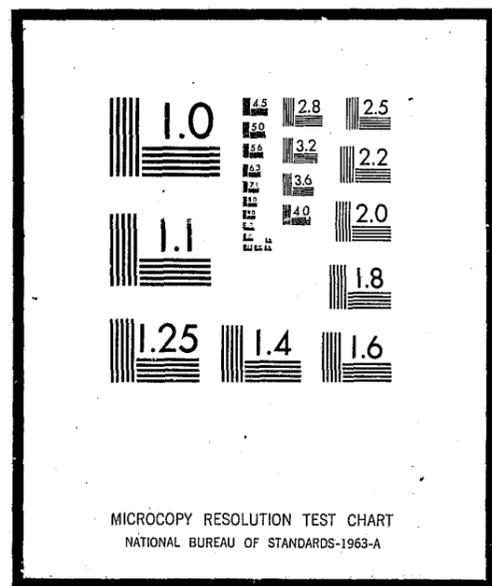


NCJRS

This microfiche was produced from documents received for inclusion in the NCJRS data base. Since NCJRS cannot exercise control over the physical condition of the documents submitted, the individual frame quality will vary. The resolution chart on this frame may be used to evaluate the document quality.



Microfilming procedures used to create this fiche comply with the standards set forth in 41CFR 101-11.504

Points of view or opinions stated in this document are those of the author(s) and do not represent the official position or policies of the U.S. Department of Justice.

U.S. DEPARTMENT OF JUSTICE
LAW ENFORCEMENT ASSISTANCE ADMINISTRATION
NATIONAL CRIMINAL JUSTICE REFERENCE SERVICE
WASHINGTON, D.C. 20531

Date filmed

8/7/75

013660



APPENDIX A

to

A CRIMINALISTICS MASTER PLAN FOR
THE STATE OF FLORIDA

FINAL REPORT
MRI Project No. 3802-D

RESEARCH INSTITUTE 425 VOLKER BOULEVARD, KANSAS CITY, MISSOURI 64110 • 816 561-0202

A STUDY TO DETERMINE THE CRIMINALISTICS
SUPPORT REQUIREMENTS FOR THE STATE OF FLORIDA

FINAL REPORT
October 20, 1972

MRI Project No. 3633-D

For

Florida Department of Law Enforcement
P.O. Box 1489
Tallahassee, Florida 32302

PREFACE

This is the Final Report of the analysis, conclusions, and recommendations developed in this study to determine the means whereby criminalistics services in the State of Florida could be best expanded and improved.

The study was sponsored by the Florida Department of Law Enforcement. The Midwest Research Institute staff conducting this study were Michael L. Worley, Project Leader; Walter R. Benson, Carl L. Cunningham and Howard Gadberry.

Data for this research were made available from crime laboratory records, FDLE reference materials, State Planning Agency files, and local law enforcement officials. Valuable advice and insights were also received from personnel in the offices of State's Attorneys, Medical Examiners, Regional Planning Councils, Health and Rehabilitative Services Laboratories, and Police Administration Programs. Midwest Research Institute wishes to thank the many persons in the above agencies who supported this study.

In preparing this analysis, Midwest Research Institute has drawn upon data and insights developed from other studies it recently conducted of the national and regional experiences in criminalistics operations, as well as from data sources within the State of Florida. We are indebted to Professor Joseph D. Nicol, Administration of Criminal Justice Curriculum, University of Illinois, who made very significant contributions to this study in his capacity as general consultant, and particularly in the development of the crime laboratory planning models.

Approved for:

MIDWEST RESEARCH INSTITUTE



John McKelvey, Vice President
Economics and Management Science

October 20, 1972

TABLE OF CONTENTS

	<u>Page</u>
Summary	1
Chapter I - Introduction	3
Purpose and Scope of This Study	3
Exclusions	3
Definition of Terms	4
Chapter II - Profile of Criminalistics Capabilities in Florida Today	5
Elements of Criminalistics	5
Perception of Need of Criminalistics Services by Potential Users	8
Chapter III - Assessment of the Involvement of Criminalistics Activities in a Supportive Role	15
Crime Laboratory Operations	15
The Medical Examiner Function and the Criminalistics Laboratory	32
Chapter IV - Viable Alternatives for a Criminalistics System in Florida	39
Development of Candidate Systems	39
Organizational and Administrative Alternatives	70
Chapter V - Phased Implementation Plan for Achieving Recommended State Criminalistics System	77
General	77
Planning Model Format and Definition of Terms	80
Cost Summary and Analysis	117
Floor Space Requirements	117
Expected Annual Case Load	118
Satellite Lab Capabilities	120
A 6-Year Criminalistics Plan	122

TABLE OF CONTENTS (Concluded)

	<u>Page</u>
Chapter VI - Guidelines for Management of the Crime Laboratory System.	125
Personnel Management.	125
Quality Control	126
Efficient and Effective Utilization of Resources.	127
Client Relationship	128
Management and Evaluation of the Crime Laboratory System.	128
Appendix A - A Suggested Crime Scene Search Training Program	131
Appendix B - Suggested Equipment for Crime Scene Search.	135
Appendix C - Interviews Conducted.	139
Appendix D - Job Descriptions	145
Appendix E - Tabulation of Laboratory Services	165

SUMMARY

This study had the purpose of determining how criminalistic services in the State of Florida could best be expanded and improved, and the specific means by which that goal could be attained.

In addition, the study examined the feasibility of combining the crime laboratory function with other scientific laboratory needs, particularly the medical examiner, and developed a phased implementation plan for the expansion of a statewide crime laboratory system which could also serve as a guideline for allocation and expenditure of LEAA funds for forensic services.

Conclusions

As a result of this study, the following conclusions were arrived at:

Conclusion 1: There is a need to considerably expand the criminalistic services available to law enforcement officers of the State of Florida and to provide these services on a more uniform basis than at present.

Conclusion 2: The current programs of the Governor's Council on Criminal Justice relating to criminalistics have, in some instances, made positive contributions toward improving the availability of crime laboratory services, but in general, the program suffers from the lack of a coordinated plan.

Conclusion 3: There should be a criminalistics support system under the control of the Florida Department of Law Enforcement that would service the entire state. The system should use regional laboratory facilities with smaller satellite laboratories included in the state system.

Conclusion 4: A secure evidence transit system should be considered for adoption to meet the criminalistics support requirements of agencies outside the 50-mile radius of each regional or satellite laboratory. Such a system could provide a courier service especially designed to facilitate the submission of physical evidence to the crime laboratory from outlying agencies which might not otherwise avail themselves of laboratory services.

Conclusion 5: The location of the FDLE Crime Laboratory at Tallahassee with respect to concentrations of population, crime, and law enforcement officers of the state is such that expansion of the laboratory would offer very little improvement to the criminalistics system. The

Tallahassee laboratory should be retained, perhaps on a smaller scale, to serve the immediate area, and also to provide technical support to the supervisor of the state crime laboratory system for research and quality control.

Conclusion 6: Elements of a state criminalistics support system should be established and maintained in the following areas:

Miami	Fort Lauderdale
Tampa	Orlando-Sanford
Jacksonville	Pensacola
	Tallahassee

Conclusion 7: It would be highly desirable to incorporate the current Dade County Department of Public Safety Crime Laboratory into the state crime laboratory system. It is unreasonable to expect the taxpayers of Dade County to bear the cost of providing crime laboratory services to Southern Florida when other regions of the state will benefit from FDLE-supported crime laboratory services at no local cost.

Conclusion 8: It is not desirable to combine the medical examiner laboratory function with the criminalistics laboratory function. The fraction of the respective work loads of the two activities which is of common interest is minimal, and any possible benefits from cost savings would be likely outweighed by conflicts in priorities. There is, however, a need to establish protocol for cooperation with the crime laboratory and the medical examiner.

Conclusion 9: There is a need for a statewide crime scene search training program and the formation of crime scene search teams in individual law enforcement departments. Crime scene search training should be under the direction of or closely coordinated with the criminalistics support system supervisor.

Conclusion 10: Health and Rehabilitative Services laboratories should continue to supplement the work of crime laboratories in the area of narcotics and dangerous drugs analyses, particularly during the implementation stages of the recommended criminalistics plan. Thereafter, the drug case load could be assumed by laboratories operating under a law enforcement charter, provided that policy is consistent with the then current consensus of opinion regarding the mental health aspects of the drug problem.

CHAPTER I

INTRODUCTION

Purpose and Scope of This Study

The purpose of this study was to develop a comprehensive plan for improving and expanding the forensic sciences support rendered the law enforcement agencies in the State of Florida. Particular attention was given to the most effective means of providing rapid, responsive, scientific support and increasing the availability of expert witnesses to testify in court in support of the crime laboratory findings.

We determined what specific laboratory services are needed to support the regions of the state; where, how, and by whom the services should be provided; the training, equipment, personnel, and expertise that will be required; and finally, how the system should be phased into operation.

In addition, we analyzed the laboratory requirements of the state medical examiners, developed a curriculum for a police training program in evidence collection and crime laboratory usage; and made recommendations for the control, management, location, and administration of the criminalistic system.

Exclusions

In accordance with the official proposal for the conduct of this study, we excluded consideration of the comparative value of criminalistics services with options for improving the overall criminal justice system or some specific component of that system. Thus, a comparison of dollar benefit of laboratory equipment with benefits for some other type of police capability was not attempted.

The assumption was made that the crime laboratory does not include the following functions:

- . Identification photography;
- . Identification fingerprints, other than latent;
- . Polygraph; and
- . Electronic surveillance.

Definition of Terms

In this study, the term criminalistics is used extensively. It is a relatively new term, and despite its wide currency, one that has not yet reached the stage of a formal definition that is generally accepted within the law enforcement and forensic sciences communities. For purposes of this study, therefore, criminalistics refers to the application of the physical sciences to the support of criminal justice. Criminalistics is a major component of the larger field of the forensic sciences.

Forensic science is a broad term which describes the application of medical science (and physical science) to the needs of the criminal justice system. The work of the medical examiner or the coroner in the determination of the cause of death involves--in addition to pathology--toxicology and serology. Because of the close involvement of the medical examiner in providing some criminalistics support to law enforcement agencies, we have considered the potential of medical examiners to function as a base for the development of the regional crime laboratory. However, in all such discussions some necessary distinctions are made between the application of science to satisfy the legal requirement that the cause of death be established and the more general application of science to the broad problem of providing proof of a criminal offense, or aiding in the solution of a crime. Criminalistics may be said to involve art as well as science, because the solution of crime frequently requires a very imaginative application of science to the problem at hand (but never a relaxation of scientific rigor).

Criminalistics can and does include some nontechnical support necessary to further the application of science to the law enforcement problem. A secure evidence transit system, such as that proposed in this study, is an example of such support. To some extent, the collection of physical evidence from a crime scene may be considered nontechnical.

By the term criminalistics system is meant all laboratory facilities or resources that are provided to support the movement of evidence from the crime scene to the laboratory, the furnishing of laboratory reports to the supported agencies, court testimony, and any other means of presenting the laboratory's conclusions. Finally, the use of the crime laboratory's findings in the clearance of cases closes the loop of the system.

CHAPTER II

PROFILE OF CRIMINALISTICS CAPABILITIES IN FLORIDA TODAY

Elements of Criminalistics

Criminalistics services provided to law enforcement officials in Florida today range from modern, full-service laboratory capabilities in Dade County and in Tallahassee to reliance upon nonenforcement departments, such as health or private laboratories, for support functions. Additionally, a number of police departments have established identification units which are concerned primarily with latent print work, although they sometimes function as evidence processing centers, as well. The activity of the medical examiner, as it pertains to toxicology, serology, and causation of death, constitutes the remainder of the state's forensic science capability.

Figure 1, "Elements of Criminalistics in Florida," provides information as to the types of criminalistics services available throughout the state grouped in the categories of full-service laboratories, drug laboratories, and identification units. (Not shown is the medical examiner capability which is treated separately in Chapter III.) As is evidenced by the location, organizational status, and function of these laboratories, not all law enforcement agencies have available the same level of service around the state. Depending upon geographical location, governmental unit affiliation and personal preferences, an investigating officer may elect to submit physical evidence for processing to a local laboratory, the state laboratory or to the FBI laboratory in Washington, D.C. (Many factors other than proximity to lab and jurisdictional considerations enter into the final decision as to whether or not case evidence will be submitted to any laboratory. These influences are discussed in detail in a later Section of this report.) The information in Figure 1 provides a capsule description of the criminalistics system currently operating in the state today, and a background to support the subsequent recommendations developed in this study.

As can be expected from the wide range of governmental bodies which control the various laboratories, the means to sustain these operations exhibit diversified funding mechanisms. For the most part, the smaller satellite labs are currently supported by funds made available to the State of Florida through the U.S. Department of Justice, Law Enforcement Assistance Administration (LEAA). These grants are administered by the State Planning Agency (SPA) for the Florida Governor's Council on Criminal Justice. State revenues support both the FDLE Laboratory at Tallahassee (through a share in the FDLE budget) and the drug analysis work being performed in Jacksonville (a service provided through the Department of Health and Rehabilitative Service

<u>Element</u>	<u>Location</u>	<u>Director or Administrator</u>	<u>Organizational Status</u>	<u>Staffing</u>	<u>Primary Function or Service</u>	<u>Source of Funding</u>
<u>Full-Service Labs</u>						
Florida Department of Law Enforcement Crime Laboratory	Tallahassee	Edward G. Bigler	State laboratory, authorized under crime control program, Department of Law Enforcement	17 Analysts	Provide crime laboratory services to all law enforcement departments within the state (2,161 cases, CY-1971)	State Revenue
Dade County Department of Public Safety Crime Laboratory	Miami	B. Edward Whittaker	Bureau under the Central Services Division of the Department of Public Safety	12 Criminalists 1 Supervisor	Crime laboratory services to Dade County Department of Public Safety and other law enforcement officials within Metropolitan Dade County (7,666 cases, FY-1971)	County Tax Levy. LEAA funding for specialized operations
<u>Drug Labs</u>						
Region IV Crime Laboratory	Sanford	William H. Ragsdale (Chief Chemist), John E. Polk (Director)	Regional lab independent of other local, state or federal labs. Organized as a project of LEAA	5 Chemists	Primarily a drug lab. Two to 3% of work load supports Florida Highway Department. Some toxicology cases on an emergency basis. Serves all law enforcement agencies in a 10-county area primarily in Region IV (3,036 cases, FY-1971)	LEAA funded
Broward County Sheriff's Crime Laboratory	Ft. Lauderdale	John Pennie	Satellite Lab of Dade County Department of Public Safety Crime Lab	1 Examiner	Support 28 L. E. departments in Broward County, (1,735 cases)	LEAA funded

Figure 1 - Elements of Criminalistics

<u>Element</u>	<u>Location</u>	<u>Director or Administrator</u>	<u>Organizational Status</u>	<u>Staffing</u>	<u>Primary Function or Service</u>	<u>Source of Funding</u>
<u>Drug Labs (Concluded)</u>						
West Palm Beach Crime Laboratory	West Palm Beach		Satellite Lab of Dade County Department of Public Safety Crime Laboratory		Analysis of drugs and narcotics	LEAA funded
Key West Crime Laboratory	Key West		Satellite Lab of Dade County Department of Public Safety Crime Laboratory		Analysis of drugs and narcotics	LEAA funded
Department of Health and Rehabilitative Services Laboratory	Jacksonville	Dr. W. R. Hofford	Central lab for state's health laboratories	Less than one full-time lab man	Some support to L.E. agencies in the analysis of dangerous drugs and narcotics. (Approximately 236 cases annually)	State Dept of Health Budget
Department of Health and Rehabilitative Services Laboratory	Tampa		One of the labs in the state's system of health laboratories	3 Chemists	Some support to L.E. agencies in the Tampa area for drugs and narcotics analysis (3,114 law enforcement cases CY-1971)	Law enforcement cases are largely funded by an LEAA grant
Bureau of Narcotics and Dangerous Drugs Laboratory	Miami	Anthony Romano (Chemist)	Operates under the Dept. of Justice, BNDD		Provides narcotics and drug analyses service to all law enforcement agencies at no charge	Federally funded
<u>Identification Units Contacted^{a/}</u>						
Ft. Lauderdale Police Department Laboratory	Ft. Lauderdale	Sgt. Ronald C. Hammond, Detective Division	Unit of the city police department	4 I.D. personnel	Principally an I.D. unit consisting of photography, latent prints, and physical evidence pick-up	
Jacksonville Crime Laboratory	Jacksonville	Lt. W. H. Knight	Unit of Jacksonville Sheriff's Office	3 I.D. officers	Basically a latent print section and evidence handling center for the department (236 identifications, CY-1971)	Sheriff's Office Budget

a/ Other identification units exist in the state but were not included in the survey since such activities contribute little to true criminalistics capability.

Figure 1 - Concluded

(HRS) laboratory). A significant amount of drug analysis is also being done in the Tampa area by the HRS laboratory, although the law enforcement cases handled are largely supported by LEAA grants. At the local level, county taxpayers in Dade County sustain the bulk of the operating costs of this facility although LEAA funds are used for special projects (i.e., the bomb fragmentation bank). (In this connection it is worthwhile to point out that the FDLE laboratory has never been the recipient of an LEAA grant, despite the now commonplace grant appropriations for laboratory equipment, innovative laboratory programs, training, etc., made available to many other laboratories throughout the U.S.) Also at the local level, the latent print sections or identification units connected with individual sheriff's departments, are normally supported by the local unit of law enforcement.

It is evident that the development of a comprehensive state criminalistics system must address not only the problem of providing uniform service to all enforcement agencies but include an equitable funding plan, as well. Such a plan would overcome the inequities and inefficiencies of duplicate taxation, remove the uncertainty of funding at the local level, and apprise law enforcement planners of the availability of funds from external sources (i.e., federal sources, foundations).

Perception of Need of Criminalistics Services by Potential Users

During the data acquisition phase of this study, interviews were conducted with local police department officials, county sheriffs, state police, state's attorneys, medical examiners, and other state officials to ascertain their perceived need for crime laboratory services. Before proceeding to more detailed findings resulting from these interviews, some general observations may be noted.

* No objections were encountered to the establishment of a crime laboratory in close proximity to a given department; moreover, state operation of such a laboratory was not seen as a hindrance in receiving support.

* Much interest was evinced by potential users as to the actual capabilities of a crime laboratory.

* Present level of awareness and realization of the value of physical evidence is relatively low. Available data would suggest that utilization of physical clue material as an investigative aid is a potential hardly tapped in many departments.

* Some programs have been started throughout the state in an attempt to meet criminalistics needs. The junior college programs, evidence processing centers, training facilities, satellite laboratories and mobile labs as discussed below are prime examples.

A listing of all contacts made during the course of the study is found in Appendix C.

Local police and sheriff's departments: Throughout the study, some 16 police and sheriff's departments were contacted for their views on the needs for an expansion of the present crime laboratory system. Almost universally when physical evidence was mentioned, two clue materials were brought to mind: drug related evidence and latent prints. Many police and sheriff's departments have their own identification units to perform fingerprint classification and matching. Out-of-state laboratories (primarily the FBI) are used by Florida agencies particularly when the agency does not feel any particular allegiance to a local lab. Some agencies use a combination of a local lab for routine cases and an out-of-state lab for specialized needs. Some larger departments train evidence technicians to respond to calls for service at the crime scene. Some departments, however, rely on specialists from the laboratory to do crime scene work.

The police and sheriff's departments which seemed to have the greatest awareness of the value of physical evidence were those which concentrated on evidence collection and provided a focal point for evidence transmission to the laboratory.

Several of the departments voiced criticism of the full-service laboratories, citing poor turn around time and lack of credence in court testimony as primary complaints.

State highway patrol: The functions of the Florida Highway Patrol (FHP) include maintaining vehicle inspectors, providing the traffic weight enforcement function, and training of breathalyzer operators and calibration of breathalyzers for sheriff's departments. Additionally, the FHP investigates all automobile deaths plus homicides which occur on state property occupied by the highway patrol. The opinions and views of the FHP were sought relative to utilization of crime laboratory services in their enforcement programs.

The perceived need on the part of FHP for criminalistics support was reported to be in the areas of latent prints, casting of tire and footprints, and ballistics work; however, laboratory records indicated greatest FHP work load was generated in the areas of hit and run, paint and fabric impressions, fracture patterns, etc. In any event the total case load generated by FHP is insufficient to warrant establishment of a separate lab; consequently, their potential work load should be included in planning the total state crime laboratory capability.

State's attorneys: In discussions with Florida state's attorneys several common points of view emerged: (1) the area of greatest deficiency

in regard to crime laboratory capability was said to be criminalistics support in suspected arson and explosives investigations, (2) the most frequent use of lab services is for chemical analysis of narcotics and dangerous drugs, (3) a greater emphasis is being placed on the role of physical evidence throughout the criminal justice system than ever before on the part of prosecutors, defense attorneys and jurors themselves, and (4) commercial labs are being used in some parts of the state (primarily for drug related work) when a crime laboratory is not conveniently located or cannot process the evidence quickly.

Of special interest in discussing the role of physical evidence in the judicial process with the state's attorneys was the impact of the speedy trial rule enacted in Florida in 1968 (and amended several times since). This law provides for trial within 90 days for misdemeanors and within 6 months for felonies. The requirement for prompt analysis and report of findings applies equally to preliminary hearings as well as trials. The opinion gained was that these laws have significantly increased the demand for timely processing of evidence. In talking with various elements of the law enforcement community around the state isolated examples of case dismissals due to delay of laboratory reports were obtained. An analysis of the case records of the major crime laboratories in the state indicate that, in the past, significant delays have been encountered in analysis and reporting of findings from certain laboratories. More recently, however, the situation has improved.

The general opinion obtained from the state's attorneys was that no impediment was seen to the implementation of a statewide laboratory system. The feelings expressed were that law enforcement agencies would send evidence to state laboratories if they felt they could get good service. Finally, it was pointed out that local agencies would not likely regard the expenditure of state funds on expanded laboratory facilities to serve a region, as an incursion on their own operating budgets.

The question of the admissibility of expert witness testimony was addressed to the state's attorneys. The opinion was expressed that the testimony of local laboratory examiners is generally acceptable in court and satisfactory results have been obtained in the past, the principal difference between the testimony of a local analyst and that of FBI technicians lying in the degree of training for court room presentations.

Several comments, however, emphasized that examiners from the FBI laboratory always made excellent witnesses, and were readily accepted by all courts in Florida. The excellent training in expert witness testimony procedures of the FBI examiners often is a deciding factor as to which crime laboratory to use in a given case.

State Planning Agency - The Governor's Council on Criminal Justice:

On-going and proposed LEAA action grants represent a further expression of the perceived need on the part of local officials for criminalistics services. The State Planning Agency (SPA) coordinates and administers these grants, under Program Description D-2, FY-72 Action Plan, State of Florida. The objective of this program is to provide modern crime lab services, facilities and resources to local units of government. Under their current charter, grants can be provided for:

- Expansion of existing facilities and services,
- Development of mobile and fixed facilities, and
- Expansion of technological skills and information resources.

