maintained for three years.

To ensure the completeness and accuracy of information, a person may inspect his own local arrest or conviction record and challenge its content (Sections 11122-11127 PC).

The ultimate responsibility for security of criminal record information is given to the Attorney General of the State of California (Section 11077 PC), who may conduct inquiries and inspect records regarding storage and dissemination.

Field Interviews

Field interviews are a form of intelligence and investigative information which identify an individual as a possible suspect in a specific type of crime. It has been suggested that intelligence and investigative information should not be computerized, or if it is, it should not be in the same files as criminal history information.[7] The argument is that this type of information can be speculative, unverified or subjective. Another concern is that combining separate and discrete transactions, such as arrests and field interviews, can change the nature of the information and create the potential for compiling dossiers. Since the MOI capability of ARJIS allows inquiries into several components simultaneously, separate events can be easily linked. The following procedures regarding field interviews entered into ARJIS address the privacy issues:

1. An officer must have reasonable cause to believe that an individual may be a suspect in a specific crime before a field interview report is written.

2. Data entry personnel and/or supervisors in some departments screen field interviews for validity before entry into ARJIS.

3. Field interviews are purged from the system after six months so they do not become part of a permanent record or dossier.

Consensus may never be reached on whether or not field interviews should be maintained in criminal information systems. Again, it is a question of weighing the benefits against potential infringement of privacy rights. This is a legal question, and therefore not addressed

[7] Law Enforcement Assistance Administration, An Analysis of Privacy Issues, Department of Justice, 1978

in this report. However, if field interviews continue to be entered into ARJIS, all possible safeguards to ensure privacy of information should be employed. It is recommended that:

1. Field officers should be trained to conduct only valid field interviews. Use of the field interview should not be the basis of a "quota" system to measure officer activity.

2. Supervisors should screen field interviews before entry into ARJIS to ensure the validity of each report (i.e., circumstances were appropriate for reporting a field interview).

3. The six-month purging cycle for field interviews should be retained.

4. Terminal security in each agency should be strictly maintained.

5. Printouts containing field interview information should be stored in a secure location, or destroyed.

Personnel Clearance

Privacy of information can be protected by limiting access to authorized personnel through internal safeguards in the computer system. The personnel component of ARJIS provides for security clearance. This security system defines the type of transaction each employee can execute in each component of ARJIS. An individual can be authorized to either look at, change and/or delete information from specific components.

Access to information is controlled through the use of employee identification codes in the following ways:

1. A background check is performed on all potential users of ARJIS before an identification code is issued.

2. The identification code must be entered at the terminal exactly as listed in the security file before a transaction can be made.

3. The numerical portion of the code does not appear on the screen.

4. If a requestor enters an invalid identification code three times, ARJIS staff is notified of a potential breach in security.

5. To increase security, ARJIS staff plans to change the numerical codes currently being used.

Access to some components (e.g., personnel and regional hotsheet) is further limited to specific personnel by the use of a password. Only employees knowing the password can obtain information from, or update, these files.

Training

Information in ARJIS is readily accessible to a large number of law enforcement agency employees, and it is important that each user understands the proper use of this information. The potential exists for an employee to obtain information from ARJIS for non-official purposes. Therefore, all personnel receiving clearance to access ARJIS should be trained in the local policies and statutes pertaining to security and privacy. The NAC standards state that "continuing in-service training on system security (and privacy) is essential to system security and must not be permitted to lapse." Part of this training should "be devoted to explaining the rationale for system security and instilling positive attitudes toward it in employees."[8]

Physical Security of Hardware

The computer itself is located in a basement behind two locked doors. Only authorized personnel are allowed access and the computer room is staffed 24 hours a day. These factors protect the computer from damage or unauthorized interference.

The Law Enforcement Assistance Administration no longer requires that automated systems developed with federal funds be dedicated solely to criminal justice information, nor does the state have such a requirement. ARJIS is part of the San Diego City computer, which is used by other city departments. Only certain terminals can access ARJIS; thus limiting its use to criminal justice agencies. In addition, only a limited number of terminals have the capability of changing or deleting information in ARJIS.