Figure 2 provides a listing of recent grant requests depicting project title, applicant's name, grant period, estimated project cost by period, and a capsule description of project. As a glance at the table shows, emphasis has largely been placed on establishing evidence processing centers, satellite laboratories, mobile laboratories, and 2-year (community or junior college) criminalistics programs. While it is not the intent of this report to comment specifically on the relative merits of individual projects within the criminalistics framework, planning guidelines for future funding are included among the recommendations in the Summary and Conclusions and the Phased Implementation Plan in Chapter V. These plans are sufficiently comprehensive to allow state planners to determine the potential contribution of a proposed project keeping in mind that individual programs should operate in concert with the state's overall criminalistics plan.

In order to gain background information as to the basis for some of the grant requests, an effort was made to visit each of the regional planning agencies of the state. Initially, the state had been divided into seven planning regions with a director appointed to head each region. More recently, however, these regions were abolished in favor of broader planning structure. In the new configuration, five planning units have been established consisting of Dade, Broward, Hillsborough, Pinellas, and Duval counties with four additional planning regions centered at Panama City, Gainesville, Orlando, and Bradenton. However, due to these organizational and subsequent personnel changes, it was not possible to meet individually with each regional council director. (A list of directors contacted is included in Appendix C.) From the interviews conducted, a fairly clear picture emerges of the criminalistics needs as seen by these local officials.

Several departments have made efforts to improve their criminalistics support capability at the local level through LEAA grants. LEAA funds have been used in Region VII to establish satellite laboratories in Palm Beach,

12

<u>Project Title</u>	<u>Applicant</u>	<u>Grant Period</u>	<u>Total Estimated Project Cost</u>	<u>Project Summary</u>
Crime Evidence Processing Center	Board of County Commissioners Bay County, Florida (Panama City)	January 1971- June 30, 1972	\$80,000 (1972)	Adequately equipped lab for support services. Process raw physical evidence. Transmittal of evidence to other labs. Preprocessing of certain evidence items. Provide vocational training in criminalistics.
Regional Criminal Justice Education and Crime Laboratory Program	City Commission of the City of Fort Pierce, Florida	July 1971- June 1972	\$ 72,000 (1972) 112,625 (1973) 101,476 (1974)	Coordination of educational and crime laboratory functions. Completely equip a crime laboratory during a 3-year period. Provide in-service and college-credit educational offerings. Establish a 2-year program leading to a degree in criminalistics.
Regional Law Enforcement Laboratory and Training Facility	City of Pensacola Pensacola, Florida	February 1, 1972- June 30, 1972	\$44,000 (1973) 44,000 (1974) 44,000 (1975)	Provide lab facility essentially for narcotic and dangerous drug evidence in area comprising First Judicial Circuit of Florida. Provide expert testimony. Officer training. Materials for community awareness program.
Regional Crime Lab for Education and Training	City of Tallahassee Tallahassee, Florida	July 1, 1971- June 30, 1972	\$12,806	Training for police officers in the area of evidence handling and processing. College credit course work plus short courses for in-service officers.
Region IV Crime Lab	Seminole County, Florida Sheriff's Department	April 1, 1972- June 30, 1972	\$173,149 (1972) 266,667 (1973) 293,333 (1974)	Comprehensive narcotics and drug analyses, pharmaceutical analysis, expert testimony, add an additional lab capability annually.
Region VII Satellite Crime Laboratory System	Sheriff's-Palm Beach, Broward, Dade and Monroe Counties	1970-1975	\$118,090	Three county satellite labs, to support and be directed by Dade County Crime Laboratory. Capability in Sound Spectograph (Voice Print). Added drug analysis capability.
Region III Mobile Crime Laboratories	City of Jacksonville Jacksonville, Florida	Sept. 1, 1971- June 30, 1973	\$160,254	Provide four fully equipped mobile labs plus three more lab technicians located throughout region to service all police agencies in areas of crime scene search.

Figure 2 - Recent Ongoing and Proposed SPA Grants

13

<u>Project Title</u>	<u>Applicant</u>	<u>Grant Period</u>	<u>Total Estimated Project Cost</u>	<u>Project Summary</u>
Tampa Regional Laboratory Division of Health	Board of County Commissioners- Hillsborough County, Florida	July 1, 1971- June 30, 1972	\$59,458	Provide additional equipment and personnel to supplement existing forensic lab services in area of narcotics and dangerous drugs.
Mobile Crime Laboratory	City of Daytona Beach, Florida	Nov. 1, 1971- Oct. 30, 1972	\$15,150	Provide mobile laboratory to supplement laboratory facilities of Daytona Beach Police Department and surrounding area.
Mobile Crime Lab Unit	Cocoa Beach, Florida, Police Department	July 1, 1970- June 30, 1971	\$11,972	Provide mobile laboratory equipped to process evidence and begin analysis. Available throughout Region IV, with primary operation in Brevard County.
Department of Transportation Curriculum Materials for Breath Examiner Specialist	State of Florida Department of Health and Rehabilitative Services, Jacksonville, Florida	July 1, 1972- June 30, 1973	\$1,400	Purchase of breath alcohol training manuals to be used in a statewide training program.
Implied Consent Support Activity	State of Florida Department of Health and Rehabilitative Services, Jacksonville, Florida	July 1, 1972- June 30, 1973	\$170,900	Employment of five Alcohol Breath Testing Inspectors to improve performance of breath tests and encourage acceptance by courts and law enforcement agencies.

Figure 2 - Concluded

Broward, and Monroe counties with the Dade County Crime Laboratory acting as the central lab. The satellite laboratories handle almost all of the drug cases in their respective counties. From all indications, the system is operating in an effective manner, demonstrating the potential impact of LEAA funds.

Not all LEAA funded criminalistics related projects have been as successful or contributed as much to improving the availability of crime laboratory services to local law enforcement. In some instances, funds have been requested at the local level simply because they were available or to "keep up" with other departments. One official reported that he really did not want a mobile crime scene unit but that someone had made the request on behalf of his department so he would accept one if given to him. (The concept of a van to do crime scene work had been abandoned by his department several years ago, because of its general unwieldiness, lack of real usefulness, etc.)

Still other expenditures of LEAA funds are planned for institutions outside of the law enforcement community with the intent to improve education or provide specialized training programs. While these institutions are, no doubt, sincere in their attempts to incorporate a criminalistics program into their curricula, criminalists themselves generally agree that a 2-year college program is simply not adequate to provide the in-depth training and background necessary to function in a modern crime laboratory. In practice, often such programs intended to provide equipment and teaching staff to help train criminalists end up supporting programs outside the realm of law enforcement interests. Even in those instances in which criminalistics programs remain viable, the number of students attracted to the 2-year program and subsequently entering a field of criminalistics is so small that only a negligible impact is made on the shortage of trained criminalists. The net effect is, of course, a severe watering down of the potential impact of LEAA funds.

The above remarks are not intended to discredit any individual or agency involved in former or on-going project grants but, rather, are made to point up the need for allocation of funds following structured guidelines for growth in criminalistics capability. With the lack of a comprehensive state criminalistics plan, projects (both good and bad) will continue to be funded on a piecemeal basis. Programs which offer little merit to the overall criminalistics system will be difficult to identify since no criteria are established for project evaluation; otherwise effective programs will be equally hard to evaluate.

ASSESSMENT OF THE INVOLVEMENT OF CRIMINALISTICS ACTIVITIES
IN A SUPPORTIVE ROLE

Crime Laboratory Operations

General: Crime laboratory operations, whether full-service or limited in scope, are intended to provide the investigative arm of the law enforcement with technical and scientific expertise commensurate with the state of the art. While it is beyond the scope of this study to address quantitatively the benefits derived in the criminal justice system as a result of timely analyses of physical evidence in a crime laboratory, it is useful to examine the involvement of the laboratory in the criminal justice system from several perspectives:

● Total cases-to-lab.* Reflects on a gross basis, the activity of the laboratory. The figure measures to some extent the acceptance of the lab among law enforcement personnel and hence may be indicative of previous investigator-to-lab contacts. In addition, it may also be effected by internal control of the agency in which the lab is imbedded.

● Distribution of type cases-to-lab. Indicates the orientation and the management philosophy of the laboratory. It is a useful measure in analyzing the overall activity of the lab and comparing case load data with other laboratories. On occasion, a laboratory may emphasize some particular type of activity (such as blood alcohol examination, drug analyses, etc.) to the exclusion of most other true criminalistics cases. This measure serves to identify those labs which have only a limited capability.

● Involvement with serious crime cases. Represents the area of greatest potential involvement for the laboratory in true criminalistics. Generally includes murder, aggravated assault, rape and burglary cases.

* In this and subsequent references to "case" statistics it is noted that no standardization of the term exists among criminalists in general nor among crime laboratories in Florida, in particular. Where variations in reporting procedures were noted during the course of the study every effort was made to present case load data on a uniform basis. For purposes of this study a laboratory "case" is defined as a known offense as reported in the Florida UCR yielding physical evidence which was subsequently submitted to a laboratory for analysis. Despite the effort to present consistent and reliable data the reader is cautioned against making any attempt to compare work load of laboratories based solely of reported "cases"-to-lab.

● Cases to lab as function of distance from submitting agency. Provides a mechanism for monitoring the immediate area in which the laboratory exerts its greatest influence. The measure is sensitive to transportation networks and the availability of an evidence transit system.

● Cases-per-officer (CPO). Portrays the extent of interaction between the investigator and the crime laboratory. Just as the number of officers in a community is a reflection of that community's perceived law enforcement needs, CPO in turn reflects the officers perception of the worth of a crime laboratory. Again, it is significant in comparing the involvement of a laboratory in different law enforcement jurisdictions. It may also be used as a planning guide in estimating annual case load in a new or expanding laboratory system.

● Case load per examiner. Indicates cases handled by laboratory examiners. It does not accurately depict actual work load unless it is further broken down by type case. The indicator can be used as both a management tool for comparison with output from other laboratory personnel and performance standards obtained from other crime laboratories.

● Court testimony. A vital link in the criminal justice system, although data on influence of court testimony are not available. Also, an important aspect of examiners total work load. If the laboratory serves a large region (i.e., a typical state lab) travel time to and from court as well as actual testimony time may substantially reduce bench time (time for analysis and report writing). Frequency of testimony is related to type case. The results of some laboratory analyses may be stipulated in court in some jurisdictions, in which case the lab analyst need not provide expert witness testimony.

Full-service labs: Figure 3 shows the distribution of lab cases submitted by Florida Law Enforcement Agencies. With the exception of the FBI laboratory, all of the labs are located within the state. The categories of criminalistics, drugs, and documents are separated out of total case load since these types of cases impose a significantly different work load on the laboratory.

The data indicate dissimilar distributions of type cases in Florida's two full-service laboratories. The FDLE laboratory is involved in approximately an equal number of criminalistics and drug cases with documents comprising about 20 percent of their total case load. The Dade County laboratory, however, has over one and a half times as many drug cases as criminalistics cases. Documents cases account for only 3 percent of all cases submitted to the laboratory. The case load percent distributions of

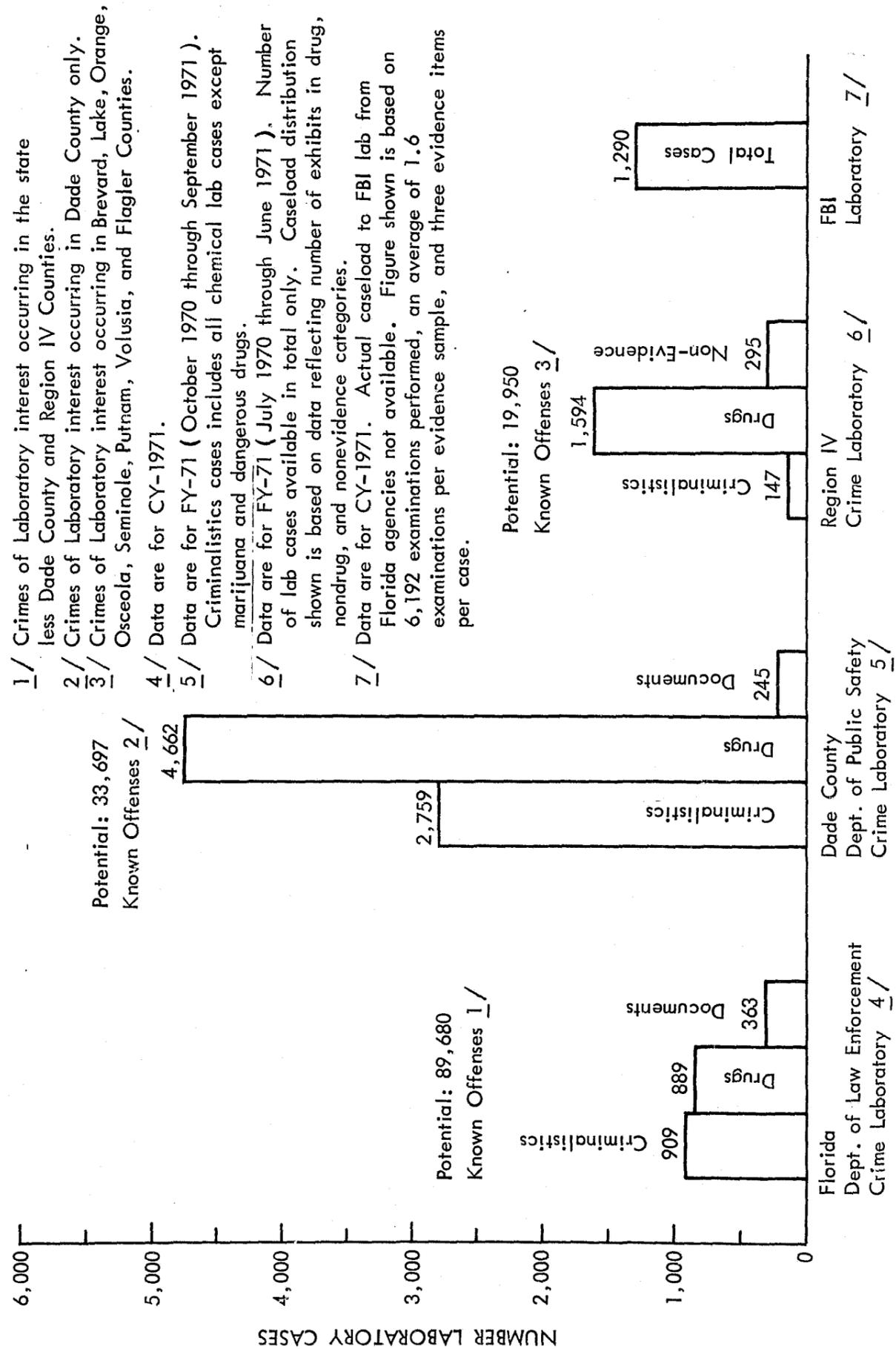


Figure 3 - Distribution of Type Cases-to-Lab from Florida Agencies - 1971

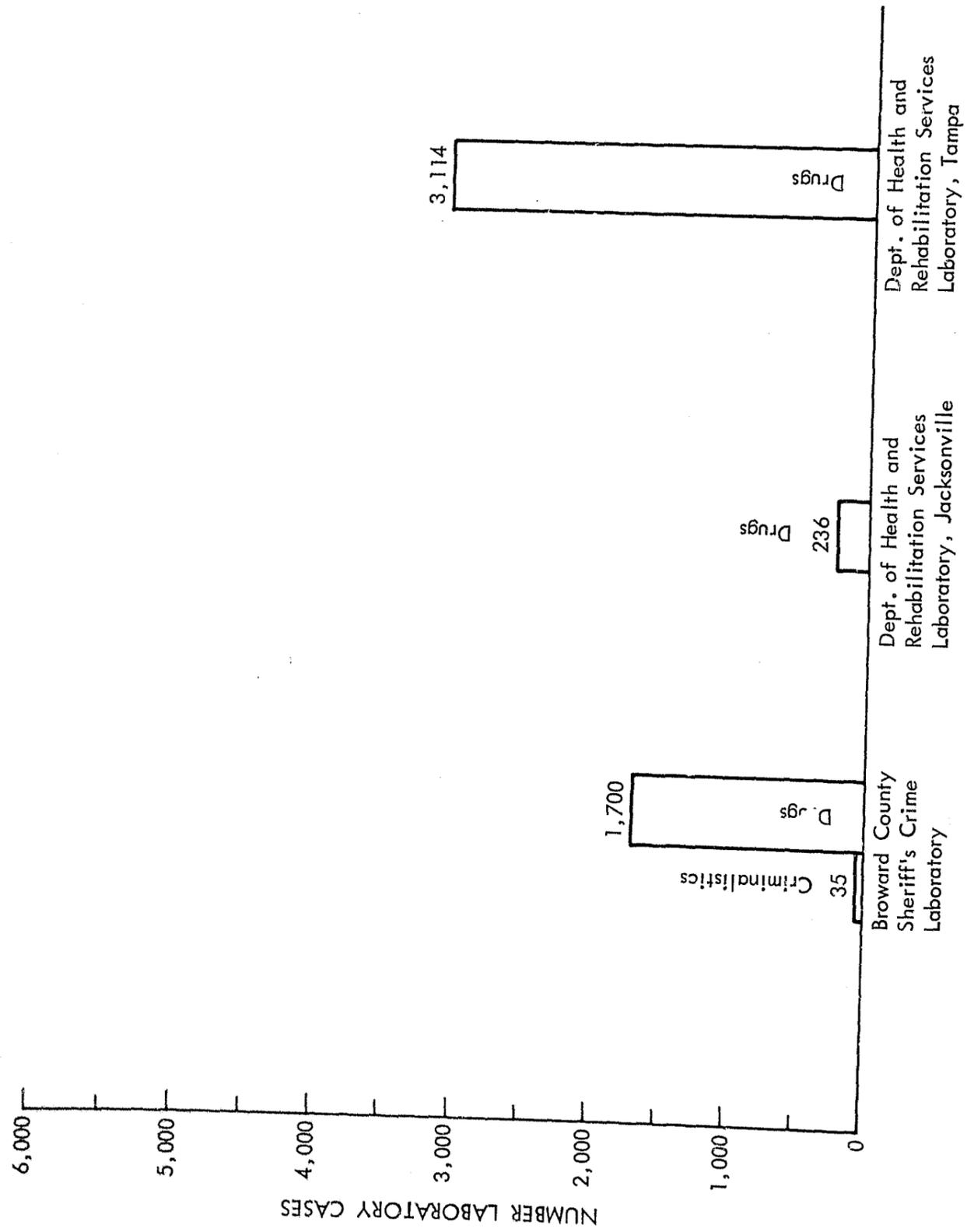


Figure 3 - Concluded

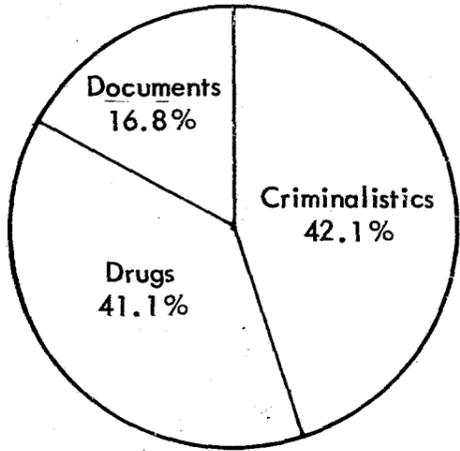
these two full-service laboratories are shown in Figure 4. In comparing the output from the two full-service laboratories it should be noted that the Dade County Laboratory has an intern program in operation, a factor which contributes to their total case load capability.

While it would be erroneous to compare work loads of these two laboratories based strictly on case load data, it is worthwhile to further examine the activity of each laboratory in light of the jurisdictional need served.

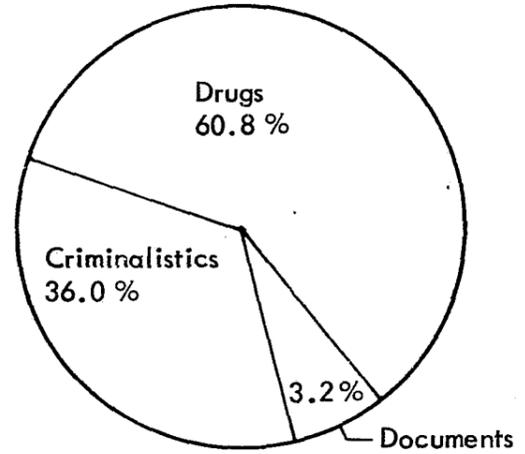
In 1971, Florida reported 284,396 index crimes. Of these, 143,327 offered the greatest potential for laboratory involvement.* For the same category of crimes, Dade County reported 33,697 or roughly 24 percent of the state total. Figure 5 shows the case load of the Dade County laboratory according to drug and remaining (nondrug) cases. The Dade County laboratory is performing over two-third of the state's nondrug cases, but has less than one-fourth of the crimes of lab interest, which occur in the state. Since the Dade County laboratory operates in essentially a closed system (doing only a minimal amount of work for agencies outside the county) the above analysis clearly indicates that the laboratory submission rate for nondrug cases (index crimes of laboratory interest) from Dade County Agencies is significantly higher than that for the remainder of the state (essentially the Tallahassee lab). In this regard, it is noted that no law enforcement agency in Florida is under a mandate to use the services of the state laboratory at Tallahassee (although they may be encouraged to do so). By contrast, the agencies in Dade County have specific directives to submit certain evidence (such as, narcotics, contraband, firearms, etc.) to the laboratory whenever it is discovered in the course of an investigation. The ultimate state criminalistics plan would do well to include suggested legislation or other directives which would require that certain types of evidence routinely be sent to the laboratory (e.g., weapons, bullets, tools, and other items which could be used to maintain a modus operandi file).

Drug cases to the crime laboratory present additional insight into laboratory involvement. In 1971, there were 15,109 reported arrests for narcotics violations in Florida. Of this number, 3,252 arrests or 22 percent came from Dade County. Referring again to Figure 5, Dade County had slightly over 38 percent of all drug cases submitted to a laboratory for analysis. Assuming that the evidence potential from all narcotics or drug cases is roughly proportional to the number of arrests made throughout the state, Dade County law enforcement agencies also have a higher submission rate for drug cases-to-lab than those in the remainder of the state. Other drug analyses are performed by the FDLE laboratory, the Health and

* These crimes include murder, rape, aggravated assault, and breaking and entering.



Florida Dept. of Law Enforcement
Crime Laboratory



Dade County Dept. of Public Safety
Crime Laboratory

Figure 4 - Percent Distribution of Cases to Full-Service Labs in Florida - 1971

	<u>Total Cases to Lab^{a/}</u>		<u>Drug Cases Only</u>		<u>Remaining Cases to Lab</u>	
	<u>Number</u>	<u>Percent State Total</u>	<u>Number</u>	<u>Percent State Total</u>	<u>Number</u>	<u>Percent State Total</u>
Florida	16,653	100.0	12,195	100.0	4,458	100.0
Dade County	7,666	46.0	4,662	38.2	3,004	67.4
Remainder of State	8,987	54.0	7,533	61.8	1,454	32.6

^{a/} Excluding FBI cases.

Figure 5 - Dade County Laboratory Support

Rehabilitative Services Laboratories in Tampa and Jacksonville, and the smaller drug labs across the state. The lower drug submission rate evident for the remainder of Florida is undoubtedly a reflection of the attitudes of many of the rural sheriff's departments regarding collection, packaging, and preservation of physical evidence, the capabilities of the crime laboratory, and availability of personnel to carry the evidence to the lab.

Other labs in the state: The remaining criminalistics activity shown in Figure 3 is primarily concerned with drug analyses. (An exception to this are the cases submitted to the FBI laboratory which are discussed below.) The Region IV laboratory at Sanford and the Broward County Sheriff's laboratory handle a few nondrug cases; however, their major involvement is still in the area of drug and narcotic analyses. The case loads of the Department of Health and Rehabilitative Services Laboratories at Tampa and Jacksonville represent drug cases handled for law enforcement agencies only, and do not represent their entire drug work load.

Florida case submissions to the FBI laboratory: The FBI does not make information available as to the number of cases sent to that laboratory by Florida law enforcement agencies. The only indication of the level of support rendered non-FBI agent requests is reported as the total number of examinations performed for a particular state. Figure 6 displays these data for FY 1971 for all states. Florida ranks among the principal users of the services of the FBI laboratory with only Maryland, Virginia, and Washington, D.C., generating more examinations from cases submitted.

In order to estimate the total number of cases sent to all crime laboratories (including the out-of-state FBI), by Florida law enforcement agencies it was necessary to make several assumptions. From the FBI annual report it was found that 6,192 examinations were performed from Florida agencies. Further, it was determined that 1.6 examinations per evidence sample were performed for all cases submitted to the FBI laboratory. Finally, the assumption of three evidence items per case (a factor used in other laboratory planning work) yields the 1,290 cases shown in Figure 3.

The high submission rate of cases to the FBI laboratory from Florida agencies warrants additional review. A word of caution should be sounded before reaching any generalization as to the criminalistics support actually rendered to Florida agencies by this federal laboratory. On the one side, the very fact that a large number of examinations are performed by the FBI laboratory for Florida agencies might suggest that law enforcement personnel in the state, in general, recognize the value of physical evidence in the investigative processes and that they will overcome even distance barriers and other inconveniences to receive the technical and

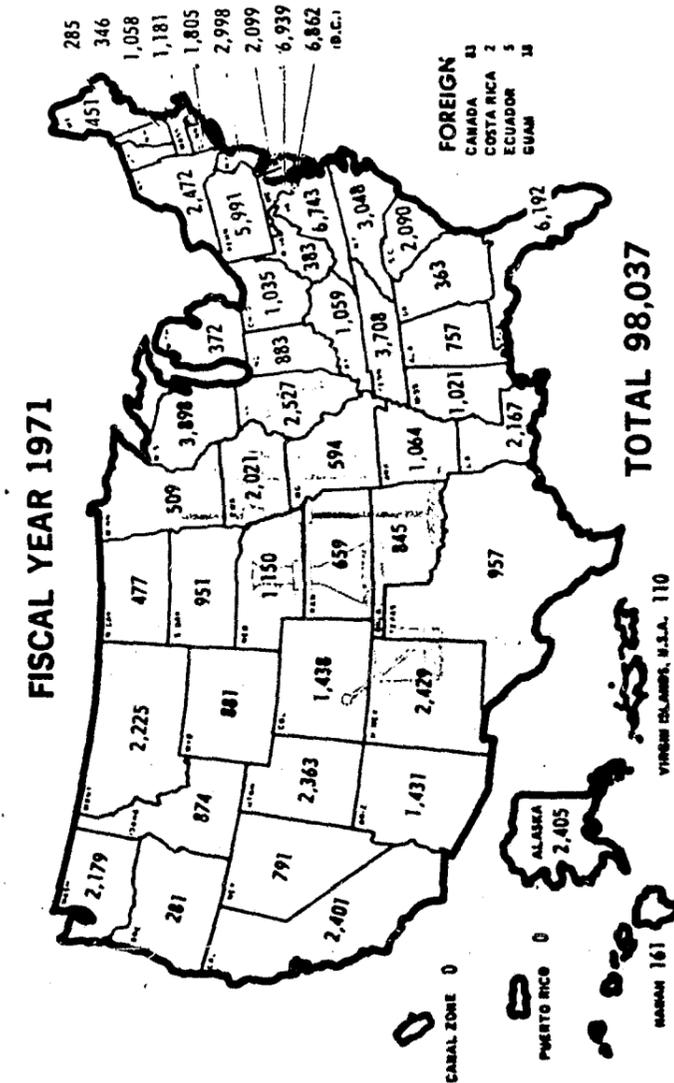


Figure 6 - FBI Laboratory Examinations Made for Nonfederal Law Enforcement Agencies

scientific support which they need. By the same token, however, a high submission rate to a remote laboratory such as the FBI can indicate a lack of confidence in the forensic science services available at the local level. Obviously, additional information is needed as to geographic origin and type case of the FBI examinations.

A further investigation into the type cases submitted by Florida agencies revealed that the cases submitted are largely documents, particularly bad checks. The high tourism-transient characteristic of Florida undoubtedly plays a major role in the need for Florida law enforcement officers to utilize the services of the national check file at the FBI.

In the absence of further data on actual distribution of cases submitted to the FBI laboratory by Florida agencies, no valid conclusion can be drawn as to the actual work load imposed upon the FBI laboratory by Florida agencies. Answers to questions raised can come only after a closer monitoring at the local level of the cases submitted or a change in FBI policy concerning disclosure of actual case load by submitting agency.

Variables affecting utilization of the laboratory: The factors governing the sphere of influence which a laboratory exerts in a region are undoubtedly quite complex. The laws of the state, and the attitude of the courts and prosecutors toward the use of physical evidence or expert witness testimony in court, can have a significant effect on whether or not evidence is sent to the laboratory. Political boundaries, such as county lines, can serve as deterrents to sending physical evidence to a near-by laboratory. Jurisdictions outside the city are often served by the laboratory on a second priority basis, and sometimes not at all, when the lab work load is high. While crime laboratories are generally cooperative in providing services to other agencies, their first loyalty, of course, is to the jurisdiction which provides funding and support.

Further, the law enforcement department exercises great influence on the amount of physical evidence that is sent to a laboratory, regardless of the proximity or jurisdiction of the laboratory. Command emphasis on the collection of physical evidence plays an important role, as does the level of training of investigators in collection of physical evidence, equipment available, existence of crime scene search teams or evidence technicians, and the priority for allocation of resources.

The crime laboratory itself influences its own volume of work. If the laboratory is able to satisfy an investigator's requests for laboratory examinations, then that investigator and others will continue to make similar requests. Conversely, if requests for service are denied, response time is inordinately long, or consistently inconclusive results are provided, then the tendency will be to reduce the number of requests for service that the investigators make to the laboratory. Further, the personality of the laboratory director is significant in the degree of utilization of the laboratory.

Cases per officer analyses (CPO): The above discussion of factors influencing submission of cases-to-lab notwithstanding, two factors bearing on crime laboratory utilization emerge that can be quantified, and which are known to significantly influence the use of criminalistics support. These measures are: (1) the density of sworn police officers, and (2) the distance of the laboratory from the respective police jurisdictions it is delegated to serve.

Even though it may be argued that only a limited number of police officers in any jurisdiction are routinely involved in crime scene investigations offering potential evidence of interest to a crime laboratory, all sworn officers of a police department are empowered to arrest and therefore have the potential to submit evidence to the crime laboratory. Moreover, available police personnel data indicate that the investigation unit of the department grows at approximately the same rate as that of total police strength. Hence, the more readily available "total sworn officers" data may be used in comparing crime laboratory involvement across jurisdictions.

As was shown in Figure 5 there were a total of 16,653 cases-to-lab in Florida in 1971 (excluding cases to FBI). This figure combined with the 11,875 sworn officers* in the state determines that

$$\text{Cases Per Officer (CPO) Florida} = \frac{16,653 \text{ total cases-to-lab}}{11,875 \text{ sworn officers}} = 1.4$$

meaning that

.On the average, 1.4 cases are submitted to a crime laboratory annually by a law enforcement official in Florida.

A closer look at Florida's CPO separates the contribution of Dade County and the remainder of the state:

	<u>Cases-to-lab</u>	<u>Personnel</u>	<u>CPO</u>
State	16,653	11,875	1.4
Dade County	7,666	2,704	2.8
Remainder of State	8,987	9,171	0.9

Thus, the law enforcement officers in Dade County are submitting cases to a crime laboratory at three times the rate of a typical police officer in the remainder of the state.

* Florida UCR, 1971.

Before comparing the CPO's calculated for Florida with that of other jurisdictions it should be pointed out that typically the CPO is highest for the lowest governmental units. This phenomenon is undoubtedly a reflection of a variety of factors discussed in the opening remarks of this section. Two of these factors, however, seem to be of paramount importance in understanding the characteristic CPO decay experienced in going from the smaller to the larger governmental units: (1) knowledge on the part of the investigating officer that a crime laboratory is dedicated to serve his departments criminalistics needs; (2) convenience factors in terms of proximity to the lab at the local level. Thus, in descending order are normally found city, county, and state regional and national CPO's.

Figure 7 provides CPO indices for a number of jurisdictions, and represents data collected at various intervals during the period 1968-1972. Any comparison of data shown must recognize this time frame differential. An influx of drug cases-to-lab, for example, as experienced by some laboratories during this period would significantly affect CPO values. Florida, it will be noted, ranks second among the four selected states shown, while Dade County, itself is operating at approximately the middle range of the city CPO's. In making these comparisons, however, it should be pointed out that the observed differences in CPO's should not be construed as an absolute measure of effectiveness of the crime laboratory(ies) or of the police departments operating within these jurisdictions. As was noted previously, many additional factors operating jointly determine the criminalistics system's effectiveness. The CPO index is more appropriately used to simply provide a measure of the sworn officer's interaction with the crime laboratory in each jurisdiction.

Cases-to-lab as a function of distance (decay analysis):

Considering the crime laboratory as a technical support for the sworn police officer, the influence or availability of that support appears to vary as a function of the distance of the laboratory from the jurisdiction or police officer served. The relationship is not readily quantifiable since data are not available from which to develop a model to analyze all of the factors involved. There is sufficient evidence, however, to suggest that law enforcement officers, like consumers of any type of service, are more apt to request technical support from a nearby local crime laboratory, where they have frequent contact with the personnel, than they are to prepare physical evidence for submission to a distant lab whether or not that lab has a charter to serve their particular jurisdiction.

The relationship of decay in evidence submission as a function of distance assumes: (1) a relatively uniform awareness or confidence among police officers of the crime laboratory's usefulness, (2) command emphasis on the use of the laboratory, (3) responsiveness on the part of the lab to police requirements, and (4) similar judicial systems and applications of

	<u>City</u>	<u>Sworn Police Officers</u>	<u>Cases-to-Laboratory^{a/}</u>	<u>CPO</u>
1.	Oakland	651	3,976	6.1
2.	Dayton	427	2,314	5.4
3.	San Francisco	1,745	6,373	3.6
4.	Fort Worth	580	1,877	3.2
5.	Chicago	12,000	34,400	2.9
6.	Houston	1,577	4,414	2.8
7.	Columbus	807	2,067	2.6
8.	New Orleans	1,460	3,516	2.4
9.	Cleveland	2,161	5,006	2.3
10.	St. Louis	2,170	4,500	2.1
11.	Kansas City	970	1,458	1.5
12.	Buffalo	1,400	1,600	1.1
	<u>County</u>			
1.	Dade	2,704	7,666	2.8
	<u>State</u>			
1.	Illinois	18,884	38,481	2.0
2.	Florida	11,875	16,653	1.4
3.	Oregon	3,283	1,968	0.6
4.	Kentucky	4,178	232	0.07

^{a/} Including drug and narcotics, does not include submissions to FBI for any jurisdiction.

Figure 7 - Laboratory Cases Per Officer, Selected Jurisdictions

physical evidence findings in courts of law throughout the region. Given those conditions, the number of cases submitted by departments nearest the laboratory will predictably be higher than from those that are located in areas farther away or in less convenient locations.

CPO as a function of distance: The net effects of combining the CPO concept and the decay analysis is shown in Figure 8, "Evidence Submission Decay as a Function of Distance." The curve shown depicts cases per officer according to distance of submitting agency from the lab. The data upon which this figure is based represent the experience of the FDLE laboratory in the period 1967-1968. The sharp decline in CPO beyond the 50-mile range clearly shows the limited sphere of influence which even a state laboratory can exert beyond a range of 50 miles. (Note that the rate of submissions is shown and not a total case load which could be affected by a precipitous decline in population served in outlying areas.) No comparable figure is shown for the Dade County lab since it is chartered to serve Dade County only (which is well within the 50-mile radius). As will be demonstrated in Chapter IV, the phenomenon shown in Figure 8 is important to note in planning optimum sites for regional laboratories in a state system.

Locational considerations: Within geographic areas, specific locations for laboratories of the state crime laboratory system should be based on the following criteria:

1. Proximity to law enforcement department having the greatest demand on the laboratory.
2. Proximity to the court of usual jurisdiction for cases in which physical evidence is involved.
3. Minimize physical security problems for the laboratory and stored evidence.
4. Readily accessible to agencies served from existing road network, including considerations for traffic flow, peak traffic demands, parking availability, etc.
5. Availability of adequate physical facilities in state or local government-owned structures.

Secure Evidence Transit System (SETS): Since the decay phenomenon discussed above is principally caused by distance and inconvenience, it is possible to compensate for these factors by the operation of an established source for transmission of physical evidence from outlying departments to the laboratory. Such a service can be referred to as a Secure Evidence Transit System (SETS).

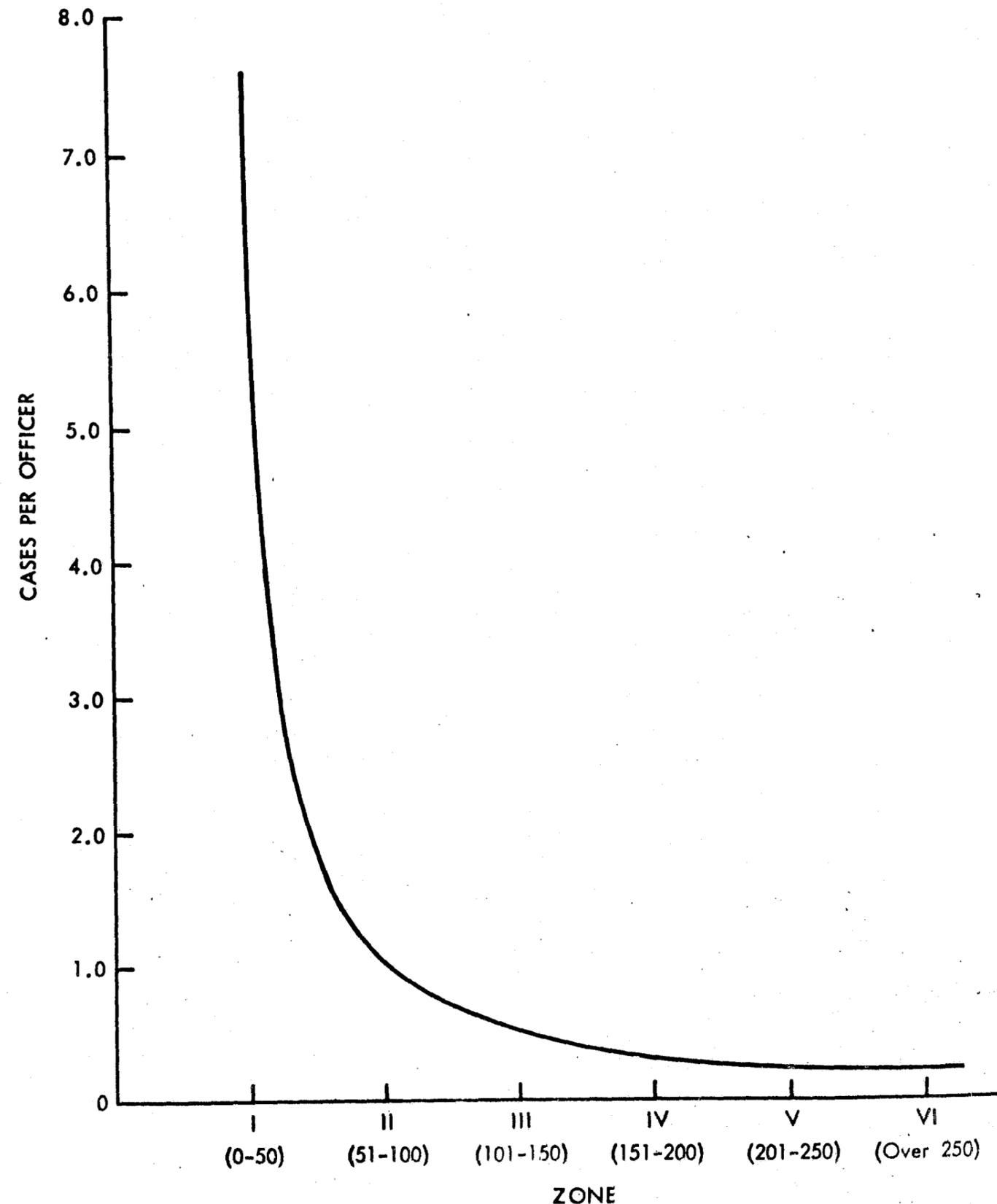


Figure 8 - Evidence Submission Decay as a Function of Distance

SETS is a secure courier service especially designed to facilitate the submission of physical evidence to the crime laboratory from law enforcement agencies which for reasons of distance or lack of availability of personnel would not otherwise avail themselves of laboratory services. SETS is intended to serve those departments beyond a 50-mile radius of the laboratory, largely on a request basis, although if demand dictates, schedules could be established.

The Secure Evidence Transit System provides a means for the state to offer a high degree of service to those small and remote departments which are not within the 50-mile convenience radius of a crime laboratory. It is an economic alternative to the establishment of crime laboratories in low population density areas where the low demand for crime laboratory services would not justify their existence. Further, its availability to the crime laboratory director provides a mechanism by which he can actively influence the submission of physical evidence to the lab.

Under this concept, each regional or satellite crime laboratory would have its own evidence transit vehicle and serve specified counties. The position of driver of the evidence vehicle could serve as an entry point for individuals who are potential candidates for in-service or on-the-job training as laboratory, photographic or evidence technicians.

Crime scene search training:

General: The proper search of the crime scene and the transmission of physical evidence to the crime laboratory is critically important to criminalistics support. There is seldom an opportunity to correct an oversight or retrieve a mistake made in processing the scene of a crime. The actions taken to collect and preserve physical evidence must therefore be timely, and performed by persons who are trained and properly equipped.

However, the "proper" equipment for crime scene teams can only be defined in terms of what a team (or an evidence technician) is expected to do. The required level of training of the technicians is similarly related to the mission assigned them. If the object is to collect available physical evidence and transmit it as quickly as possible to the crime laboratory, the team's requirements for training, equipment and transportation are far more conservative than if certain on-site examinations of evidence is desired.

Concept of the mission to be assigned the crime scene search team: For reasons explained below, training efforts and resources are considered best utilized by restricting the mission of the crime scene technicians to only recording and searching the crime scene, collecting physical evidence and preparing it for transport to the laboratory. The collection

function would include casting and fingerprint work. This concept of mission does not preclude technicians from advising police on any apparent implications of physical evidence. However, it does exclude tasks that would involve examinations of clue material that are best done at the laboratory. Examples of such exclusions would be tests for human blood and seminal stains, and performance of paraffin tests. Routine analyses of suspected drug substances would also be excluded.

In recommending such exclusions, we recognize the advantage of time that could be saved if preliminary screening of evidence were done on site. There is an undeniable value to shortening the time needed to supply the police with the results of analyses of physical evidence. However, the question to be resolved is not the value of on-site examinations of evidence, as such, but the benefits that are likely to be realized, relative to what it would cost in money and training efforts to provide them, and then to sustain that level of support. There is also the question of how reliable would be the results of such examinations, considering the difficulties that could be expected in maintaining the requisite level of training of personnel, and the physical problems involved with transporting instruments and working within the confined space of a van or mobile crime lab. There would be few cases in which final answers could be delivered by the crime scene technicians. Thus, aside from any of the above considerations, there is the question of whether the time saved by providing incomplete or partial results would compensate for the added costs.

Costs associated with supporting a mobile crime lab concept:

There are two major aspects of costs associated with developing the more sophisticated crime scene capability. The first concerns transportation and equipment; the second, training.

The transportation requirement is one component of cost increases if a crime scene search team is expected to attempt some on-site examinations. A considerably larger and more expensive vehicle would be required than if the team's objective is restricted to processing the scene. The equipment requirements are substantially increased as well. In this connection, there is the question of the long-term usefulness of even a large, walk-in type van, as a base of operations for crime scene technicians. Even in this kind of vehicle, there would be severe shortages of space for efficient laboratory type operations, particularly considering the several other purposes (transportation of personnel, equipment and evidence collected) to which the vehicle would be put.

Training, the second major aspect of increased costs to support a more sophisticated program, should be considered not only in the context of dollars and man-days expended, but in terms of the benefits that must be foregone as a result of fewer officers being trained. The number of hours and perhaps the technical level of training required for a technician expected to perform some types of on-site examinations is too high to allow the inclusion of officers from many small departments in the state.

The most important consideration with respect to crime scene search is that a search be conducted in the first place. It is likely that physical evidence is often overlooked, or not perceived as having evidentiary value, because police personnel on the scene lack the necessary training. Equipment is far less often the determinant in physical evidence collection than is basic training in physical evidence perception and collection. Considering the critical connection between the sworn police officer as the collector of physical evidence and the crime laboratory, it is most important, at this initial stage, that the base of training in crime scene processing be as broad as possible.

A competent search of a crime scene does not demand highly specialized training or rare skills. It does require knowledge of basic procedures, understanding of the fundamental reasons why something must be done in a certain way, close attention to detail, and practice. The last is primarily a function of in-service training. Recording the crime scene, a function inherent in every search, involves knowledge of photography. The question of how much training should be given crime scene technicians in the use of photographic equipment raises again the basic question of mission. If the technician is to be trained to a level at which he can deal with virtually any technical photographic problem that is likely to be presented him, the number of hours of training in photographic techniques would be very high. However, the fundamentals of photography, coupled with an organized program of practice and critique in-service, can give a police officer sufficient skill with a camera to deal with the overwhelming majority of situations.