The terminals used for inquiry or update are generally in secured locations within each law enforcement agency. The level of security varies by agency, but in most cases, entrance to inner offices is limited to personnel who have received clearance. In addition, the areas where the terminals are located are staffed during business hours. In some departments, terminals are locked after hours to prevent use. Of the ten agency administrators surveyed, two felt that there was a potential for non-authorized individuals to reach a terminal. The two agencies rely on the personnel codes and/or staff members to prevent unauthorized access.

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[8]Peterson, Russell W., OpCit.

CHAPTER 6
COMPARISON WITH OTHER SYSTEMS

ISSUE VI: COMPARE ARJIS TO OTHER REGIONAL CRIMINAL JUSTICE INFORMATION SYSTEMS.

SUMMARY

Findings indicate that the benefits received from ARJIS and the problems encountered are similar to other regional justice information systems. In addition, the cost of ARJIS is within the range of other systems. The administrative structures differ among the systems studied. The variety of organizational configurations suggest options that can be explored by the ARJIS Board of Directors.

DISCUSSION

Surveys were mailed to personnel in sixteen agencies responsible for the administration of regional computer systems with law enforcement applications similar to those in ARJIS. Eight responses were received. The surveys addressed issues similar to those previously discussed, such as administrative structure; benefits; problems and cost (see Table 14 for a summary of results).

The eight systems in this study are not directly comparable to ARJIS. The population served ranges from 305,000 to 4,516,468 and the number of law enforcement member agencies varies from 2 to 71. In addition, the components, although similar to ARJIS, are not the same. Some systems contain applications for courts, prosecutors and probation, in addition to law enforcement. Others have on-line communication/ dispatch capabilities. However, all have several components that provide the same functions as ARJIS (e.g., UCR reporting, crime analysis, crime incident, geoprocessing, etc.). Computer hardware and software also vary. But the data from these agencies do show some similarities in the development process and operation of regional criminal justice information systems.

Administrative Structure

Policy and budget decisions for these systems are made by any one, or a combination, of the following:

1. Policy Committee (which can consist of a combination of criminal justice personnel, elected officials and/or community members).
2. Police Administrators.
3. Chief Administrative Officer.
4. Elected Officials.

ARJIS is administered by the ARJIS Board of Directors, consisting of elected officials from each area served. The Board of Directors acts as a policy committee which sets the overall direction for ARJIS, approves the budget and responds to security and privacy issues.

Day-to-day operation of the eight regional systems is managed by either data processing, a law enforcement agency and/or an operations committee. The ARJIS structure incorporates three types of management and each group has its own level of responsibility:

1. City Manager of San Diego as Executive Director.

2. Management committee consisting of the police chiefs, sheriff or their designate.

3. San Diego Data Processing Corporation.

TABLE 14
COMPUTER SYSTEMS SURVEY RESULTS
N = 8

System	State	No. of Law Enforcement Agencies	Population Served	1980-81 Budget	Policy & Budget Decisions	Day to Day Operations
PIN	California	71	4,516,468	$ 737,625	PIN Policy Committee and Sheriff	Data Processing
CORPUS	California	25	1,097,580	1,102,351	Alameda County Committee on Criminal Justice and Chief Administrative Officer	CORPUS Operations Committee and Data Processing
CABLE	California	4	700,000	1,736,000	Mayors Office, Board of Supervisors	Police Department
CRISS	Oregon	2	1,000,000	605,000	City Council	Police Department
TIEPIN	Washington	2	305,000	581,507	Criminal Justice Management Group and County Commissioners for System Services	County System Services and Sheriff
BI-STATE	Iowa & Illinois	12	N/A	195,698	Commission of Members from Two County Boards	Data Processing
ALERT	Kansas & Missouri	40	1,500,000	2,550,763	Police Department	Police Department
REJIS	Missouri	48	N/A	2,478,515	REJIS Commission (Appointments by City Manager and St. Louis Executive)	REJIS General Manager (Data Processing)
ARJIS	California	12	1,861,846	1,608,635	ARJIS Board of Directors	Management Committee, Police Department, and Data Processing

Benefits and Problems

The following advantages of regional systems were mentioned by respondents:

1. Speed of access to files (6).
2. Shared information/centralized system (4).
3. Improved processing of paper/records (3).
4. Increased investigative capability (1).
5. Officer safety (1).
6. System interface (1).
7. Cost-effectiveness (1).