Law enforcement departments should have their own crime scene search capability. However, the training of evidence technicians to compose these crime scene search teams is frequently beyond the technical capability of individual departments. The basic techniques involved in processing and recording a crime scene can be presented in 40 to 60 hours of instructions. The crime laboratory director should be involved in the presentation (or at least act in an advisory or supervisory capacity) of the course of instruction since the lab is the ultimate recipient of the evidence collected.

A suggested training program for crime scene search personnel is contained in Appendix A. Appendix B contains a recommended list of crime scene search equipment for use by evidence technicians.

The Medical Examiner Function and the Criminalistics Laboratory

Background: The possibility of integrating the crime laboratory operation with that of the office of the medical examiner, offers certain potential advantages to a regional criminalistics system. Certainly, the stringent personal, professional and technical background required to qualify for a position as medical examiner establishes beyond any doubt the necessary integrity and scientific credentials demanded of crime laboratory

personnel. Additionally, the need for close coordination and communication between the staff of a crime laboratory and the medical examiner lends further support for merging the two functions. Because some scientific instrumentation and other laboratory equipment are common to the criminalistics and medical examiner functions, significant economies, both in terms of time and money, might be effected by combining their operations and facilities into a forensic science laboratory.

Administrative control: Control of forensic laboratory operations would be assumed by either the medical examiner or the criminalist. Since the criminalist normally is not qualified to perform medical examiner functions, it is safe to assume that there would always be a requirement for a medical examiner on the staff of the combined facility. If the laboratory were under the control of a medical examiner, the ME could, in turn, appoint a crime laboratory director or himself assume that responsibility. It is quite probable in an operational situation, that the medical examiner would emerge as the individual in charge of the combined facility, if for no other reason than higher salary and a greater number of years invested in professional training. In this event, the medical examiner would maintain the final authority to formulate policy and define the operational procedures to be followed by the laboratory. This dual function of administrative and technical direction would be feasible only if the incumbent medical examiner were thoroughly conversant with the broader aspects of criminalistics.

The national experience: It is the exception, rather than usual practice that a crime laboratory has such intimate association with the medical examiner functions. However, the common law enforcement goals which these two services support suggest that strong consideration be given to the possibilities of complete merger of the two functions. It is therefore useful to take an overview of the medical examiner functions nationwide.

As of 1970, 22 of the 50 states have a statewide medical examiner system. Fifteen additional states have similar medical examiner laws that apply only at the county or city level. The remaining 13 states have no medical examiner laws, thus leaving the cause and manner of death certification up to county coroners or other nonphysicians. It has been estimated that because of this lack of uniformity in the law that only one-third of the population of the U.S. is served by a medical examiner. Of much greater importance is the estimate that some 1,800 undetected homicides occur in the U.S. annually.^{1/}

^{1/} Luke, J., W. Stuner, and C. Petty, "The Status of Forensic Pathology in the United States Today," Forensic Science Gazette, 1, 3-8, July 1970.

In most states which require appointment of medical examiners, the law also requires that any death occurring as a result of an accident, homicide, or suicide, is unattended or of a suspicious nature, shall come under the medical examiner's jurisdiction. Thus, the examiner is charged with establishing the cause and manner of death but not investigating the legal circumstances associated with the case. Particularly, he is not charged with identifying the murder or developing investigative leads for the police (although many medical examiners do just that).

A forensic pathologist, on the other hand, is a licensed physician (as is the medical examiner) who has specialized training in the field of forensic science. Thus, the work of the forensic pathologist goes beyond the medical examiner's death investigation in establishing not only the causation and manner of death, but its relationship to the field of law as well.

In the typical criminalistics system, the medical examiner applies or utilizes the expertise of the forensic pathologist to complement the investigations of the local law enforcement agencies. Thus, the medical examiner system represents a vital link in the chain of law enforcement investigative processes.

Merger of the ME and Criminalists Activities: Despite the close similarity of functions and objectives of the medical examiner and criminalist, the directed, legal responsibility of the medical examiner falls far short of the full scope of criminalistics. Simply stated, the medical examiner's attention is focused on the cause of death of a human, and on the evidence and processes immediately associated with that event. The criminalist, on the other hand, cannot be so confined if he is to make any significant contribution to criminal justice. The classic relationship of the medical examiner and criminalist working a homicide is that the former determines that a crime has been committed, and hopefully, something of how it was done. The criminalist then attempts to develop from the fullest possible range of all available clue materials, information that will lead to the identification of the offender. While the medical examiner has no direct responsibility to process physical evidence beyond that associated with his investigation of the cause of death, the criminalist will frequently be concerned with trace materials or other evidence that has only peripheral connection to the actual crime, but which may nevertheless serve to develop some investigative lead for the police to follow.

The proponents for merging criminalistics and medical examiner functions do not argue that the distinction just described does not exist, but that there is sufficient crossover between the functions to justify the action and that criminalistics that go beyond medical examiner requirements can still be performed under the medical examiner's supervision. That argument is, of course, intrinsically valid. However, it ignores something of the reality of the competing demands that would be involved.

To this point, we have considered homicide as the example of convergence of interests and capabilities of medical examiners and criminalists. However, the fact is that the overwhelming majority of criminal investigations in which the criminalist is involved has nothing to do with homicide. The medical examiner has no chartered interest in burglary, for example, which is probably the most difficult crime to solve; and is thus the type case in which the criminalist should become more involved. There are, of course, numerous other type cases which are completely divergent from the interests and functions of the medical examiner. Thus, the conclusion is forced that the great majority of the work performed in the general field of criminalistics would fall outside the medical examiner's interest if not his expertise.

Statistically, natural deaths comprise approximately 70 percent of the total number of medical examiner cases. These cases involve individuals who die suddenly and who have no attending physician. Accidental deaths account for approximately 20 percent of the total, and suicidal and homicidal deaths comprise approximately 10 percent of the total number of cases. In Maryland, homicidal deaths, those cases wherein the most notoriety is achieved, actually represent only 4 percent of all cases handled under the medical examiner law.^{2/} The experience of Florida is quite similar to these figures. In Dade County, the only governmental entity within the state which has both a full time medical examiner's office and a full-service crime laboratory, approximately 5 percent of those autopsies performed by the medical examiner were considered criminal in nature or of concern to the crime laboratory. Similarly, of the total number of cases in which the Dade County Department of Public Safety crime laboratory was involved during a 1-year period, only 2 percent of these could be considered to be within the sphere of interest of the medical examiner, principally homicide.^{3/} The magnitude of the overlapping of this sphere of interest of the medical examiner and the criminalistics laboratory is shown graphically in Figure 9

^{2/} Sopher, I. M., and W. C. Masemore: "The Police Officer and the Medical Examiner System." Police, November 1971, pp. 23-26.

^{3/} If other death investigations such as suicides, drownings, accidents, and natural deaths which were found to be noncriminal in nature were included, these figures would be increased by a factor of approximately two.

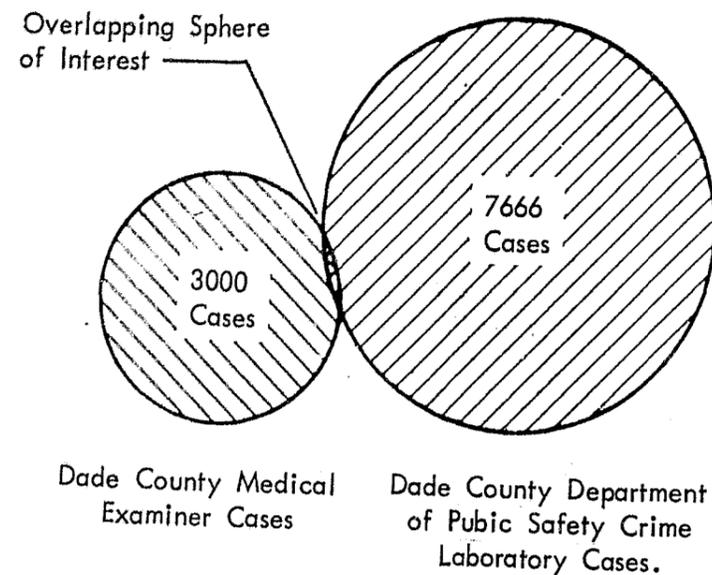


Figure 9 - Overlapping Sphere of Interest-Dade County Medical Examiner and Dade County Department of Public Safety Crime Laboratory

Yet, there is still nothing in that fact alone that is debilitating to the proposition of placing a criminalistic laboratory under a medical examiner's control. The problem is considerably more subtle than that. There is, first of all, the professional orientation that the medical examiner must have--a point that has already been developed. But of equal importance is the fact that a situation would be created in which the component of the organization that would have authority to direct the criminalistics operation would have less than complete interest and involvement in the outcome.

That statement does not imply lack of good faith or competence on the part of medical examiners who may be placed in the dual role of directors of criminalistics laboratories. What is involved here is primarily the issue of how broad a scope the criminalistics function would be allowed or encouraged to take under the aegis of a medical examiner. It is a safe assumption that no medical examiner in the State of Florida is overstaffed. By the very nature of the cross-training and common capabilities that would exist between the staff directly responding to the medical examiner functions, and the examiners designated as criminalists, examiners could be diverted to take up slack in one aspect of the operation. That would be a potential advantage to the merged system. However, if the medical examiner were given overall control, there would be considerable potential for the criminalistics functions to be slighted in emergencies. Similarly, there would be stimulus to hire criminalists with strong qualifications for doing the type work that the medical examiner is responsible for. This combined potential could retard the development of a viable, innovative and highly responsive criminalistics system for the state.

Role of the medical examiner in Florida today: Further complicating the concept of a combined medical examiner/criminalistics laboratory system is the present or planned geographic distribution of these services, and the likely differences in the rates of growth of the demand for the respective services. As a result of this study, the most cost effective approach to expansion of the criminalistics function for the state would be to establish three regional laboratories with one or more satellite operations from each of the regional labs. Contrast this with the 11 service regions of the Department of Health and Rehabilitative Services (which is one of the medical examiner districts propositions being considered by the Medical Examiners' Commission) or the 20 judicial districts of the state's attorneys. Expansion of the medical examiner's functions and activities is likely in light of the enactment of the 1970 Medical Examiners' Act by the Florida legislature. Similarly, it is expected that if the recommendations of this study are implemented, the use of criminalistics services will also increase throughout the state. There is no reason to believe, however, that these expansions will proceed at the same rate since entirely disparate forces influence growth in the use of the respective services.

The last element of concern in considering the feasibility of a joint ME/criminalistics laboratory is the potential common use of laboratory equipment. The major items of equipment used by the medical examiner's laboratory would include the spectrograph, UV spectrophotometer, IR spectrophotometer, and microscopes. The prorated costs of all of these items over a 10-year life expectancy is less than \$2,000 per year, and represents but a small fraction of the equipment costs of a full-service crime laboratory. Thus, equipment savings as a result of the combination of the two labs would be small indeed, and might well be offset by differences in priorities.

Concluding remarks: For the above reasons, it is not considered desirable nor feasible to combine a state system of criminalistics laboratories with a state system of medical examiner laboratories. It is clear, however, that a high degree of cooperation should exist between the medical examiner and the crime laboratory. This cooperation is put into practice at the local level. At the state level, however, there appears to be an opportunity to take advantage of the existence of the Medical Examiners' Commission as authorized by the 1970 act to establish a protocol for such cooperation in those cases which are of joint interest to the Medical Examiners and the crime laboratory. Particularly needed is a procedure for the disposition of nonorganic items discovered in the course of autopsy including clothing and effects accompanying the body to the morgue.

While the currently authorized membership of the Medical Examiners' Commission includes one representative from the Florida Department of Law Enforcement, there is a need for both law enforcement field operations and crime laboratory requirements to be represented on the Commission to facilitate the development of a cooperative protocol. While it may be possible to combine these capabilities in a single law enforcement representative, an expansion of the membership of the Commission to include two representatives of law enforcement, with one of these being a criminalist, would be highly desirable.

VIABLE ALTERNATIVES FOR A CRIMINALISTICS SYSTEM IN FLORIDA

Development of Candidate Systems

Several feasible candidate criminalistics systems emerge as a result of the analysis of law enforcement needs, coupled with the philosophy of the Florida Department of Law Enforcement. This section of the report focuses attention on the primary candidate systems considered to be feasible. Other configurations have been considered throughout the study but were subsequently dismissed because of inherent shortcomings.

Preliminary considerations: The purpose of any system analysis, including that addressing crime laboratory needs, is to fulfill a stated objective in keeping with some criteria of "goodness" (i.e., measures of performance, benefits, service derived, expressed in terms of units of costs). In the case of an analysis of crime laboratories the situation is somewhat more complicated in that, to date, no one has satisfactorily demonstrated the ultimate benefit derived by the criminal justice system as a result of influence of the crime laboratory. This observation is not meant to discredit the contribution which the crime laboratory obviously makes, but is intended, rather, to state one underlying premise of this study:

The crime laboratory operating in the criminal justice system is capable of providing scientific and technical support unavailable from any other source to law enforcement agencies. As such, it provides a worthwhile and positive stimulus toward more effective administration of justice.

It is only good management policy, therefore, that with limited funding available, resources are to be channeled into the areas of greatest need. This is not to say that the criminalistics needs of all agencies, both large and small, throughout the state cannot be met by a fully developed criminalistics system. Rather, the implication is that a priority system must be established for phasing a statewide system. Moreover, specific recommendations are given in this study (including the concepts of "induced proximity" and the evidence transit system) which specifically address the needs of the smaller outlying communities and encompass plans to include them in the state system.

Population distribution: Recognizing that it is people who commit crimes, the locational analysis first examined the population distribution in Florida. Figure 10 displays population density with each

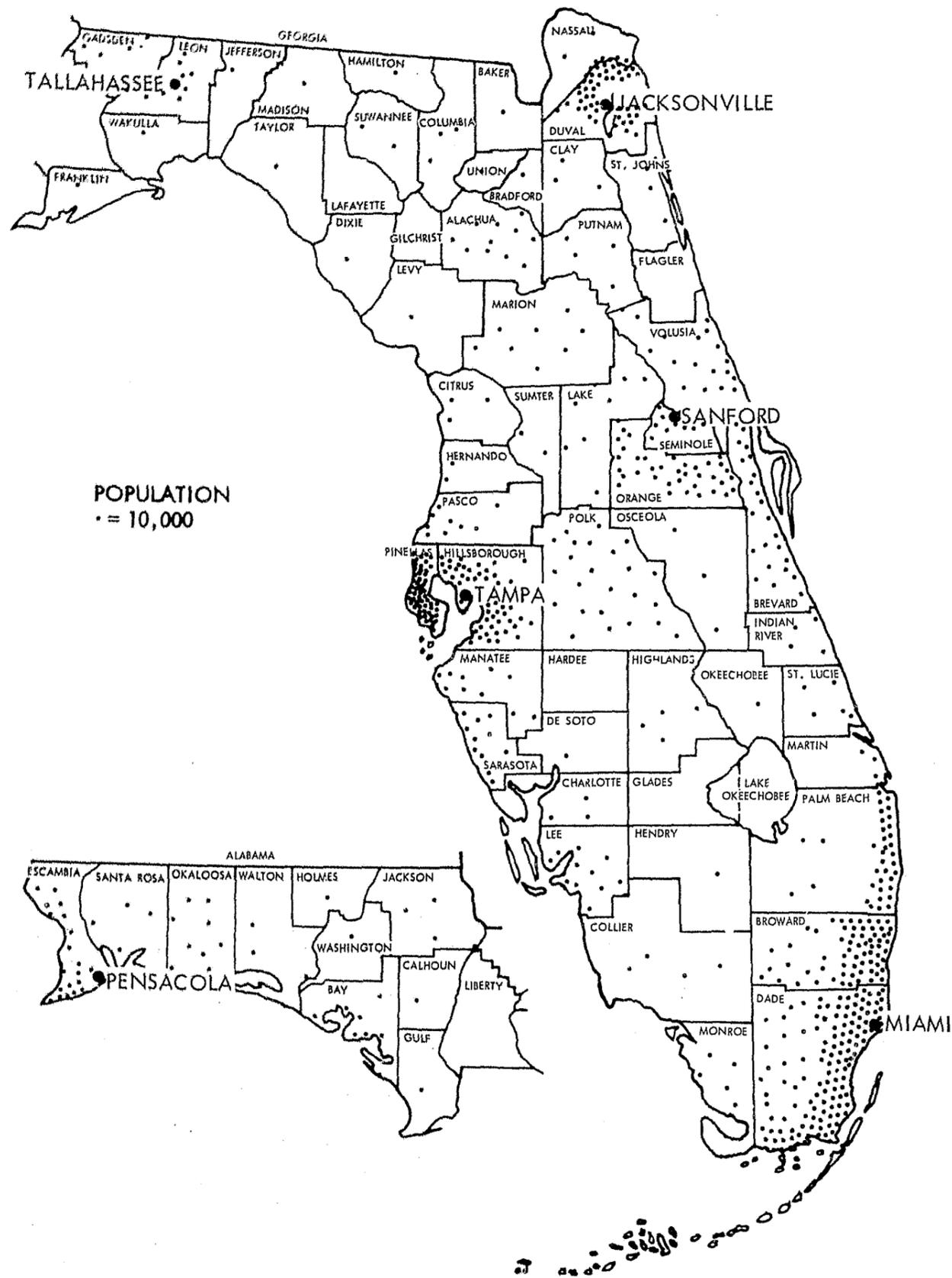


Figure 10 - Florida Population Distribution by County - 1971
(Approximations Based on UCR Statistics)

dot representing 10,000 persons.* In considering population distribution, it is significant to note that Florida is atypical of most other states in terms of its climate and resulting high tourism trade, proportion of senior citizens, geographical configuration, etc. The combined influences of these factors are shown in this figure, manifested as a clustering of people at the more desirable sites. The role which these factors play in regard to crime rates would be difficult to quantify and could be the subject of a separate research effort. For purposes of this study, however, it is sufficient to recognize that people live where they do in Florida for a variety of reasons and that the distribution shown in Figure 10 does evince a considerable degree of clustering.

Crimes of laboratory interest distribution: Since the work load of the laboratory is generated by incidence of crime, the location analysis next examined the premise that the crime laboratory should be "where the crime is." Data from the 1971 Florida UCR was used to construct the crime density map shown in Figure 11; only the index crimes having the greatest potential evidence yield to the laboratory have been included (i.e., murder, rape, aggravated assault and breaking and entering) because of the ready availability of data on index crimes. Nonindex crimes such as hit and run, arson, documents, etc., are not included since data on number of actual offenses are not uniformly available. As may be observed from viewing the clustering of offenses, four centers of highest reported criminal activity occur in the state: the Miami area (including Dade, Broward and Palm Beach counties); Tampa-St. Petersburg area, Jacksonville area, and the Orlando-Sanford area (Orange, Seminole and Volusia counties).** The unit of measurement used in constructing the map is such that the clustering indicates only

* In this and the subsequent series of maps one unit of the parameter under investigation (i.e., population, expressed in units of ten thousands is shown as a single dot on the map. The absolute number, of course, has been rounded to the nearest unit for graphical depiction. On the population map, for example, one dot could actually represent between 5,000 and 15,000 people.) The distributions shown are accurate to within county boundaries but actual distributions within a county may vary somewhat from these shown. Comparison of one county's density with that of any other in the state in regard to the attribute shown may be readily seen however.

** In the subsequent discussion of these distribution centers the following interpretation of terms are understood: "Tampa" includes the Tampa-St. Petersburg area. "Sanford" refers to the Orlando-Sanford area, including Orange, Seminole, and Volusia counties. Sanford is used in place of the more densely populated Orlando due to the presence of a drug laboratory already located at Sanford.

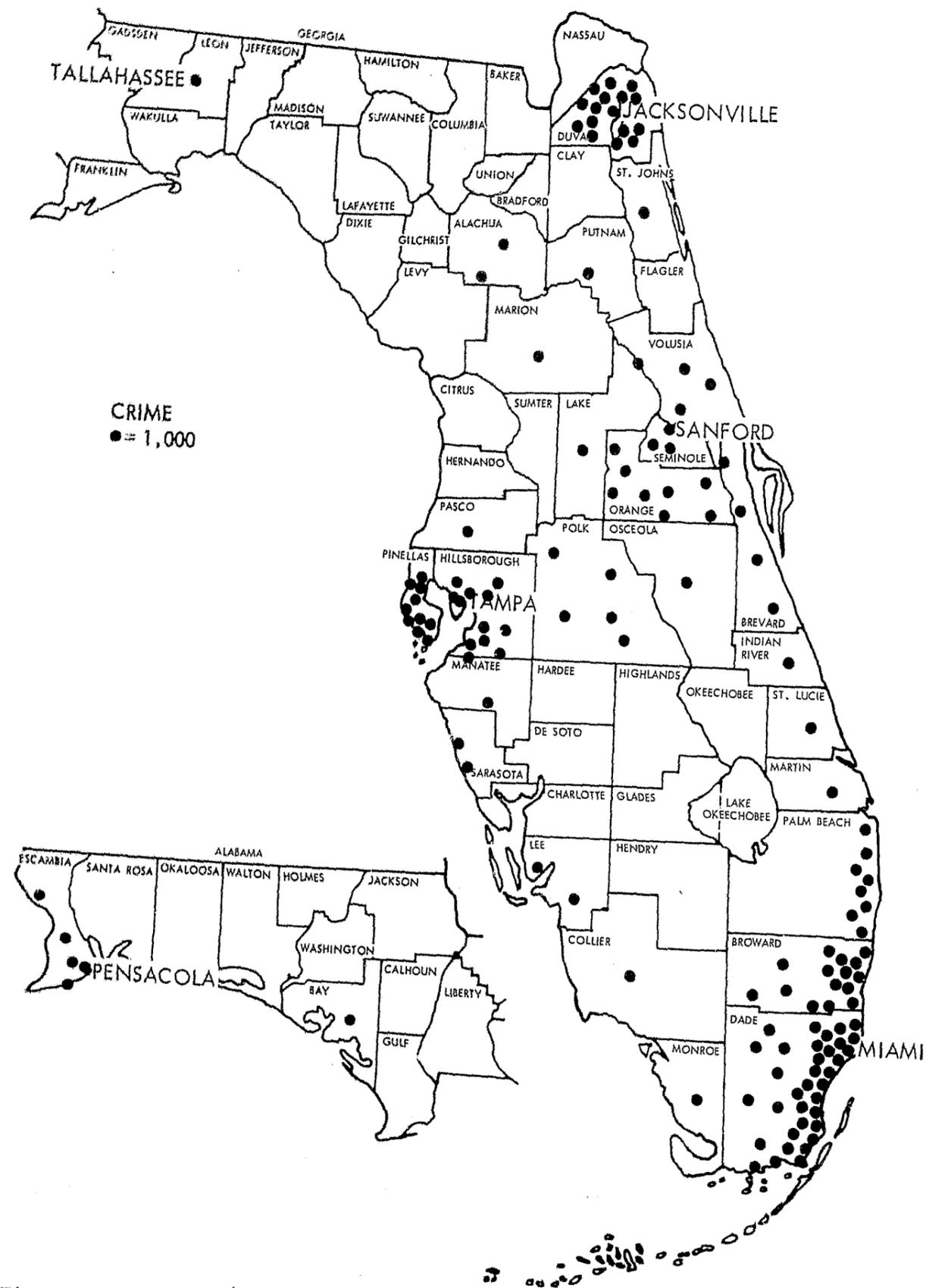


Figure 11 - Florida Crimes of Laboratory Interest Distribution by County - 1971
(Approximations Based on UCR Statistics)

the areas of greatest potential need for criminalistics services. As foot-noted earlier, the absence of a dot in a particular county does not necessarily mean that there are no crimes of laboratory interest occurring there. Rather, according to the unit of measurement in this case, it indicates that fewer than 500 such crimes were reported in these counties in 1971.