The problems cited most often by respondents are ones that were experienced during the development of ARJIS: data processing staff turnover (6), and inadequate training of users (4). Other problems include: determining cost-effectiveness (2); user dissatisfaction (2); coordination of efforts between data processing and users (2); political differences among users (2) or local government officials (1); prohibitive costs (2); lack of standardization of terminology and data elements (2); determining priorities for development (1) and quality control of data entry (1).

Cost

The 1980-81 budgets for the eight systems range from $581,507 to $2,550,763. ARJIS has the fourth highest budget of $1,608,635, but the less expensive systems, for the most part, perform fewer and/or less complex functions. The following are other factors which affect differences in cost:

1. The type of hardware/software.
2. Rented vs. purchased hardware.
3. A system dedicated to criminal justice vs. a system shared with other government departments (auditing, etc.).
4. A system in development vs. maintenance stage.

The sample systems are not directly comparable to ARJIS, but the data suggest that ARJIS costs are within the range of other regional systems.

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REFERENCES

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In addition, Search Group, Inc., conducted a computer inquiry for information on known regional systems in the country according to scope and function.

APPENDICES

APPENDIX A

COMPONENTS OF ARJIS

Field Interview

A field interview report (FI) is written in instances where an individual is suspected of illegal activity, but insufficient grounds exist for an arrest. The FI report includes the person's name, address, physical description, location of contact, time, crime potential and a description of any vehicles involved.

In the past, such reports were filed manually in each agency's jurisdiction. Standardized FI forms are now entered into ARJIS, making these reports readily available to all agencies. This information can be used to locate a victim, suspect or witness to a crime.

Crime Case

The crime case component contains regional crime incident reports. These files can be accessed by geographic area, date, time, case number, crime type, victim, witness, suspect or vehicle description. This allows an officer to connect common elements of crimes which can lead to an arrest.

Property

The property component consists of stolen, wanted and pawned property in the San Diego region. Since stolen property is often pawned outside the jurisdiction in which it was stolen, this component is expected to enhance the property recovery capabilities in the region.

The property component is designed to allow inquiry by serial number or by property description. The glossary standardizes property descriptions to allow entry into ARJIS. This provides officers the potential for identifying the approximately 88% of stolen property for which the serial number is unknown.

Arrest

The arrest component of ARJIS is not currently operational. When implemented, it will enable any law enforcement agency to track an individual from initial arrest through final disposition in the courts. The traffic and misdemeanor citation portion of the arrest component will be implemented before felony and misdemeanor bookings.

Master Operations Index

This component allows inquiry by name, physical description or location to four components at one time (field interview, crime case, property and eventually arrest). For example, through one inquiry, it may be learned that a person is known to be: 1) a victim of an incident in Chula Vista; 2) a burglary suspect in National City; 3) a pawnor in San

Diego and 4) a field interviewee in La Mesa. An officer can then request detailed information on each incident from ARJIS.

Personnel

The personnel component has two major functions. First, it serves to maintain security of data in the file so that individuals at any law enforcement agency will not be allowed access without clearance through the personnel component. Second, the personnel component may also be used to prepare personnel rosters and other management reports, as well as listings of special skills possessed by individuals within each department such as second languages, marksman or paramedic skills. Not all capabilities are available as yet.

Automated Worthless Document Index

This component assists investigators in the area of credit card, forgery and non-sufficient fund crimes. The component compiles multiple indices regarding victims and suspects involved in worthless document crimes and compares these indices against jail bookings.

Crime Analysis

Crime analysis can occur on-line (for example, a listing of crimes by geographical area) or through batch reports which analyze crime trends or common factors of crime incidents in ARJIS. This increased understanding of regional crime patterns can assist in allocation of resources, tactical or operational planning and administration.

Manpower Allocation

This component was to include a series of programs to aid in designing patrol beats and assigning personnel to an area. It is not being implemented at this time.

METHODOLOGY

Crime Case Follow-Up Study

To determine the degree to which ARJIS was used in investigating reported crimes, detectives in nine agencies provided feedback on each case closed. A case closure included arrest, exceptional clearance, unfounded, or filed (no further follow-up) cases.

During a three-month period (January 1 - March 31, 1981), detectives completed a crime case follow-up report on these cases (see form, page 81).

The officers indicated which components of the ARJIS, county or state, computer systems assisted in cancellation of a case or property recovery. Data were also collected on the following variables:

1. case number.
2. date of occurrence.
3. crime type.
4. series.
5. value of property stolen.
6. type of property stolen (serialized or unserialized).
7. disposition date.
8. type of disposition.
9. arrest or property recovered at the crime scene.

The results may slightly underrepresent the use of ARJIS in cases where a patrol officer searched the system prior to submitting a case to detectives. The survey of patrol officers gives information regarding their use of ARJIS in making arrests which augment the case study results.

User Surveys

Patrol officers, detectives and line supervisors in the 10 local law enforcement agencies participating in ARJIS completed surveys which dealt with the following issues:

1. The value and impact of ARJIS, to date.
2. Training needs.
3. Problems regarding use of ARJIS.

The survey was to include all patrol officers, detectives, agents, corporals and sergeants. The officers were asked to complete the questionnaires at line-up or squad conference during a three - to four-day period to allow for sick leave and days off. The response rate was approximately 61% with 1212 forms returned. This provides a sufficient number to evaluate the situation at each agency as well as regionwide.

The survey results are compared to a pretest survey conducted in July, 1980. Factors specific to certain agencies which could influence results were considered in analyzing the survey data such as the availability of in-house computers and the methods available for accessing ARJIS information.

The number of surveys returned by each law enforcement agency are as follows:

	# of Surveys Returned
Carlsbad	28
Chula Vista	67
Coronado	19
El Cajon	55
Escondido	48
La Mesa	19
National City	27
Oceanside	54
San Diego Police	813
Sheriff	81
Unknown	1
TOTAL	1,212

The responses to the questionnaire are presented on page 76.

Management Survey

In addition to the opinions and comments of ARJIS users, it was necessary to obtain information on each agency's policies and procedures relating to ARJIS (i.e., the administrative perspective). The police chiefs and Sheriff, or their representatives, were interviewed regarding the departments' involvement in ARJIS development, training procedures, benefits and disadvantages of the system, and future concerns about ARJIS.

APPENDIX C
N=1212

ARJIS QUESTIONNAIRE

The Criminal Justice Evaluation Unit of SANDAG is continuing the assessment of the Automated Regional Justice Information System (ARJIS). The responses of patrol, traffic and investigative officers and their supervisors to a few follow-up questions about use of the system will be very helpful.

Your responses will be confidential. The information provided will be presented in statistical form and will not be identified by name.

After you have completed the questionnaire, please return it to your patrol supervisor/ investigations supervisor.

1. HOW HAVE YOU REQUESTED/RECEIVED INFORMATION FROM ARJIS? (CHECK ALL THAT APPLY)

N = 1201
- **158** never received information
- **619** query terminal personally
- **476** request given to terminal operator
- **479** request given to communications/dispatch over radio
- **480** request given to ICAP/Crime Analysis (San Diego Police Dept. only)
- **11** Other (specify): _____

2. HAVE YOU BEEN TRAINED IN HOW TO: (CHECK ALL THAT APPLY)

N = 1212
- **670** access information from the ARJIS terminal?
- **788** prepare field interview reports?
- **752** prepare regional crime incident reports?

3. DO YOU THINK YOU NEED (ADDITIONAL) TRAINING IN: (CHECK ALL THAT APPLY)

N = 1212
- **968** accessing information from the ARJIS terminal?
- **244** preparation of field interview reports?
- **282** preparation of regional crime incident reports?

4. THE FOLLOWING IS A LIST OF ARJIS INQUIRIES. PLEASE INDICATE WHICH ONES YOU HAVE USED.

N = 1189
- **441** Master Operations Index (MOI)
- **930** Field Interview
- **372** Geographic Inquiries (e.g., verification of an address - not crimes by area)
- **280** Regional Hotsheet
- **122** Personnel
- **129** Glossary (descriptive terms for property)
- **628** Crime Case
- **438** Property
- **449** Pawned Property
- **538** Traffic
- **132** None
- **5** Other (specify): _____