Sworn officer distribution: Given that the link between physical evidence at the crime scene and cases-to-lab is the police officer himself (or in some systems, special evidence technicians trained to do crime scene work) it is worthwhile to also consider the distribution of law enforcement officers throughout the state.

By and large, the number of police officers in a community is a reflection of that community's perceived need for law enforcement service which, in turn, is related to incidence of crime. Hence, there is normally a high correlation in an area between the density of police officers and the volume of crime. Significant variations in this pattern have been noted to occur and so it is necessary to examine distribution of police officers independent of crime density.

Figure 12 depicts the distribution of sworn officers in city and county agencies in the state. The pattern clearly follows that for the crime distribution noted previously with approximately the same clustering points. Again, an unmarked county indicates that there were fewer than 50 sworn police personnel in that jurisdiction in 1971.

Narcotics and drug arrests distribution: While it would be highly desirable for the crime laboratory to emphasize support of the investigative function of law enforcement officials in cases offering a high potential yield of physical evidence (i.e., murder, rape, aggravated assault, and breaking and entering) a major portion of the actual work load of the typical crime laboratory is devoted to drug and narcotics examinations. While it is not the intent of this report to comment on societal norms or enforcement of existing drug laws, the drug case load cannot be ignored since it comprises over 70 percent of all cases submitted by a law enforcement agency to a Florida laboratory. (See Figure 5.) Figure 13 shows the 1971 narcotics and drug arrests distribution for Florida.

Several observations concerning the drug problem in Florida can be made as a result of the conduct of this study.

* Law enforcement officials in Florida are faced with a drug problem of much the same magnitude and characteristics as confronts the rest of the nation (i.e., over 50 percent of all arrests for narcotics violations were of persons under 21 years of age).

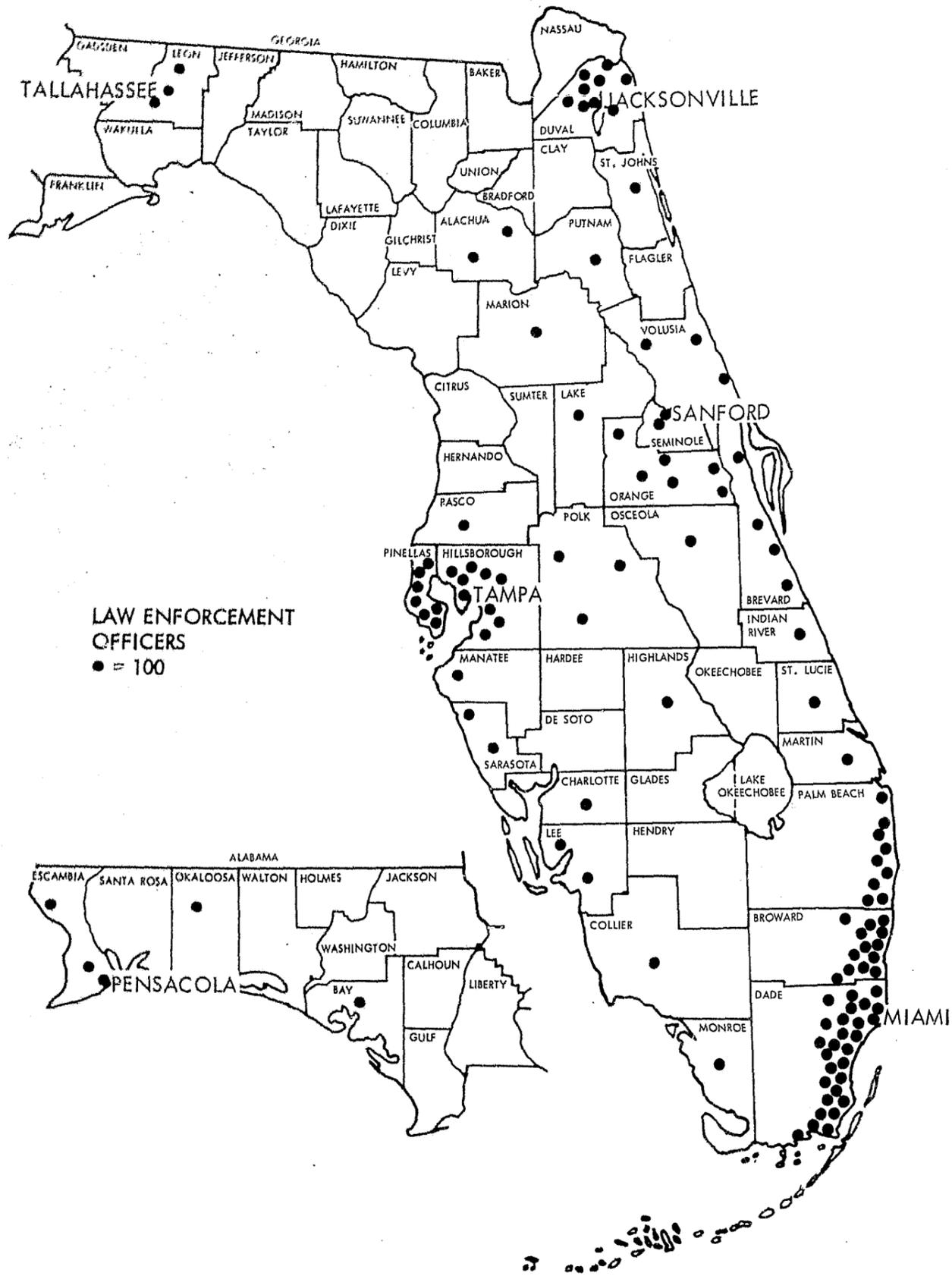


Figure 12 - Florida Law Enforcement Officers Distribution by County - 1971
(Approximations Based on UCR Statistics)

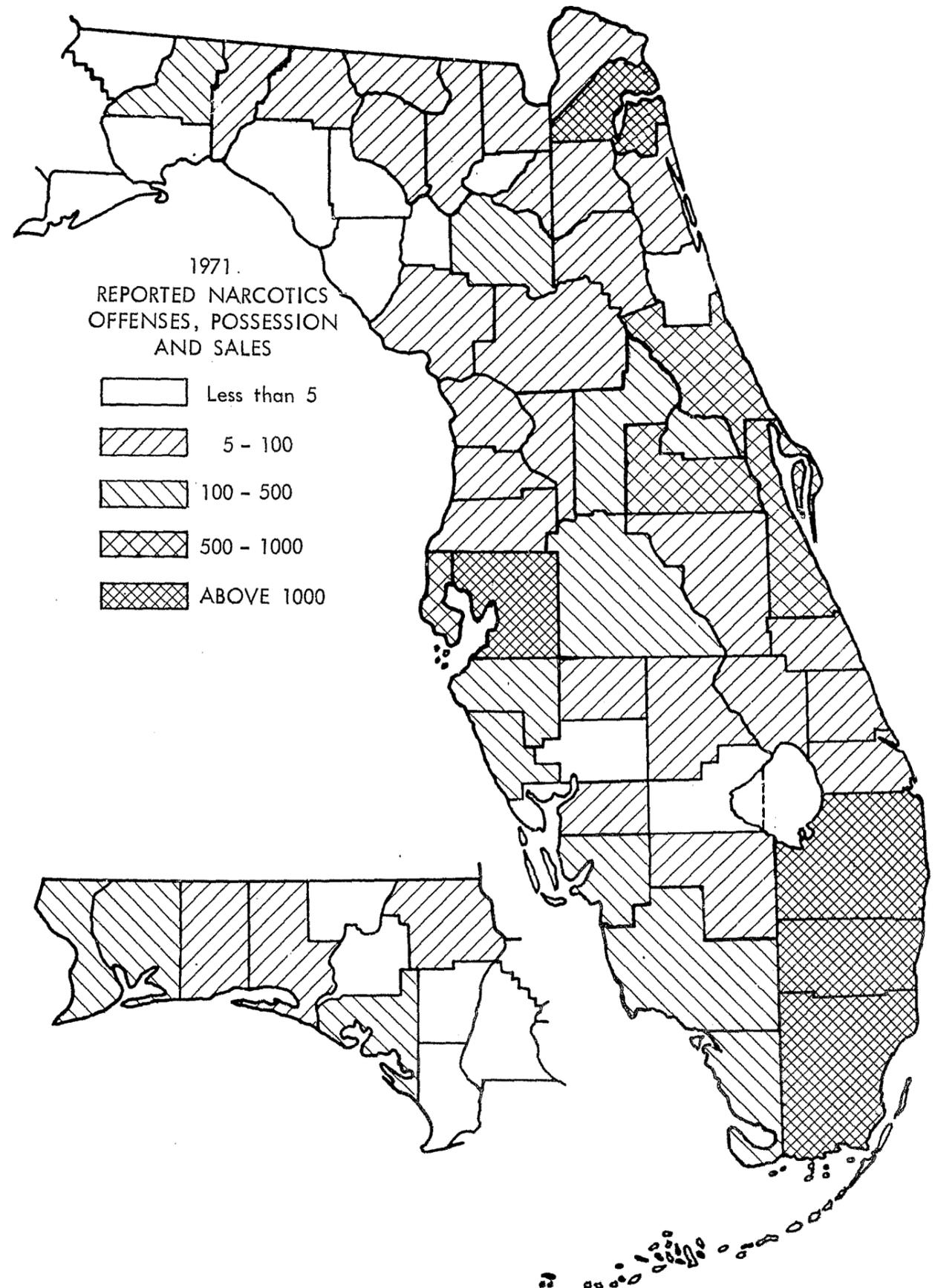


Figure 13 - Florida Narcotics and Drug Law Arrests Distribution by County - 1971 (Approximations Based on UCR Statistics)

* The distribution of narcotics violations in the state typically follow the high population density areas and concentrations of young people (university and college campuses, military installations, etc.-- see Figure 13).

* Law enforcement officials and other agencies are actively working together in programs to control the drug abuse problem (over 15,000 arrests were made in 1971; a number of LEAA grants have been received providing for specific action programs aimed at curbing the drug menace).

* Arresting officers are submitting drug and related evidence samples to laboratories for analyses at a high rate (over 12,000 cases in 1971 including cases to crime laboratories, health laboratories and private laboratories).

* The drug and related cases-to-lab comprise a major portion of the total case loads of the two full-service laboratories. (Approximately 40 percent at the FDLE lab and 60 percent for the Dade County lab.)

* The satellite system of drug laboratories established around the Dade County laboratory, is effectively handling a considerable portion of the drug load which would otherwise have gone to the central laboratory (the Broward County Sheriff's Lab handled 1,700 cases in 1971 representing over a fourth of all drug cases-to-lab in Dade and Broward County).

* Other laboratories around the state are currently involved in drug cases for law enforcement agencies (principally the Health and Rehabilitative Services labs) even though they are not actively soliciting such cases. Most are performing these services under a general public service charter.

Elements of analysis: The attributes of population, crime, sworn officers, and drug activity in the previous section are primary considerations in establishing the locational requirements for the state's criminalistics system. The depiction of each of these parameters in the preceding maps strongly suggest that their distributions are highly correlated throughout the state. Thus, it is evident that little difference would result if any of these attributes (or a combination of these) were chosen to depict "service level" or "coverage" of the laboratory system.

Two primary criminalistics support levels are envisaged. At the highest level are the regional laboratories capable of rendering full criminalistics service to user agencies. At a lower level of service is the satellite lab (capable of initially handling only drug cases and limited criminalistics cases) which is appended to a full-service regional laboratory. The capabilities of each laboratory in terms of service categories

and case load output are described in detail in Chapter V. Also included there are equipment lists, and personnel requirements. Management guidelines are given in Chapter VI.

The following section describes the candidate systems structured in terms of location, capability, costs and systems benefit measure. The attributes shown reflect approximate data within a 50-mile radius of the location of the laboratory which is consistent with the decay analysis presented in Chapter III.

The following entries are found in the series of tables accompanying the analysis. All data shown were taken from the 1971 Florida UCR unless otherwise indicated.

Population - Number of people living within a 50-mile radius of the laboratory. Populations (1971) are approximations taken from the Florida UCR representing an update of the figures published in the 1970 census.

Crimes - The approximate number of known offenses in the categories of murders, rape, aggravated assaults, and breaking and entering reported in 1971. Totals include only offenses reported within 50 miles of the designated location.

Sworn officers - The approximate number of sworn officers in city and county law enforcement agencies within 50 miles of the location shown. Numbers exclude sworn officers in state highway patrol and special agents in FDLE.

Narcotics arrests - Includes approximate number of arrests for violations of both drug possession and drug sale laws. Statistic is used in lieu of actual offense data which are unavailable.

Total system cost - Represents the total annual cost to sustain a regional lab (\$350,000)* plus satellite laboratories (\$50,000). Includes salary and salary related costs and equipment costs in a full-service laboratory. Does not include costs of acquiring an adequate physical plant either through purchase or renovation of an existing facility.

* The \$350,000 figure is a generous estimate of the annual cost to operate a full-service regional laboratory with 12 professional staff members and maintaining adequate support equipment. The figure is used for comparative purposes in this analysis only to provide a consistent base of reference. Actual first year costs to implement the recommended system depend upon the buildup rate of criminalistics capability in the laboratory. See Chapter V for detailed phased implementation plan and associated cost estimates.

C.O.S. - Cost per officer served - Cost to provide criminalistics support services based on the number of officers to be served. Calculated as C.O.S. (regional labs) plus C.O.S. (satellite labs).

System benefit measure - A reflection of the coverage or potential involvement which the system affords by virtue of the crime density and drug activity coming directly under the laboratory's sphere of influence. (These two attributes were chosen to simplify the analysis in light of the high correlation which exists among all factors of analysis posed. See in this regard pages 40-46.) The full-service regional crime laboratory is assumed to have a higher involvement in true criminalistics cases as opposed to the satellite laboratories initial major emphasis on drug cases. The benefit measure for the regional laboratories is therefore computed as the weighted average of the percent of crimes of laboratory interest and the percent of narcotics arrests falling within a 50-mile radius of the laboratory. (With crime involvement receiving twice the weight of narcotics arrests.) Initially, the satellite laboratories have only a drug analysis capability and limited criminalistics capability so that no system benefit is given for the percent of crimes other than drugs occurring within the 50-mile sphere of influence. (In actuality, plans may be made to phase additional criminalistics capability into these satellite operations.) For the purpose of this analysis, however, the satellite labs are assumed to have a drug capability only. Consequently, the SBM for satellite labs is computed as one-third the percent of drug arrests so as to weight the drug involvement of the satellite lab equally with drug involvement of the regional labs.

Candidate structures:

Configuration I: The first candidate system structured simulates the existing support level of criminalistics services currently available to user agencies in Florida. This system is shown as Configuration I in Figure 14 and consists of two regional labs at Miami and Tallahassee with no satellite laboratories. The total annual system cost for this configuration is \$700,000 based on a \$350,000 cost per full-service laboratory (see Chapter V for additional cost details). The cost per officer served under this configuration is \$163.

The systems benefit measure is 35.7 representing a weighted average between the 35.3 percent of crime and the 36.5 percent of narcotics arrests which are "covered" by full-service laboratories at Miami and Tallahassee.



	<u>Population</u>		<u>Sworn Officers</u>		<u>Crime</u>		<u>Narcotics Arrests</u>		<u>Systems Benefit Measure</u>
	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>	
<u>Regional Labs</u>									
Miami	1,966,811	27.9	4,005	33.7	48,643	33.9	5,254	34.8	34.2
Tallahassee	198,534	2.8	289	2.4	1,946	1.4	250	1.7	1.5
Total	2,165,345	30.7	4,294	36.1	50,589	35.3	5,504	36.5	35.7
<u>Satellite Labs</u>									
None									

Total System Cost ^{a/}	- \$700,000
C.O.S.	- \$ 163
Systems Benefit Measure	- 35.7

^{a/} See Planning Model, Chapter VI, for detailed cost estimates.

Figure 14 - Candidate Structure - Configuration I

Figure 15 displays the relationship between Total System Cost and System Benefit Measure. This graph and those included in this series were constructed assuming a priority allocation of resources to areas of greatest potential coverage. If, for example, only one full-service laboratory could be supported of the two posed in this configuration, the lab at Miami would be funded rather than one at Tallahassee on any criteria considered (population served, number of crimes of interest, sworn officers available or narcotics arrests made). Point A plotted in Figure 15, corresponding to Miami, has a systems benefit measure of 34.2 and Total System cost of \$350,000. The second point on the graph, B (Miami plus Tallahassee) is determined by considering the incremental benefits received (1.5) in terms of the additional expenditures required to maintain a second full-service laboratory at Tallahassee. The slope of the graph thus constructed provides some insight into the cost benefits relationship attributes of the system. As the curve shows, only a relatively small increase in coverage is obtained by a sizeable (100 percent increase) in system cost. Obviously, a more desirable configuration would yield higher systems benefits measures for the same or reduced cost, which is to say its graph would have a greater slope than that shown in Figure 15. This graph may be compared with the Systems Cost/Benefits relationship obtained in other configurations.

Configuration II: Configuration II shown in Figure 16 considers the systems effect of adding a full-service laboratory at Sanford to Configuration I. As is shown in the table approximately 10 percent increased coverage is added to all four measures. System cost for this configuration increases by 50 percent. Systems benefit measure increases to 46.2 representing an increase of some 29 percent.

The graphical representation of Configuration II is shown in Figure 17. The procedure used in structuring the graph is similar to that described previously: laboratories with the maximum potential contribution to the system are added first. Thus, proceeding from left to right on the graph are shown Miami (Point A), Miami plus Sanford (Point B), Miami plus Sanford plus Tallahassee (Point C). Configuration II bears an interesting relationship to that depicted in Configuration I. Note that upon the addition of a second full-service laboratory to either system that while total systems costs for both are at the \$700,000 level the systems benefit measure for Configuration II is over 25 percent higher. Further, the decreased slope of the curve corresponding to the addition of the Tallahassee lab in Figure 17 once again demonstrates a nominal gain (1.5) in the criminalistics system at the cost of sustaining another full-service laboratory.



POINT	REGIONAL	SATELLITE
A	Miami	--
B	Miami	--
	Tallahassee	--

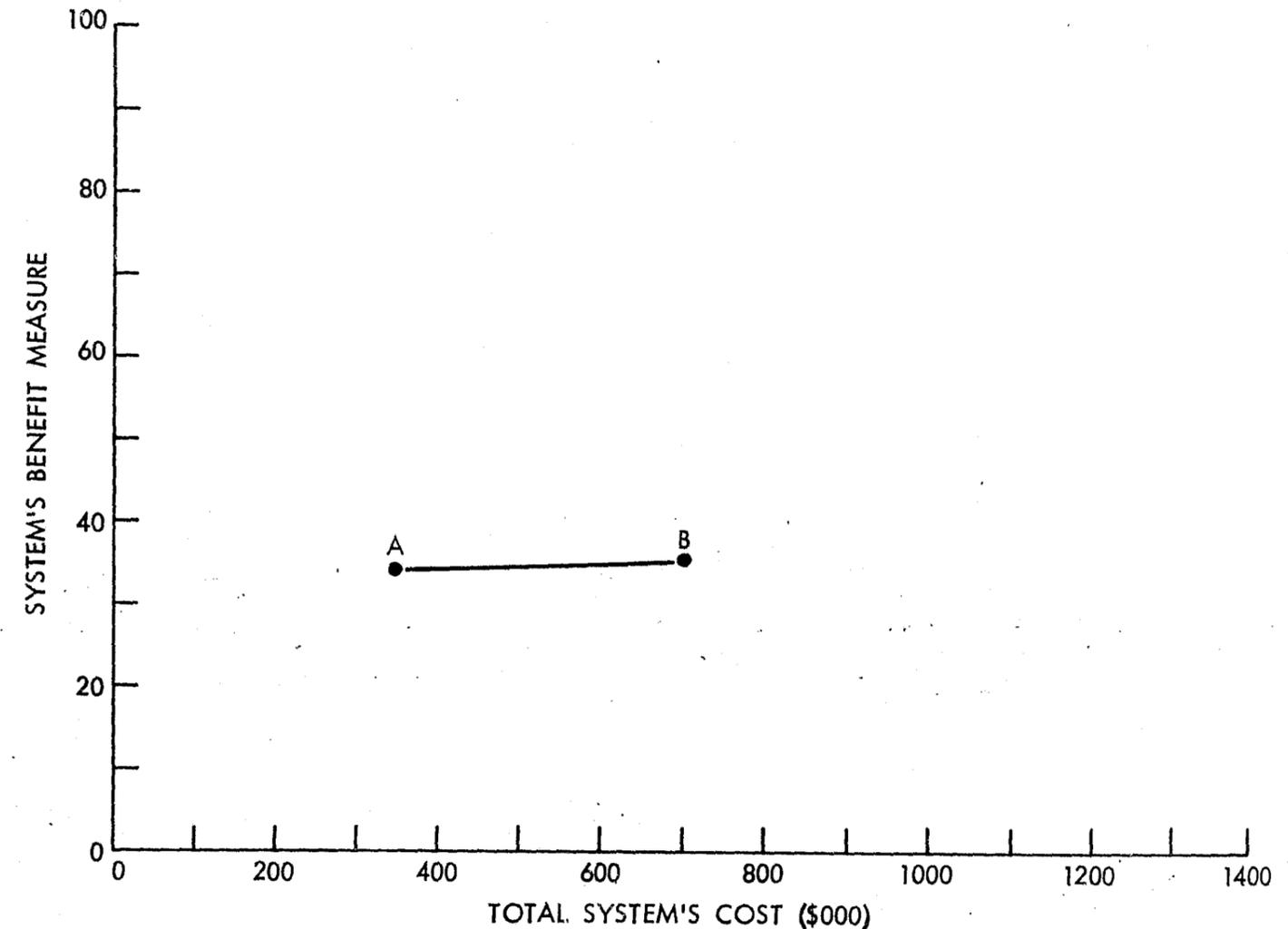


Figure 15 - Total System Cost Vs. System Benefit Measure - Configuration I

	<u>Population</u>		<u>Sworn Officers</u>		<u>Crime</u>		<u>Narcotics Arrests</u>		<u>Systems Benefit Measure</u>
	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>	
<u>Regional Labs</u>									
Miami	1,966,811	27.9	4,005	33.7	48,643	33.9	5,254	34.8	34.2
Tallahassee	198,534	2.8	289	2.4	1,946	1.4	250	1.7	1.5
Sanford	<u>727,590</u>	<u>10.3</u>	<u>1,171</u>	<u>9.9</u>	<u>14,837</u>	<u>10.4</u>	<u>1,602</u>	<u>10.6</u>	<u>10.5</u>
Total	1,892,935	41.0	5,465	46.0	65,426	45.7	7,106	47.1	46.2