5. HOW OFTEN DO YOU REQUEST INFORMATION FROM EACH OF THESE COMPONENTS? (CHECK THE APPROPRIATE RESPONSE)

	More than once a day	Once a day	3-4 times a week	1-2 times a week	Once every 2 weeks	Once a month	Less than once a month	Never
MOI	52	31	84	117	76	71	126	626
Field Interview	59	53	133	221	140	128	202	247
Geographic Inquiries	11	5	31	71	68	98	170	729
Hotsheet	18	47	39	53	28	60	132	806
Personnel	12	15	21	22	20	15	88	990
Glossary	5	3	7	27	24	29	86	1002
Crime Case	18	15	61	139	118	114	189	529
Property	20	12	57	82	85	73	175	679
Pawned Property	23	14	53	65	62	80	170	716
Traffic	44	24	81	87	76	93	152	626

Patrol Officers

6. HOW MANY ARRESTS WERE YOU CREDITED WITH IN THE LAST MONTH?

9968 arrests ____none

7. ESTIMATE THE NUMBER OF YOUR LAST 10 ARRESTS FOR WHICH ARJIS PROVIDED USEFUL INFORMATION.

SDPD – 706/5390 = 13%
Others – 132/2950 = 4%
Total – 838/8340 = 10%

____arrests ____none

8. ESTIMATE THE NUMBER OF YOUR LAST 10 ARRESTS WHICH PROBABLY WOULD NOT HAVE BEEN MADE WITHOUT ARJIS INFORMATION.

SDPD – 440/4940 = 9%
Others – 58/2700 = 2%
Total – 498/7640 = 7%

____arrests ____none

Detectives

9. HOW MANY CRIME CASES WERE YOU ASSIGNED TO INVESTIGATE IN THE LAST MONTH?

SDPD – 4039
Others – 2230
Total – 6269

6269 cases ____ none

10. ESTIMATE THE NUMBER OF YOUR LAST 10 ACTIVELY INVESTIGATED CASES WHICH WOULD HAVE BEEN UNWORKABLE WITHOUT THE USE OF ARJIS INFORMATION.

SDPD – 324/2010 = 16%
Others – 106/790 = 13%
Total 430/2800 = 15%

____cases ____none

11. ESTIMATE THE NUMBER OF YOUR LAST 10 CRIME CASE CLEARANCES (BY ARREST OR EXCEPTIONAL MEANS) IN WHICH ARJIS PROVIDED USEFUL INFORMATION.

SDPD – 360/2030 = 18%
Others – 154/790 = 19%
Total – 514/2820 = 18%

____case clearances ____none

12. ESTIMATE THE NUMBER OF YOUR LAST 10 CRIME CASE CLEARANCES THAT PROBABLY WOULD NOT HAVE BEEN CLEARED WITHOUT ARJIS INFORMATION.

SDPD – 178/1880 = 9%
Others – 54/790 = 7%
Total – 232/2670 = 9%

____case clearances ____none

13. WHICH OF THE FOLLOWING ARE PROBLEMS OR DISADVANTAGES OF ARJIS? PLEASE CHECK THE RESPONSE THAT REFLECTS YOUR OPINION ABOUT THE STATUS OF THESE TODAY:

Problems/ Disadvantages	A Major Problem	Somewhat of a Problem	Not a Problem
1. Information is not accurate	17	166	756
2. Information is not complete	43	388	522
3. There are delays in data entry	207	480	281
4. Excessive down time	317	445	239
5. Does not provide useful information	15	108	810
6. Computer terminals are not easily accessible	112	282	570
7. Difficult to get information while on patrol	251	414	264
8. Insufficient training in use of terminals	523	370	160
9. Complicated to query	164	430	331
10. Computer response time on inquiries is slow	107	417	434
11. Provides too much information on any inquiry to be useful	8	13	809
12. Other (specify) _____			

14. AGENCY: _____

15. PRESENT ASSIGNMENT: (CHECK ONLY ONE)

____Patrol
____Traffic
____Investigations
____Records
____Research & Planning
____ Other (specify): _____

16. RANK: _____

17. YEARS WITH THE AGENCY: _____

18. WORKING HOURS: (SHIFT)_____
(FOR EXAMPLE: 0800 - 1630)

THANK YOU FOR YOUR TIME.

CRIME CASE FOLLOW-UP SUPPLEMENT

CASE CANCELLED ___ AGENCY _____

NOT WORKABLE (filed) ___ COMMUNITY/AREA _____

PROPERTY RECOVERED ONLY ___ CASE NUMBER _____

DATE OCCURRENCE _____

TYPE CRIME _____ SERIES [yes] [no] # OF CASES _____

PROPERTY STOLEN [yes] [no] SERIALIZED PROPERTY INVOLVED [yes] [no]

TOTAL VALUE $ _____ NON-SERIALIZED PROPERTY INVOLVED [yes] [no]

DISPOSITION DATE _____

HOW: ARREST ___ EXCEPTION ___ UNFOUNDED ___ FILED ___

PROPERTY RECOVERED [yes] [no] COMPLETE ___ PARTIAL ___ VALUE REC. $ _____

SERIALIZED PROPERTY RECOVERED [yes] [no]

NON-SERIALIZED PROPERTY RECOVERED [yes] [no]

COMPUTER SYSTEMS USED WHICH ASSISTED IN CANCELLATION &/or PROPERTY RECOVERY:

ARJIS(Regional)		CAJIS(County)		CLETS(State)	
Field Interview	___	Criminal History	___	Criminal History	___
Pawned Property	___	Want/Warrants	___	Want/Warrants	___
Stolen Property	___	Traffic Court	___	Property	___
Crime Cases	___	Probation	___	DMV (Name)	___
Arrest	___	Jail Population	___	DMV (License)	___
Traffic	___	Alias	___	Stolen Vehicle	___
AWDI	___	District Attorney	___		
Regional Hotsheet	___			ICAP(SHERLOC)	___

If none of the above is checked please indicate the following:

ARRESTED AT SCENE ___ PROPERTY RECOVERED IN FIELD ___

USED SYSTEM(s) BUT NO HITS ___ DID NOT USE SYSTEM(s) ___

Investigator: _____

Station/Command: _____

TABLE 15

ARJIS OBJECTIVES BY COMPONENT

A. FIELD INTERVIEW (FI)

Priority 1
1. Field Interrogation Document (Regional)
2. On-Line Data Entry
3. Field Interrogation Search
4. Audit Trail, Reorganization and Purge of Data Base
5. Standardized Routing Procedure for FI Forms
6. Contingency Plan for Back-up of Computer System

Priority 2
1. Centralized Filing of FI Documents
2. Supervisory Information
3. Management Information
4. Meet Field Officer Information Needs
5. FI Submittal Notification
6. Police Unit Coordination in Use of FI Information
7. Law Enforcement Agency Interface
8. Interface to Other ARJIS Systems Through MOI

B. PERSONNEL

Priority 1
1. Skills Index
2. Current Assignment
3. Manpower Status
4. Personnel Information Maintenance
5. Training
6. Activity Measures

Priority 2
1. Medical Information Processing
2. Court Subpoena System

Priority 3
1. Employee Restricted Information
2. Career Development

C. MASTER OPERATION INDEX*

1. Automated regional cross-correlation on how individuals are known to law enforcement
2. Reduce manual activities
3. Increase accuracy and timeliness of data
4. Reduce need for multiple files
5. Reduce need for varied terminal equipment
6. Provide effective method to control data entry and access

* Revised

CONTINUED

1 OF 2

7. Improved base of information
8. Geographic correlations
9. More effective and efficient means of obtaining data
10. Updating and security functions

D. CRIME CASE

Priority 1
1. Victim Data Base
2. MOI Interface
3. Logical Relations with Other Components
4. Regional Interface between City and County
5. Reduce Data Entry Delay
6. Reduce Delays in Routing Cases
7. On-line Inquiry Retrieval Time
8. Data Security
9. Back-up and Recovery
10. Allowable Downtime

Priority 2
1. Data Integrity
2. Geobase Interface
3. State and Federal Interface
4. On-line Update
5. On-line Training
6. Officer Feedback
7. Court Dispositions
8. Managerial Reporting
9. Growth

Priority 3
1. Full Data Sharing
2. On-line Update Speed
3. CAD Case No. Assignment
4. Victim Notification
5. Elimination of Source Document
6. 24-hour Availability

E. CRIME ANALYSIS

Priority 1
1. Method for Determining Case Susceptibility to Closure On-Line
2. Crime Prediction
3. Technique for Series Detection
4. Method for Gathering Data

Priority 2
1. Geographically Oriented Crime Statistics Method
2. a. Method for Comparing Areas of Responsibility
   b. Means for Alerting Patrol of Abnormal Activity