52 Satellite Labs

None

Total System Cost - \$1,050,000
 C.O.S. - \$ 192
 Systems Benefit Measure - 46.2

Figure 16 - Candidate Structure - Configuration II

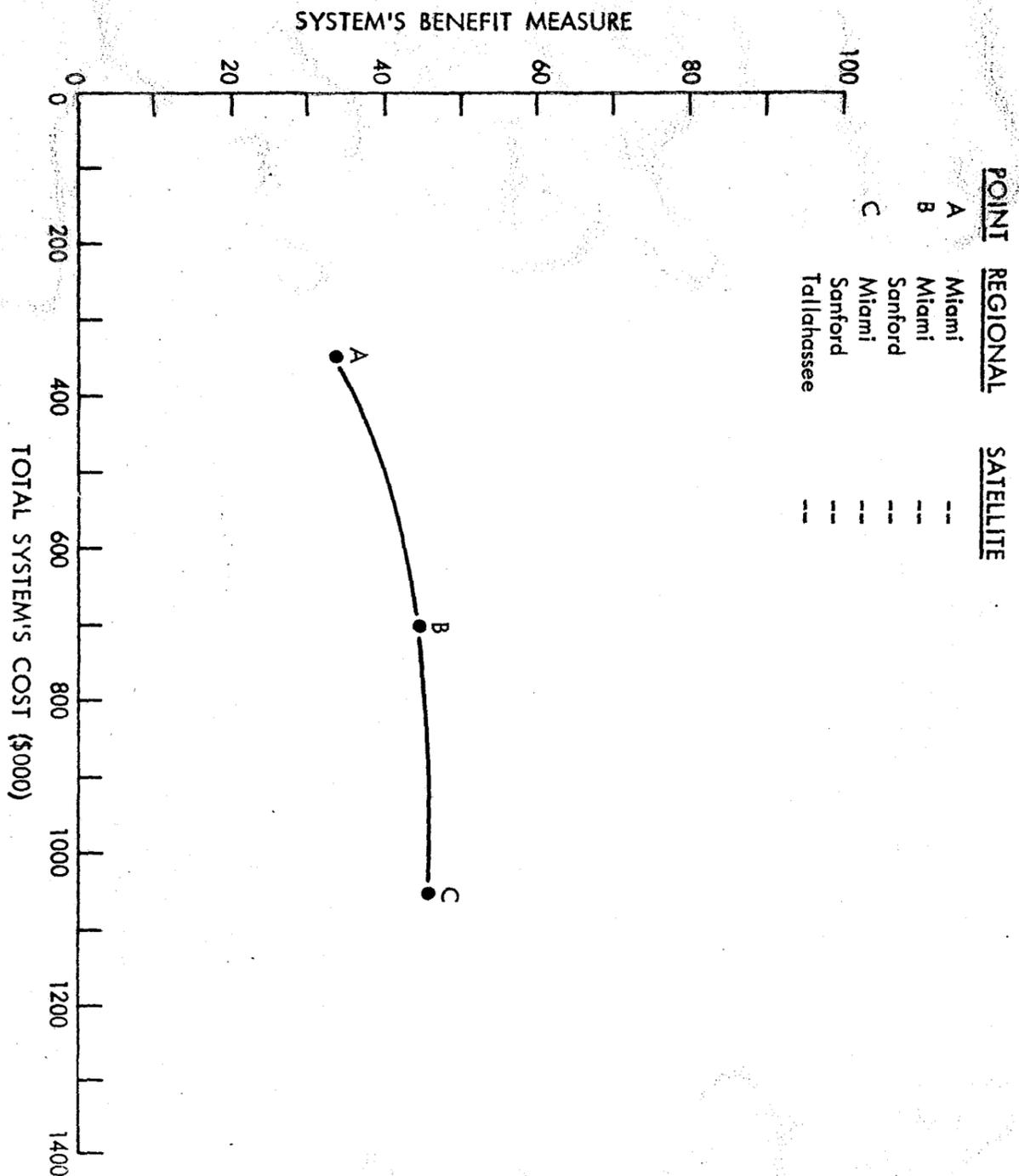


Figure 17 - Total System Cost Vs. System Benefit Measure - Configuration II

Configuration III: The regional lab component of Configuration III shown in Figure 18 has three elements corresponding to the assignment of full-service laboratories at Miami, Tallahassee, and Tampa. The potential contribution of these three labs may be compared with Configuration II emphasizing the effects of a trade off between the Sanford and Tampa lab locations. By noting the increase in systems benefit measure for the two configurations the substitution of Tampa for Sanford appears to be a cost-effective measure. At the three regional lab level the systems benefit measure increases from 46.2 to 54.3 representing nearly an 18 percent increase. A graphical representation of this configuration is shown in Figure 19.

Configuration III is the first candidate structured to examine the impact of adding satellite laboratories to a system. As discussed earlier it is assumed for purposes of this analysis that in the beginning satellite labs will have only a drug analysis capability, so that no recognition is given to the crimes-of-lab interest which fall within the sphere of influence of the satellite laboratories. Accordingly, any contribution to the criminalistics system which the labs at Sanford, Ft. Lauderdale, and Jacksonville might make in the crimes-of-lab-interest component are ignored in the system benefit measure. (Note in this connection that the drug potential of a full-service laboratory and that of the satellite laboratory are given equal weighting. This assumption is applied uniformly in the analysis of all candidate systems so as not to impede the identification of significant differences existing in the candidate systems or otherwise bias selection of a preferred system.)

The curve in Figure 19 is structured by adding elements (regional or satellite labs) to the system on a cost benefit basis. Note in this connection that a regional lab at Miami and its satellite at Ft. Lauderdale are added to the system before the regional lab at Tampa and its satellite at Sanford are structured. The final elements of the system are the satellite lab at Jacksonville and a regional lab at Tallahassee. The flattening of the curve beyond point E once again illustrates that the assignment of a full-service laboratory at Tallahassee weights down the cost-effectiveness of the entire system.

Configuration IV: In an attempt to structure an improved base of regional labs the analysis next examined the implications of assigning a third full-service laboratory at Jacksonville rather than at Tampa or Sanford as previously depicted. The result of this configuration shown in Figure 20 yields a system benefit measure of 46.1 which is slightly under the Configuration II score and considerably below that of Configuration III. Hence, no attempt is made to structure a satellite system on a base configuration which is less effective than a previous candidate system. A graph of the system's cost benefit relationship for Configuration IV is shown in Figure 21.



	Population		Sworn Officers		Crime		Narcotics Arrests		Systems Benefit Measure
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	
<u>Regional Labs</u>									
Miami	1,966,811	27.9	4,005	33.7	48,643	33.9	5,254	34.8	34.2
Tallahassee	198,534	2.8	289	2.4	1,946	1.4	250	1.7	1.5
Tampa	<u>1,475,642</u>	<u>20.9</u>	<u>2,109</u>	<u>17.8</u>	<u>28,221</u>	<u>19.7</u>	<u>2,483</u>	<u>16.4</u>	<u>18.6</u>
Total	3,640,987	51.6	6,403	53.9	78,810	55.0	7,987	52.8	54.3
<u>Satellite Labs</u>									
Sanford	727,590	10.3	1,171	9.9	14,837	10.4	1,602	10.6	3.5
Ft. Lauderdale	324,296	4.6	902	7.6	16,258	11.3	3,244	21.5	7.2
Jacksonville	<u>659,041</u>	<u>9.4</u>	<u>935</u>	<u>7.9</u>	<u>16,267</u>	<u>11.3</u>	<u>1,321</u>	<u>8.7</u>	<u>2.9</u>
Total	1,710,927	24.3	3,008	25.3	47,359	33.0	6,167	40.8	13.6
Total System Cost	- \$1,200,000								
C.O.S.	- \$ 214								
Systems Benefit Measure	- 67.9								

Figure 18 - Candidate Structure - Configuration III

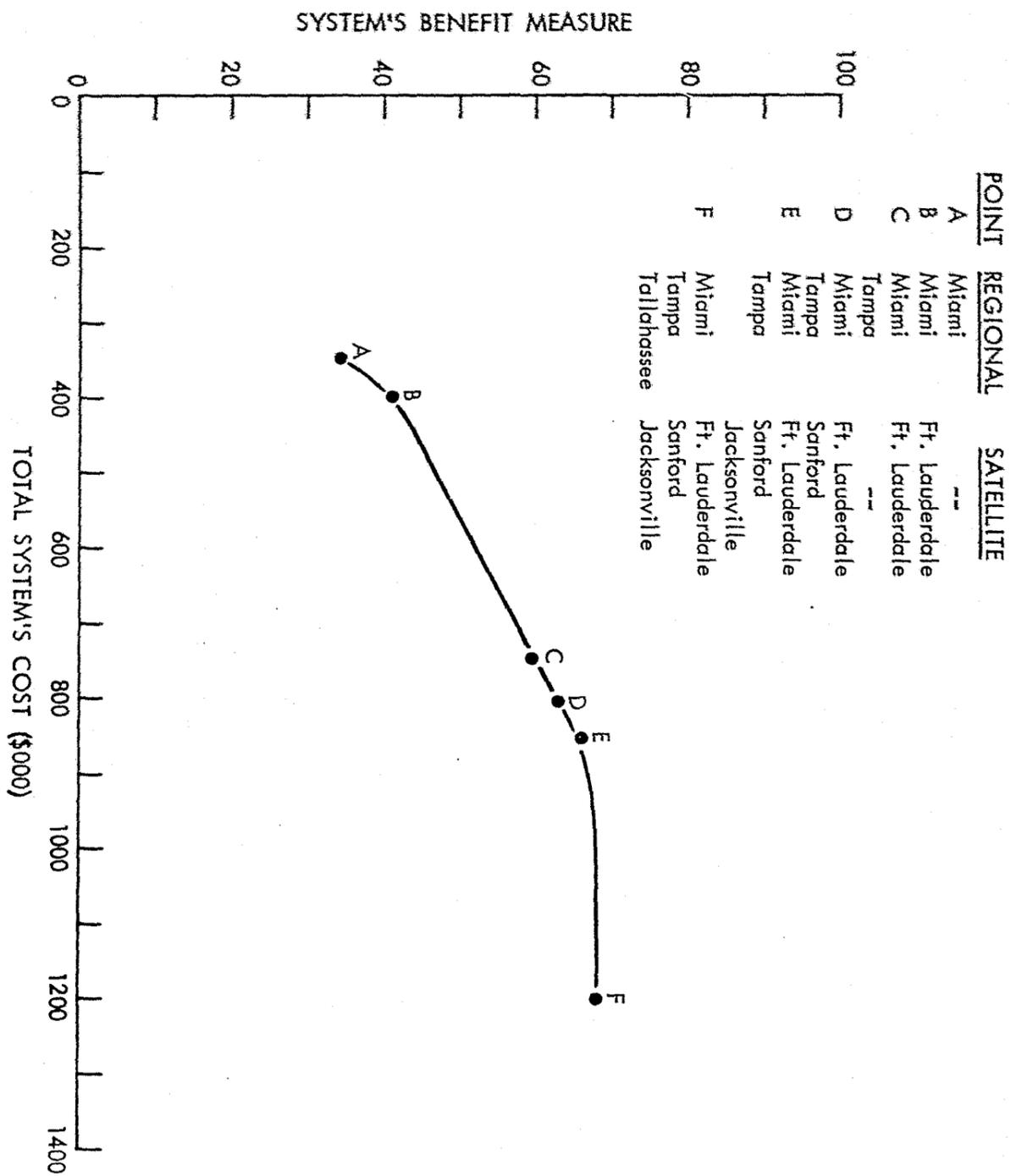


Figure 19 - Total System Cost Vs. Systems Benefit Measure - Configuration III

	<u>Population</u>		<u>Sworn Officers</u>		<u>Crime</u>		<u>Narcotics Arrests</u>		<u>Systems Benefit Measure</u>
	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>	
<u>Regional Labs</u>									
Miami	1,966,811	27.9	4,005	33.7	48,643	33.9	5,254	34.8	34.2
Tallahassee	198,534	2.8	289	2.4	1,946	1.4	250	1.7	1.5
Jacksonville	<u>659,041</u>	<u>9.4</u>	<u>935</u>	<u>7.9</u>	<u>16,267</u>	<u>11.3</u>	<u>1,321</u>	<u>8.7</u>	<u>10.4</u>
Total	2,824,386	40.1	5,229	44.0	66,856	46.6	6,825	45.2	46.1
<u>Satellite Labs</u>									
None									
Total System Cost	- \$1,050,000								
C.O.S.	- \$ 201								
Systems Benefit Measure	- 46.1								

Figure 20 - Candidate Structure - Configuration IV

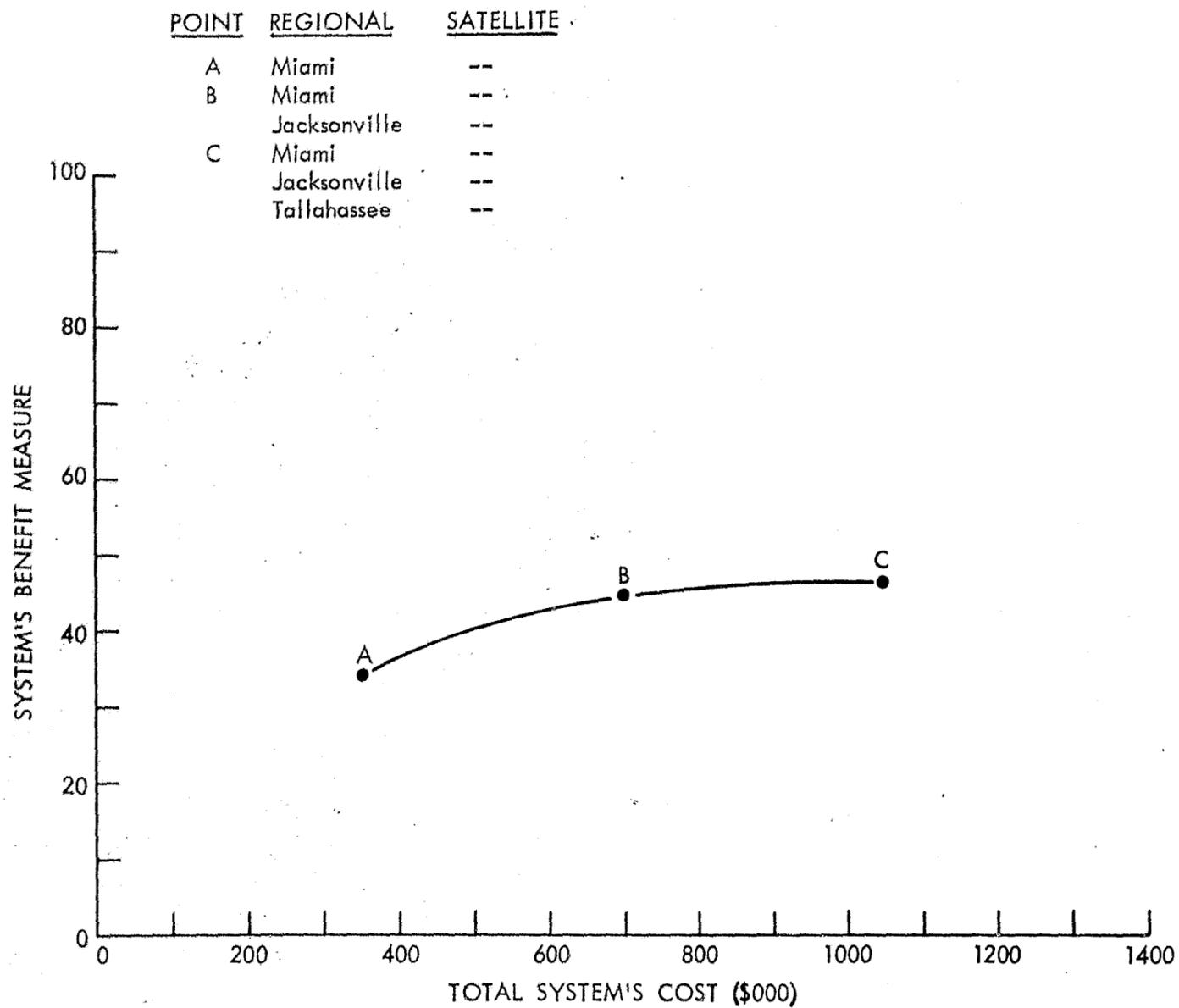


Figure 21 - Total System Cost Vs. Systems Benefit Measure - Configuration IV

Configuration V: Each of the candidate systems considered heretofore have included both Miami and Tallahassee in their configurations. The rationale for this approach is that the state's only two full-service laboratories are currently at these locations. In considering all of the parameters under investigation (population, crime, sworn officers and narcotics arrests) it is apparent that the Miami laboratory is situated at a cluster point for each of these characteristics. Not so evident, however, is the case for justifying the operation of a full-service laboratory at Tallahassee.

In view of these considerations Configuration V was structured by taking the best system considered so far (Configuration III) and replacing the low contributor in that system, Tallahassee, by Jacksonville. The result of this trade off depicted in Figure 22 is dramatic--the systems benefit measure at the three regional lab level increases from 54.3 to 63.2. In comparing the potential impact on the criminalistics system evinced by the candidate structures it should be emphasized that the regional component of the total system cost in each of the last three configurations is the same (\$1,050,000). It is only the potential benefit to the state criminalistics system that is found to vary substantially.

Having found an improved "mix" of regional labs a system of satellite labs was again structured assigning drug labs to Sanford, Ft. Lauderdale, and Pensacola. The result of this allocation yields an additional 12.0 to the systems benefit measure for a total configuration score of 75.2. Costs for the three additional satellite labs are \$150,000. This system is depicted graphically in Figure 23. Note the substantial improvement in the systems benefit measure at each increment evidenced by the increased slope of the curve.

Configuration VI: Since the inclusion of the Sanford regional laboratory resulted in a marked improvement in systems benefit measure in going from Configurations I to II a sixth configuration was structured in which Sanford replaced Jacksonville as the site for the third full-service laboratory. (A corresponding exchange was made at the satellite lab locations.) As is recorded in Figure 24 and shown graphically in Figure 25 a slight increase in the systems benefit measure is noted in Configuration V over Configuration VI.

	Population		Sworn Officers		Crime		Narcotics Arrests		Systems Benefit Measure
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Regional Labs									
Miami	1,966,811	27.9	4,005	33.7	48,643	33.9	5,254	34.8	34.2
Tampa	1,475,642	20.9	2,109	17.8	28,221	19.7	2,483	16.4	18.6
Jacksonville	659,041	9.4	935	7.9	16,267	11.3	1,321	8.7	10.4
Total	4,101,494	58.2	7,049	59.4	93,131	64.9	9,058	60.0	63.2
Satellite Labs									
Sanford	727,590	10.3	1,171	9.9	14,837	10.4	1,602	10.6	3.5
Ft. Lauderdale	324,296 ^{a/}	4.6	902 ^{a/}	7.6	16,258 ^{a/}	11.3	3,244 ^{b/}	21.5	7.2
Pensacola	260,770	3.7	329	2.8	4,062	2.8	608	4.0	1.3
Total	1,312,656	18.6	2,402	20.2	35,157	24.5	5,454	36.1	12.0
Total System Cost	- \$1,200,000								
C.O.S.	- \$ 211								
Systems Benefit Measure	- 75.2								

a/ Excludes attributes of Broward and Dade counties assigned to the regional lab at Miami, above.
b/ Excludes Dade County.

Figure 22 - Candidate Structure - Configuration V

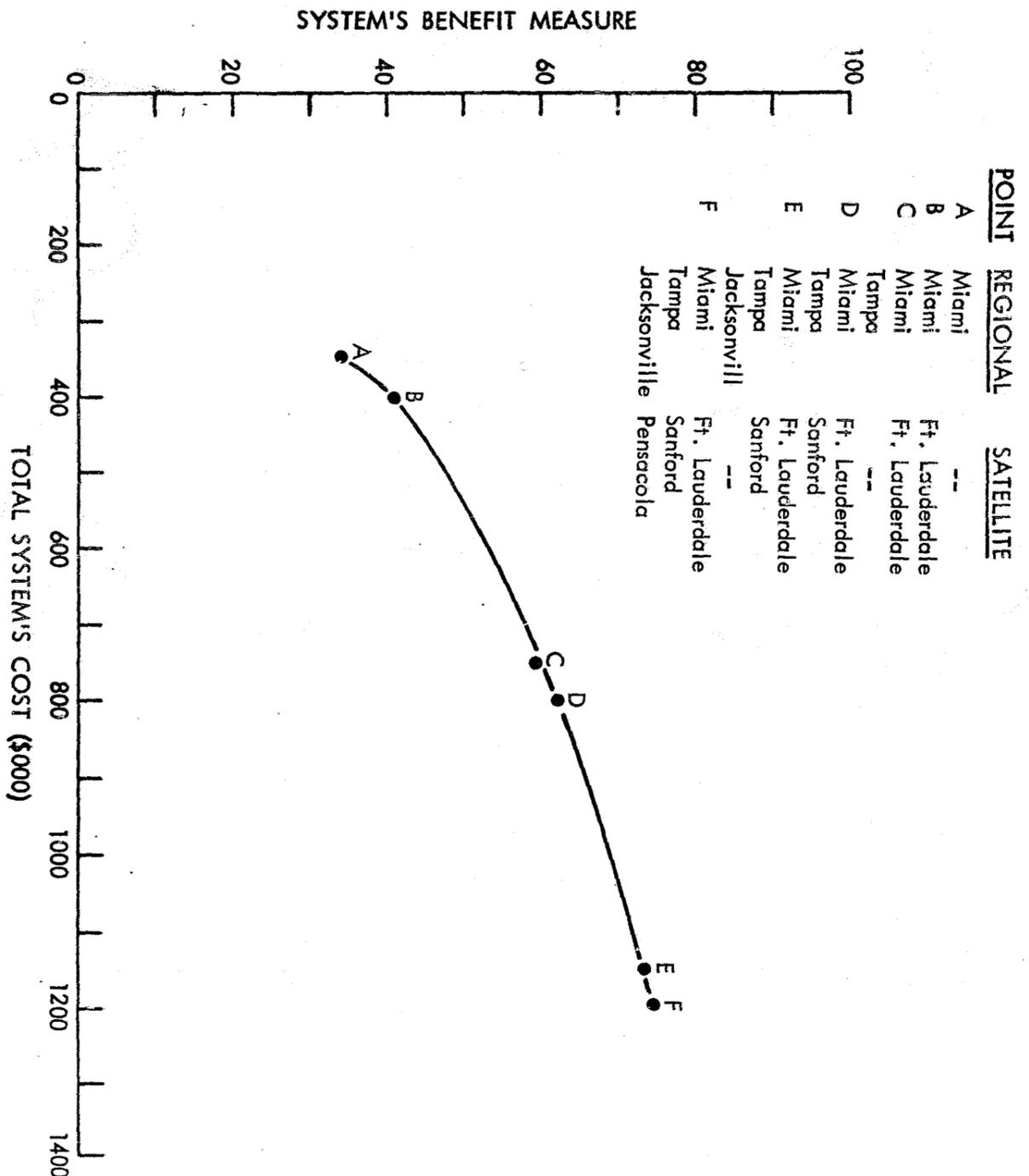


Figure 23 - Total System Cost Vs. Systems Benefit Measure - Configuration V

	<u>Population</u>		<u>Sworn Officers</u>		<u>Crime</u>		<u>Narcotics Arrests</u>		<u>Systems Benefit Measure</u>
	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>	
<u>Regional Labs</u>									
Miami	1,966,811	27.9	4,005	33.7	48,643	33.9	5,254	34.8	34.2
Tampa	1,475,642	20.9	2,109	17.8	28,221	19.7	2,483	16.4	18.6
Sanford	<u>727,590</u>	<u>10.3</u>	<u>1,171</u>	<u>9.9</u>	<u>14,837</u>	<u>10.4</u>	<u>1,602</u>	<u>10.6</u>	<u>10.5</u>
Total	4,170,043	59.1	7,285	61.4	91,701	64.0	9,339	61.8	63.3
<u>Satellite Labs</u>									
Ft. Lauderdale ^{a/}	324,296	4.6	902	7.6	16,258	11.3	3,244	21.5	7.2
Jacksonville	659,041	9.4	935	7.9	16,267	11.3	1,321	8.7	2.9
Pensacola	<u>260,770</u>	<u>3.7</u>	<u>329</u>	<u>2.8</u>	<u>9,062</u>	<u>2.8</u>	<u>608</u>	<u>4.0</u>	<u>1.3</u>
Total	1,244,107	17.7	2,166	18.2	36,587	25.5	5,173	34.2	11.4
Total System Cost	- \$1,200,000								
C.O.S.	- \$ 213								
Systems Benefit Measure	- <u>74.7</u>								

62

a/ See footnote "a" and "b", Figure 22.