F. PROPERTY

1. Revise Crime Case and Pawn Documents
2. Improve Manner in which Reports Are Completed
3. Complete and Accurate Description of Property by Victim
4. Record Unserialized Property
5. Include information Re: Crime Case
6. Interface with County, State and City Computers
7. Reports - Statistical

G. ARREST

Priority 1
1. Data Base of Who, When, Where Detained, What Property and What Happened
2. Detention Document Data Entry
3. Back-Up - Recovery
4. GTR Interface
5. Security Provisions
6. Personnel Locator Table
7. Violation/Unit Correlation Table
8. Geographic Incoding

Priority 2
1. On-line Data Retrieval
2. Document Control Facility
3. County System Interface
4. Alternate Batch Retrievals
5. Statistical/Summary Reporting
6. Daily Log
7. Investigator Notification
8. Automatic Want/Warrant Check
9. Sound Alike Names
10. Geographical Location Retrieval
11. File Initialization
12. Data Maintenance Capability
13. Interface to Other ARJIS systems
14. Assist/Non-Assist Retrieval

Priority 3
1. Investigative Follow-up Control
2. Disposition Control
3. Automated Disposition Update
4. CAD Interface

H. AUTOMATED WORTHLESS DOCUMENT INDEX

1. Provide Forgery/Fraud with Computerized Index Containing Pertinent Information Regarding Fraudulent and Stolen Documents
2. Interface with Other ARJIS Components
3. Officer Notification
4. Batch Reporting

TABLE 16

IMPACT OF ARJIS, BY AGENCY
USER SURVEY
April, 1981

OF LAST TEN CASE CLEARANCES	CARLSBAD	CHULA VISTA	CORONADO	EL CAJON	ESCONDIDO	LA MESA	NATIONAL CITY	OCEANSIDE	SDPD	SDSO	OVERALL
% of cases that would have been unworkable without ARJIS	17%	21%	15%	15%	16%	15%	N/A	10%	16%	16%	15%
% of case in which ARJIS was useful	8%	19%	10%	35%	18%	38%	N/A	17%	18%	12%	18%
% of case closures not made without ARJIS	0%	7%	0%	8%	18%	8%	N/A	3%	9%	4%	9%
OF LAST TEN ARRESTS											
% of patrol arrests in which ARJIS was useful	5%	4%	5%	4%	5%	8%	12%	2%	13%	2%	10%
% of arrests that would not have been made without ARJIS	2%	1%	6%	1%	5%	3%	2%	1%	9%	1%	7%

TABLE 17

PERCENT OF CASES CLOSED BY ARREST OR EXCEPTION
IN WHICH ARJIS INFORMATION WAS OF ASSISTANCE
CRIME CASE FOLLOW-UP SUPPLEMENT
January - March, 1981

	Total Cases	Hits	%
Carlsbad	89	5	6%
Chula Vista	200	29	15%
El Cajon	39	10	26%
Escondido	18	0	0
La Mesa	33	16	48%
National City	72	1	1%
Oceanside	69	7	10%
San Diego Police Department	1,085	109	10%
Sheriff	254	14	6%
TOTAL	1,859	191	10%

TABLE 18

PROPORTION OF CASES WITH ARJIS HITS
CASES CLOSED BY ARREST, EXCEPTION, UNFOUNDED OR FILED
CRIME CASE FOLLOW-UP SUPPLEMENT January - March, 1981

Agency	Total Cases	Cases With ARJIS Hits	%
Carlsbad	220	8	4%
Chula Vista	308	33	11%
El Cajon	89	19	21%
Escondido	80	2	3%
La Mesa	36	17	47%
National City	120	4	3%
Oceanside	153	18	12%
SDPD	2,215	237	11%
Sheriff	556	31	6%
	3,777	369	10%

TABLE 19

PROBLEMS ASSOCIATED WITH ARJIS
USER SURVEY
April, 1981

PROBLEM		PERCENT OF RESPONDENTS
1.	Insufficient training in use of terminals	81%
2.	Excessive downtime	69%
3.	Delays in entering data	63%
4.	Difficult to get information while on patrol	61%
5.	Complicated to query	54%
6.	Response time on inquiries is slow	48%
7.	Information is not complete	39%
8.	Terminals are not easily accessible	36%
9.	Information is not accurate	17%
10.	Does not provide useful information	11%
11.	Provides too much information per inquiry to be useful	11%
12.	Other	5%
13.	None	5%

END