Figure 24 - Candidate Structure - Configuration VI

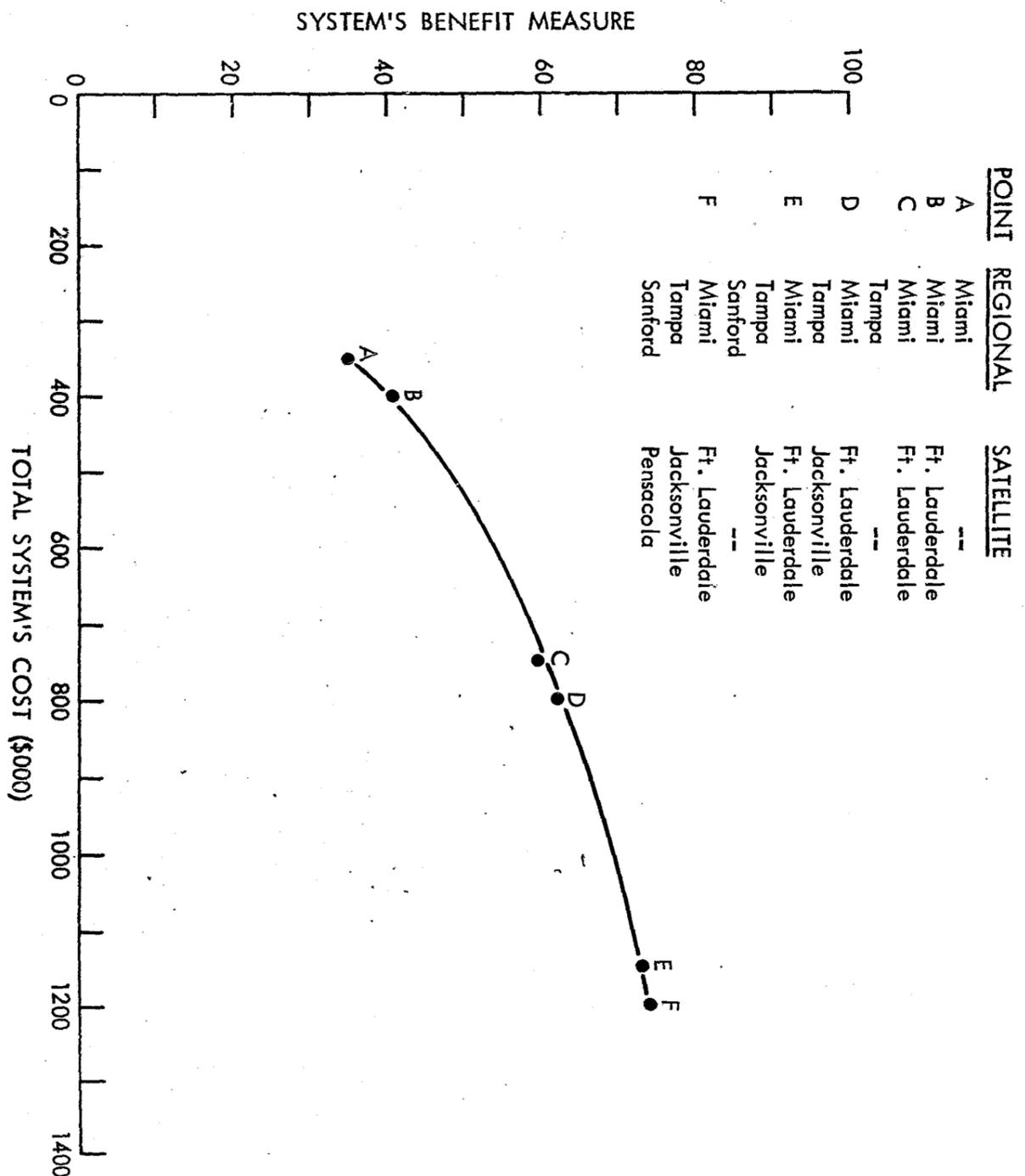


Figure 25 - Total System Cost Vs. Systems Benefit Measure - Configuration VI

63

In judging the relative merits of the last two candidate systems, it should be pointed out that, under the assumptions and constraints stated earlier, the respective systems benefit measure for the two configurations are identical for all practical purposes. The analytical scheme used in determining this index makes the final candidate score sensitive to the weights assigned the percent of crime and narcotics arrest falling within the lab's sphere of influence. A perusal of the data shown in Figure 24 shows that the Jacksonville site would be favored by a heavier weighting of crimes of interest over drug cases. Likewise, the Sanford location would be favored if a greater emphasis were placed on drug involvement. No real purpose would be served, however, if this portion of the analysis were extended to examine the impact of varying the weighting factors assumed in the six previous configurations. The more meaningful interpretation (and the one taken here) is to consider the systems benefit measure of each candidate system as defined above in light of other pertinent factors operating within the state criminalistics system. Such influences as the existing and planned state highway system, geographical placement of laboratories, current elements of criminalistics operating in a region, and the priorities which the FDLE adopts regarding crime thrusts must each enter into the final decision process.

Configuration VII: The structuring of candidate systems to meet the criminalistics needs of the state has progressed to the point that two configurations each consisting of three regional and three satellite laboratories are considered optimal. To examine the desirability of expanding the preferred system beyond a base of three regional labs (and to contend with the very real possibility that the laboratory at Tallahassee may be included in the ultimate state criminalistics system) a seventh configuration was considered. Configuration VII takes the regional lab base used in Configuration VI and adds a fourth full-service laboratory at Tallahassee. Corresponding crime population, sworn officers, and narcotics arrests data are shown in Figure 26. (No system of satellite laboratories is included.) The results show that total system cost increases by \$200,000, the systems benefit measure drops 13 percent and the cost per officers decreases to \$185. The cost benefits relationship of Configuration VII is shown in Figure 27. This graph clearly shows that while total systems cost for criminalistics services are at a maximum with this configuration, the systems benefit measure is higher in Configurations III, V, and VI, systems each having three full-service laboratories and three satellite drug labs.

Configuration VIII: Continuing the expansion of the regional lab base begun in Configuration VII, an eighth configuration was structured in which a regional laboratory is assigned to each location considered in any



Regional Labs	Population		Sworn Officers		Crime		Narcotics Arrests		Systems Benefit Measure	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Miami	1,996,811	27.9	4,005	33.7	48,643	33.9	5,254	39.8	5,254	34.2
Tampa	1,475,642	20.9	2,109	17.8	28,221	19.7	2,483	16.4	2,483	18.6
Sanford	727,590	10.3	1,171	9.9	14,837	10.4	1,602	10.6	1,602	10.5
Tallahassee	198,534	2.8	289	2.4	1,946	1.4	250	1.7	250	1.5
Total	4,368,577	61.9	7,574	63.8	93,647	65.4	9,589	63.5	9,589	64.8
Total System Cost - \$1,400,000 C.O.S. - \$185 Systems Benefit Measure - 64.8										

Figure 26 - Candidate Structure - Configuration VII

POINT	REGIONAL	SATELLITE
A	Miami	--
B	Miami	--
	Tampa	--
C	Miami	--
	Tampa	--
	Sanford	--
D	Miami	--
	Tampa	--
	Sanford	--
	Tallahassee	--

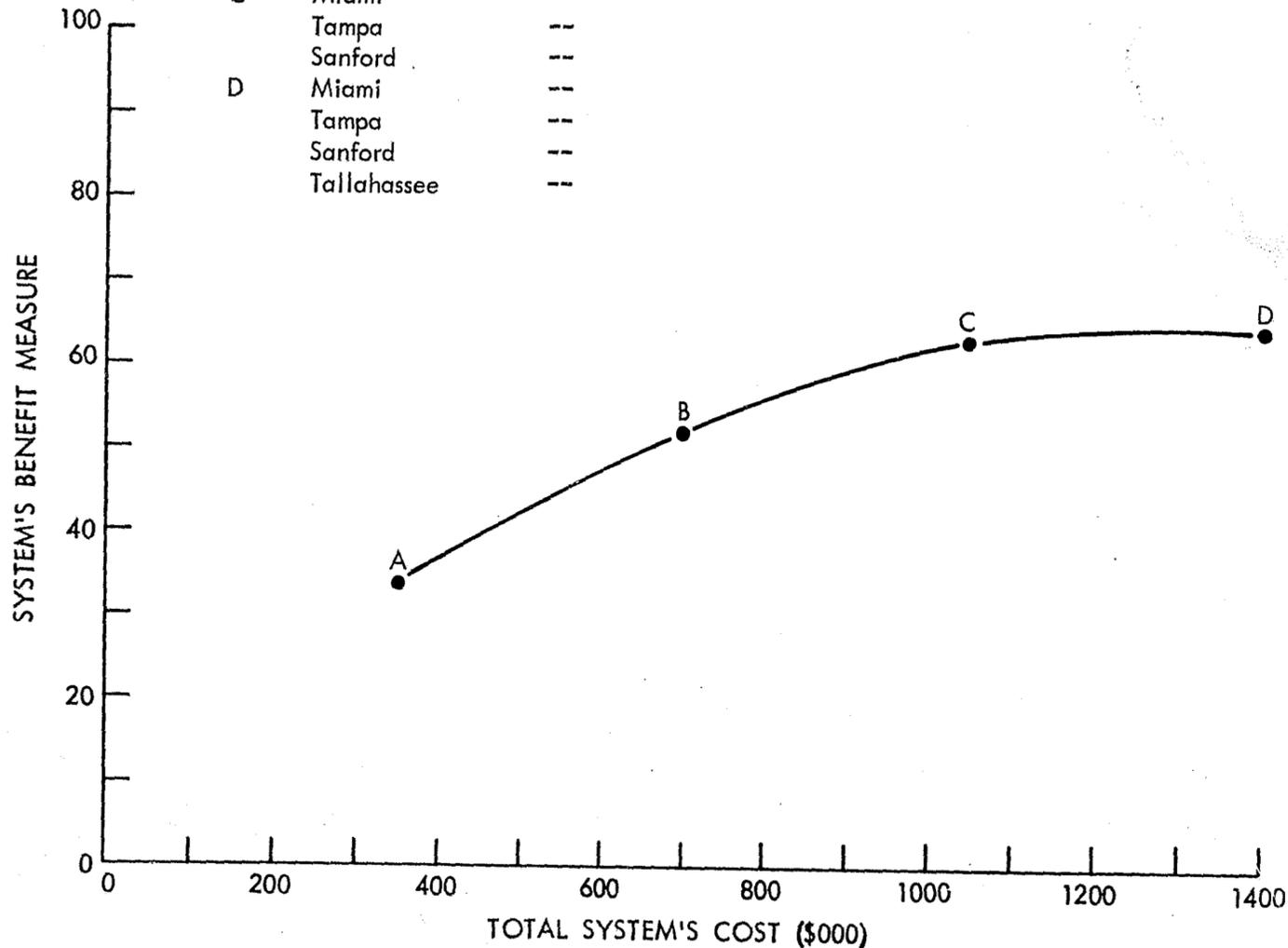


Figure 27 - Total System Cost Vs. Systems Benefit Measure - Configuration VII

previous candidate structure (including both regional and satellite lab sites). Even though such a structure may prove to be cost prohibitive at the present, the analysis represents more than an academic exercise since this system may be viewed as depicting the criminalistics capability of Florida in an ultimate state of development.

Figure 28 displays the seven regional lab locations with the total line depicting the approximate number and percent of people, sworn officers, crime, and narcotics arrests falling within 50 miles of one of the seven full-service laboratories. Figure 29 shows a graphical depiction of SBM with the locations added incrementally based on a ranking according to the systems benefits measure of each component. Thus, Miami is shown as the site of the first regional laboratory and Tallahassee as the last laboratory to be added to the system.

A comparison of the attributes of this candidate structure with those of the other configurations yields some insights into the criminalistics potential in Florida. As is tabulated in Figure 28, the SBM for Configuration VIII is 93.1, indicating almost a 25 percent increase over the next highest configuration. (Configuration V.) Total cost for this configuration is, however, at the 2.5 million dollar mark representing an increase of 100 percent over the next most costly system.

Ignoring for the moment the relatively high cost of the total system, the SBM/cost relationship may be compared on a point-by-point basis with that of the "best" candidate system considered so far, Configuration V. At the \$1.0 million level the SBMs are approximately 70.0 and 65.0 for Configurations V and VIII, respectively. At the \$1.2 million level (the highest funding level required in Configuration V), the SBMs are 75.2 and approximately 73.0 in the same order. Beyond this level no direct comparison of the two configurations is possible due to the cut-off point of the earlier configuration. Throughout the funding level which Configuration V encompasses, Configuration VIII has a lower SBM indicating diminished cost benefits ratio.

Viewed in the perspective of the seven other candidate structures, Configuration VIII is seen as a system which ultimately attains the maximum SBM at a cost which is double that of any other structure (which is probably unrealistic to sustain at the present). The desirability of a high SBM goes without question; the attaining of this goal by building upon a system which is less than optimum throughout half of the implementation plan is viewed with serious reservations.

Configuration VIII, then, represents not so much a plan for implementation of a state criminalistics system but, rather, sets a goal to be achieved after first establishing high priority regional labs and later developing satellite labs into full-service regional labs.

Regional Labs	Population		Sworn Officers		Crime		Narcotics Arrests		Systems Benefit Measure
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Miami	1,996,881	27.9	4,005	33.7	48,643	33.9	5,254	39.8	34.2
Tampa	1,475,642	20.9	2,109	17.8	28,221	19.7	2,483	16.4	18.6
Ft. Lauderdale ^{a/}	324,296	4.6	902	7.6	16,258	11.3	3,244	21.5	14.7
Sanford	727,590	10.3	1,171	9.9	14,837	10.4	1,602	10.6	10.5
Jacksonville	659,041	9.4	935	7.9	16,267	11.3	1,321	8.7	10.4
Pensacola	260,770	3.7	329	2.8	9,062	2.8	608	4.0	3.2
89 Tallahassee	<u>198,534</u>	<u>2.8</u>	<u>289</u>	<u>2.4</u>	<u>1,946</u>	<u>1.4</u>	<u>250</u>	<u>1.7</u>	<u>1.5</u>
	5,612,684	79.6	9,740	82.0	120,234	90.9	14,762	97.7	93.1

Total System Cost - \$2,450,000
 C.O.S. - \$ 252
 Systems Benefit Measure - 93.1

a/ See footnote "a", Figure 22.

Figure 28 - Candidate Structure - Configuration VIII

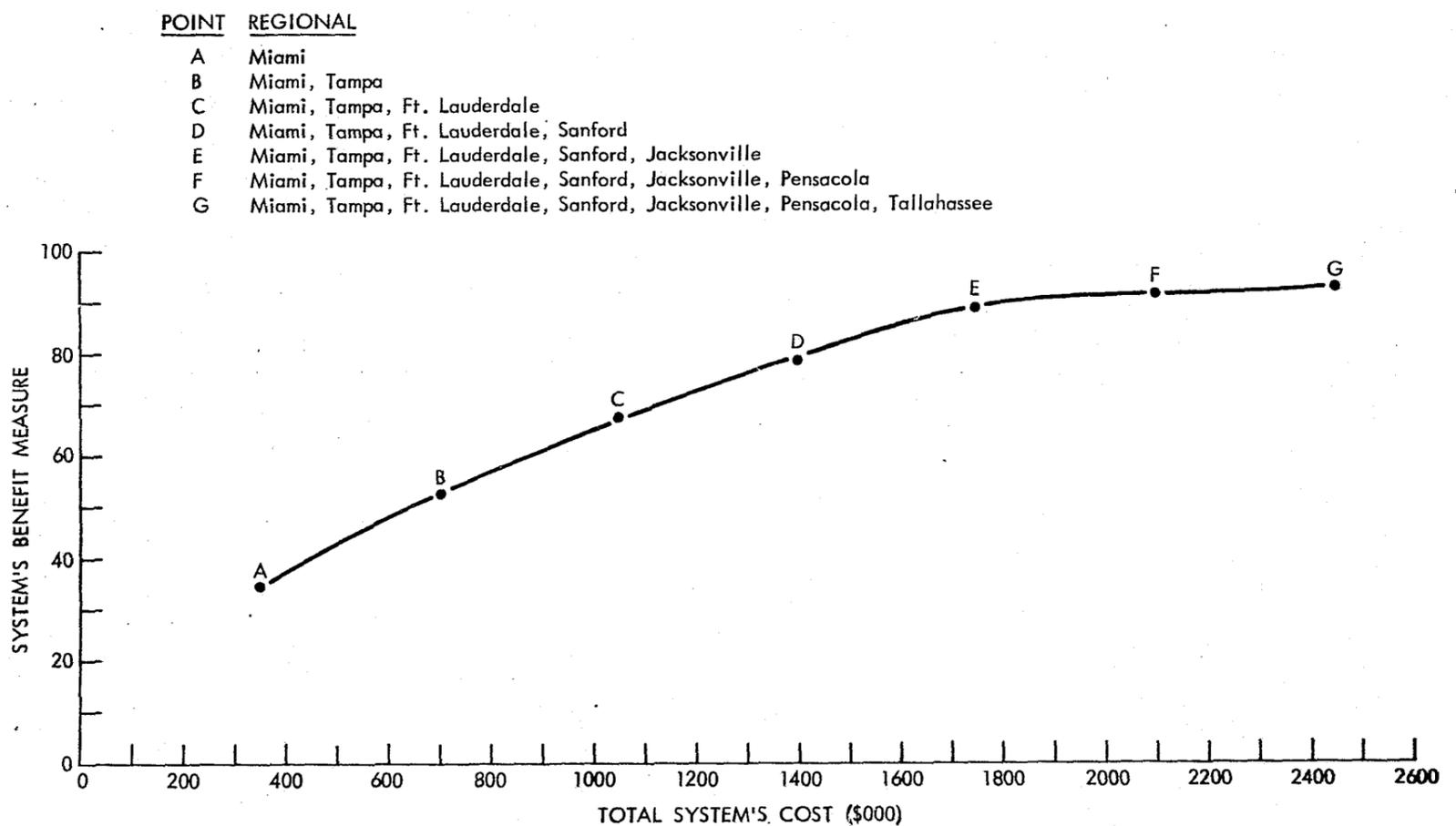


Figure 29 - Total System Cost Versus Systems Benefit Measure - Configuration VIII

Organizational and Administrative Alternatives

The organizational alternatives:

General: In analyzing the alternatives presented here, the primary criterion was to select the one which would best establish and maintain the highest level of criminalistics support for law enforcement agencies of the State of Florida--both from the technical and the administrative points of view. On the other hand, it would be unrealistic to overlook the often demonstrated influence that a strong advocate or advocates can have on the success of a crime laboratory. Advocacy in this sense can be at the state, regional, or local level, perhaps even from a single official; however, more often it takes on the form of support rendered the laboratory by one or more law enforcement departments or by another scientific agency.

Judging from the response noted during this study, a crime laboratory system for the State of Florida should not lack for such advocacy or support. The great majority of the chiefs of police and sheriffs contacted during the study expressed the desire for significantly expanded criminalistics support for the state, and as near their own jurisdictions as possible. This perception of need for criminalistics by the potential users was discussed in Chapter II.

It has been established that it would be highly desirable to improve and expand the criminalistic services available to law enforcement departments throughout the State of Florida, and that these services be provided on a more uniform basis than at present. The first part of this chapter established a quantitative basis for the location of crime laboratories to implement this expansion. Chapter V which follows presents a detailed phased implementation plan to expand Florida's criminalistics capability over a multiyear period.

The problem at hand is to examine the organizational and administrative alternatives which should be considered, and to determine which of these offers the greatest potential for successful administration of an expanded criminalistics system.

Before examining the possibilities of specific agencies which could be charged with the responsibility for expansion and operation of the criminalistics system or elements thereof, we should address two fundamental issues:

Centralized vs. decentralized system. That is, should the crime laboratories established under this plan be administered and controlled by a state agency, or should each laboratory come under the control of a local agency which it serves?

Dedicated or multipurpose laboratory. That is, should the laboratory be dedicated to the purpose of providing criminalistics support for law enforcement agencies, or should the scientific laboratory have a multiple role, such as part of a higher educational curriculum or combined with public health needs, such as the medical examiner function?

Centralization vs. decentralization: On the question of centralization vs. decentralization of administration and control of the crime laboratory system, it should be noted that criminalistics support being provided the state at the present time is on a decentralized basis. The current system exemplifies both the advantages and disadvantages of decentralization. The Dade County Department of Public Safety Crime Laboratory is an excellent example of local government's perception of need for criminalistic support, and its willingness to allocate its own resources to provide that service. Law enforcement agencies within Dade County have available a full-service crime laboratory to meet their scientific investigative needs, and initially at least, other agencies beyond Dade County were free to call upon the laboratory for assistance. As the laboratory work load increased, particularly in recent years with a high volume of dangerous drugs and narcotics cases, the laboratory has had to restrict its services to its immediate charter--Dade County. The in-service training programs and assistance to Broward, Palm Beach, and Monroe counties in establishing satellite drug laboratories is but another good example of local initiative to meet a need for expansion of criminalistic services--in this instance, taking advantage of the availability of LEAA-derived funding.

However, the Dade County Crime Laboratory is also an example of the parochial loyalty and priorities which must exist toward the department or agency responsible for funding and control of the laboratory and the professional careers of its staff. While the laboratory at one time served the criminalistics needs of much of Southern Florida, budgetary and other resource limitations, coupled with expanding case load, have dictated that it limit its scope. Even within Dade County, the preponderance of cases are submitted by officers of the Dade County Department of Public Safety.

Other criminalistic support activities throughout the state only serve to illustrate the disparity between the scope and quality of service available on a convenient, timely basis between those agencies in close proximity to Dade County or Tallahassee, and the remainder of the state. These crime laboratory elements were discussed in Chapter II. The bulk of the latter activities are dependent upon LEAA-derived funding and thus have no permanent basis for their future existence.

Centralized administration and control of a criminalistic system on the other hand would eliminate the problem of parochial views and priority allocations to one local department and afford a better opportunity

to provide "equal opportunity" for the same level of criminalistic services to all departments. Centralization offers the other advantage of the opportunity for technical quality control of laboratory procedures, and uniformity in training, particularly in court testimony procedures. Centralization also allows for a phased implementation plan for the expansion of criminalistic services which is consistent with demand, the availability of trained evidence technicians, the availability of qualified professional staff, equipment and facilities.

Ideally, it might be desirable for every law enforcement department to have its own full-service crime laboratory, but both the cost involved, and the lack of availability of skilled laboratory staff, precludes this alternative. Even the local laboratory facilities which currently exist in the State of Florida suffer (in varying degrees) from the fact that they are just that--laboratory facilities, and not a criminalistics system providing for trained crime scene search capability, convenient access to the laboratory by remote departments, and programs to increase the use of the crime laboratory by both investigators and prosecutors.

The high cost and complexity of a criminalistics laboratory is such that few local departments can be expected to provide the necessary financial support, or have the technical capability of assuring quality control of the efforts of the crime laboratory. A state agency, on the other hand, can attract personnel with both the technical and administrative qualifications needed.

It is entirely possible for a municipal or county supported crime laboratory to continue to function within the area served by a regional crime laboratory which is part of the state criminalistics system. This same situation exists in the Commonwealth of Massachusetts where the Boston Police Department operates its own crime laboratory in the same city where the main laboratory of the state crime laboratory system is also located. Similarly, the City of Chicago Police Department maintains its own crime laboratory to serve its jurisdiction, while a state system of crime laboratories also exists.

In both of the above examples the crime laboratory is under the operational and administrative control of the individual who also has responsibility for providing police services to that same area. The existing Dade County Department of Public Safety Crime Laboratory has a situation somewhat different than those cities, however, in that it acts in the capacity of a regional crime laboratory serving the 25 separate law enforcement departments of the various governmental entities within Dade County. In this instance the individual having administrative and operational control over the crime laboratory does not exercise this same responsibility over all of the

departments served. If a state crime laboratory system is to be established, it must, of necessity, include a regional crime laboratory to service the densely populated southeast Florida Coast. The Dade County Department of Public Safety Crime Laboratory could continue to function in parallel to the state's regional laboratory, however, the effect would be duplicatory, and result in competition for skilled crime laboratory staff and create added expense for the taxpayers of Dade County.

Dedicated or multipurpose laboratory: The question of combining the crime laboratory with that of the medical examiner was discussed in Chapter III above. Basic difference in priorities, and the small area of overlap of interests between these two functions mitigates against such a combined facility, particularly in light of the relatively small cost savings which might be realized.

Several ongoing and planned programs at junior colleges throughout the state are examples of dual use of laboratory facilities both to support the needs of law enforcement agencies, and to meet the needs of educating potential criminalists. On the surface, this is a very attractive proposition, since it puts expensive laboratory equipment to multiple use, serving both operational and educational needs, takes advantage of the availability of college faculty with scientific training, and may even save the costs of construction of laboratory facilities since the college could provide these, making use of the laboratory in other areas as well.

The many ongoing programs throughout the State of Florida in community colleges, junior colleges, and other academic institutions in the field of criminal justice are indeed commendable and are providing an essential service in continuing education for law enforcement officers and also act to encourage other qualified individuals to enter the profession. However, there is reason for concern if some of these programs at the 2-year level have the objective of training criminalists and/or providing operational crime laboratory services to law enforcement agencies. This is inconsistent with both the educational requirements of criminalists and the operational needs of police. From the point of view of the community college considering an operational crime laboratory on campus, the problems of security, large volumes of long-term storage of physical evidence, uniformed law enforcement officers and marked police cars regularly on campus all probably far outweigh any possible advantage of acquisition of LEAA-funded laboratory equipment. The academic staff involved in the laboratory operations would certainly have problems of conflicting priorities between their academic pursuits and the need for highly responsive examination of physical evidence. Frequent absences dictated by the requirement to appear in court as expert witnesses would also create problems. If both academic and operational use of the scientific equipment of the laboratory is contemplated,

additional conflict-of-priority problems would arise. The security of physical evidence, particularly dangerous drugs and narcotics, might well pose problems of such magnitude that the existence of an operational crime laboratory on a college campus would indeed be short lived.

From the point of view of law enforcement agencies relying on an on-campus operational crime laboratory, certainly many of the factors discussed above also pose significant problems for law enforcement as well. The problem of security of the crime laboratory could well impose additional personnel requirements on law enforcement agencies far beyond that which would be required if the laboratory were housed in a facility under the usual control of law enforcement. Since the provision of expert witnesses for testimony in court is one of the principal functions of a crime laboratory, proximity of the laboratory to the major user and the courts of usual jurisdiction is a factor in crime laboratory location. Most college campuses are remote from both courts and law enforcement departments.

An educational program concentrating on qualifying scientists to become criminalists should be concentrated in a single educational institution which offers a full 4-year program in the physical sciences and preferably one which also provides for graduate programs as well. The experience of other universities throughout the country with similar program indicates that the number of students who are attracted to the field is insufficient to make the program self-supporting, in the present social climate at least. External support, usually in the form of LEAA grants, has been the basis for continuation of such programs. It would appear then that the junior college is not the appropriate higher educational level to establish such a curriculum. The experience of other 4-year universities throughout the country with similar program should be carefully examined before embarking on a criminalistics program, however.

One other possibility exists for combined functions of a scientific laboratory, that is, to develop a system of laboratories to meet all of the scientific laboratory needs of all departments of the state. The Commonwealth of Massachusetts approaches this concept in its Department of Public Safety Chemical Laboratory. That laboratory performs chemical analyses to support the state Racing Commission in the form of saliva and urine tests, analyses associated with the enforcement of state fire regulations and other nonhealth related activities. Even in Massachusetts, however, the State Department of Public Health operates food and drug laboratories. While some economies are effected from the Massachusetts concept, the racing season places high priority demands on the laboratory which must, of necessity, cause delays in processing criminalistics cases. The concept was adopted primarily to forestall the repetition of two undesirable incidents in Massachusetts' history, the Coconut Grove fire, and an early racing scandal.

Establishment of a combined laboratory system for the State of Florida would create problems in allocation of priorities, orientation and training of laboratory staff, types of equipment to be acquired, locational considerations, and others which would all far outweigh any possible advantages accruing from the apparent economy. If the objectives in establishing a criminalistics laboratory system for the state are to improve the degree of involvement of the crime laboratory in law enforcement and thus raise the overall quality of the profession in the State of Florida, then the criminalistics laboratory system should be dedicated to that sole purpose.

Alternatives for the agency to administer and control a state criminalistic system: Given that the criminalistic system for the State of Florida should be one with centralized control at the state level, and be a set of laboratories devoted primarily to the provision of scientific support to law enforcement agencies throughout the state, the next point for consideration is which state agency should have the responsibility for the development of a state criminalistics system and the supervision and technical quality control of the professional staff of these laboratories.

Possible candidates include the Florida Department of Law Enforcement, which is already authorized by the legislature to provide crime laboratory services for the state; the Department of Health and Rehabilitative Services which is responsible for the medical examiner function of the state and also has several scientific laboratories operating in the area of public health; the State Attorney General's Office, or under the supervision of states' attorneys; or perhaps even the creation of a new department created for the purpose of supervising a crime laboratory system for the state.

Discussing the alternatives in inverse order of their presentation in the foregoing paragraph, there are two reasons to reject the creation of a new department to administer and supervise a crime laboratory system for the state. One, despite the fact that the crime laboratory has considerable potential to serve law enforcement and criminal justice, it does not warrant the creation of a new department reporting directly to the governor and on par with existing state departments. Second, the Florida Department of Law Enforcement is already authorized to provide these services to the entire state.

While the results of laboratory examination of physical evidence is used by states' attorneys in the prosecution of criminal defendants, the crime laboratory also serves the investigative function of law enforcement agencies as well. In fact, this latter function is by far not only the dominant work load of the laboratory, but also of necessity must be the initial purpose of the involvement of the crime laboratory in a given case. If the investigative officer does not bring physical evidence to the laboratory as part of his investigative process to prepare for indictment of a suspect,

then it is highly unlikely that the prosecutor would develop a new need for laboratory examination of clue material. Thus, a law enforcement-oriented agency to supervise a crime laboratory system would seem to serve the needs of both law enforcement and the Office of the Prosecutor.

While the Department of Health and Rehabilitative Services has an existing laboratory function, and is chartered to exercise supervision over the medical examiners of the state, it is not considered an appropriate candidate for the supervision of a crime laboratory system, for the same reasons discussed earlier concerning the combining of the medical examiner and criminalistics function.

Clearly, the Florida Department of Law Enforcement is the agency which should have the responsibility for a state criminalistic system. It is currently authorized to provide crime laboratory services to law enforcement agencies throughout the state. Its primary interests are in the support of law enforcement, and the leadership of the department has expressed advocacy for improved criminalistics support for the state.

The FDLE crime laboratory at Tallahassee can play a valuable role in this organizational concept. In addition to acting as a crime laboratory to serve local needs the laboratory could be a center for criminalistics research for the state and also provide the technical personnel and equipment needed for inspection and quality control of the laboratories of the state criminalistics system. As with all of the crime laboratories of the system, the Tallahassee laboratory will also have a capability for apprentice or on-the-job training of professional personnel. (The role of the Tallahassee laboratory is discussed further in the Phase Implementation Plan.)

CHAPTER V

PHASED IMPLEMENTATION PLAN FOR ACHIEVING RECOMMENDED STATE CRIMINALISTICS SYSTEM

General

This chapter develops a phased implementation plan, complete with personnel and equipment requirements and, in addition, includes plans for a facility at Tallahassee to administer the system and suggests research and development in criminalistics beyond the implementation period.

The cost benefit analysis presented in Chapter IV resulted in two candidate system configurations offering a very high potential Systems Benefit Measure (SBM) on a least-cost basis. These systems are Configurations V and VI.

The only difference between these two configurations, it will be noted, is the trade-off in designation of regional or satellite laboratory functions to the Sanford and Jacksonville areas. Given the small difference in the SBM for these two sites and the lower priority for the third regional laboratory in the state after the implementation of the Tampa facility, it is advantageous to incorporate a regional laboratory option into the phased implementation plan at the beginning of Year 3. The purpose of this option is to allow state planners the flexibility of determining the site for the third state regional laboratory based on demonstrated or actual demand for crime laboratory services in either the Sanford or Jacksonville areas.

While the systems benefit measure is an excellent indicator of the potential demand for crime laboratory services, the actual use which law enforcement departments will make of the laboratory will be dependent upon many other factors such as responsiveness of the laboratory to the needs of law enforcement departments, both in terms of time and successful results; attitudes of prosecutors and the courts; training of law enforcement personnel in the use of the crime laboratory; and even such intangibles as personalities of individuals involved and perceived cooperation. Criteria for the upgrading of a satellite laboratory to regional status should be based on actual performance rather than potential. Since the satellite laboratory performs examinations relative to dangerous drugs and narcotics, and also limited criminalistics examinations for the area served, it is reasonable to assume that the existence of the laboratory and the interaction with law enforcement departments will stimulate and encourage the submission of physical evidence in criminalistics cases not only to the

satellite, but also to other labs. Therefore, one measure of actual criminalistics case load that would be handled by a satellite laboratory if it were upgraded to a full-service regional laboratory would be the total number of criminalistics cases submitted to any laboratory from the area served-- i.e., law enforcement departments within 50-mile driving radius of the laboratory.

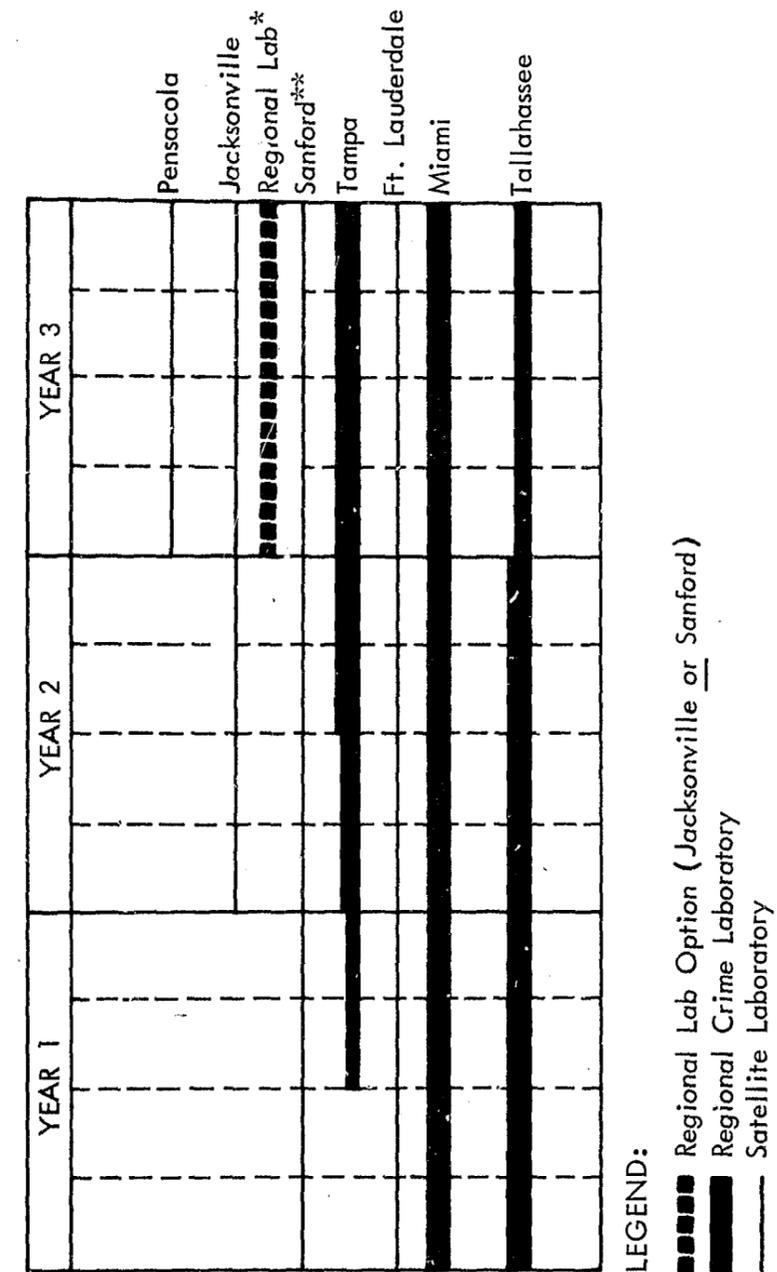
Using criminalistics case load per examiner data for the existing Dade County Department of Public Safety crime laboratory as a benchmark, an anticipated criminalistics work load for a regional laboratory with a staff of 12 professionals would be approximately 2,000 cases per year. Of course, this volume would not be achieved at the initial opening of the lab, but would be achieved over time.

From the above information, an arbitrary "rule of thumb" can be established as a criterion for the upgrading of a given satellite laboratory to regional lab status. A lab can be considered for regional status when the criminalistics cases submitted by law enforcement departments in the immediate service area of the satellite lab are approximately half the number of criminalistics cases that would be handled by a full-service regional lab. This number would include all criminalistics cases submitted to any laboratory, from law enforcement departments within 50-mile driving radius of the satellite lab. To simplify record keeping, the criminalistics cases submitted from departments of entire counties, any part of which is within the 50-mile driving radius should be counted.

The emphasis is placed on criminalistics cases submitted from the area served rather than total cases (which would include dangerous drugs and narcotics examinations), since the principal thrust in upgrading a satellite laboratory to regional status is the addition of significant criminalistics capability to the lab. It would be entirely possible for a satellite laboratory to expand its staff and equipment based on increased demand for drug analyses without achieving the necessary criterion for upgrading to regional status.

Figure 30 depicts the basic time-sequencing and scheduling of the implementation plan. In this plan a 3-year timetable is assumed although the plan is sufficiently flexible so as to allow compression or expansion as the experience warrants and still retain implementation priorities. Each year's activity is further subdivided into quarterly increments with the option of acquiring new capabilities at the beginning of the quarter.

At the beginning of Year 1, one regional laboratory (Miami) and its satellite (Ft. Lauderdale) are shown in full operation recognizing the high SBMs of these two areas and that laboratories are already in existence



* Assigned to Jacksonville or Sanford according to demonstrated need.
 ** Out of phase according to SBM priority. Early presence in state system recognizes current lab at Sanford.

Figure 30 - Phased Implementation Plan

in both locations though not presently operating within the state system. Also shown operational at the beginning of Period 1 is a facility at Tallahassee responsible for the administrative function of the system of state crime laboratories. Note that the Tallahassee facility retains its local case load capability throughout the planning period in addition to its administrative role. Details of personnel and equipment requirements for all components of the Tallahassee facility are presented in the planning model, Florida State Criminalistics System Planning Model, this chapter.

The only other component of the state criminalistics system operating at the beginning of Year 1 is the satellite laboratory at Sanford. The early assimilation of this laboratory into the state system is based solely on the presence of a laboratory at this location rather than a high priority according to the SBM.

Continuing the buildup of criminalistics capability, one additional regional lab is begun in the third quarter, Year 1 (Tampa location). Note that this laboratory does not emerge full-blown but, rather, that a phasing of capabilities is accomplished through increments of personnel and equipment additions at the beginning and again at the third quarter of Year 2 (shown as successive expansions of the line interval width). Tampa is initially established as a regional lab in the beginning (as opposed to beginning as a satellite lab only) due to high SBM of this location as shown in the system analysis, Chapter IV.

The laboratory at Jacksonville is to be operational at the beginning of Year 2.

Activities in Year 3 include start-up of the satellite facility at Pensacola and exercise of the regional lab option at either the Jacksonville or Sanford areas.

Planning Model Format and Definition of Terms

The details of the phased implementation plan are shown in the format of a computer planning model. To facilitate review of the model, attention should be placed on noting report headings found throughout the plan. The following description of reports apply throughout the model.

REGIONAL LAB (alternately SATELLITE LAB)--a descriptor used to distinguish between the staffing and equipment requirements of the two basic components (regional and satellite labs) of each system.

EQUIP ACQUISITION PLAN--a report indicating number of items of a piece of equipment to be acquired in a given planning period.

UNIT EQUIPMENT COST--costs to purchase one piece of equipment during the quarter indicated. Costs are not accumulated unless equipment is actually purchased at that time. Inflationary cost factors are built into the model.

EQUIPMENT EXPENDITURES--the actual cost to purchase equipment of the designated category and description. Represents the product of the entry in EQUIP ACQUISITION PLAN times corresponding data in UNIT EQUIPMENT COST.

PERSONNEL STAFFING PLAN--the cumulative number of personnel of a given skill level in the laboratory at the specified planning period.

PERSONNEL SALARY LEVELS--the annual salaries of lab personnel by skill level. Figure shown is annual rate of pay and does not reflect salary costs during quarter. Cost of living increases are provided for in the model.

PERSONNEL SALARY COSTS--the actual costs for personnel salaries by skill level each quarter. Salaries paid is a product of number of personnel shown in PERSONNEL STAFFING PLAN times corresponding data shown under PERSONNEL SALARY LEVELS.

SUMMARY--report provided for each regional and satellite lab. Includes summary information on equipment costs, salary costs, and total operating costs by quarter and yearly totals.

The above report titles and headings are found in the Systems' reports. In addition, a separate report is provided for the Tallahassee facility showing personnel and equipment requirements and associated costs.

The final report in the plan is a summary report highlighting the costs to sustain all components of the state system.

SUMMARY--total configuration costs for equipment and personnel for all laboratories operating in the system including regional labs, satellite labs and the Tallahassee facility. Costs for the Secure Evidence Transit System (SETS) are provided separately and in toto.

Before proceeding to the planning model a further word of explanation should be given. While 12 planning periods are shown in the model the structure is not keyed to any particular calendar year although the base value for salaries and equipment costs shown reflect 1972 estimates.

LINE NO.	PLANNING ITEM	1	2	3	4	5	6	7	8	9	10	11	12
531													
	FT. LAUDERDALE												
523													
	EQUIPMENT EXPENDITURES												
441	STEREOMICROSCOPE 800	0	0	0	0	0	0	0	0	0	0	0	0
442	PHASE MICROSCOPE 3000	0	0	0	0	0	0	0	0	0	0	0	0
443	POLARIZING MICROSCOPE 2500	0	0	0	0	0	0	0	0	0	0	0	0
444	IR SPECTROPHOTOMETER 12000	0	0	0	0	0	0	0	0	0	0	0	0
445	UV SPECTROPHOTOMETER 12000	0	0	0	0	0	0	0	0	0	0	0	0
446	STILL AND STORAGE 800	0	0	0	0	0	0	0	0	0	0	0	0
447	MISC EQUIPMENT 3000	0	0	0	0	0	0	0	0	0	0	0	0
448	BENCHWORK AND FURNITURE 12000	0	0	0	0	0	0	0	0	0	0	0	0
449	MISC EXPENDABLES 1250 1250	1250	1250	1250	1250	1325	1325	1325	1325	1405	1405	1405	1405
450	BOOKS AND PERIODICALS 500 500	500	500	500	500	0	0	0	0	0	0	0	0

84

LINE NO.	PLANNING ITEM	1	2	3	4	5	6	7	8	9	10	11	12
531													
	FT. LAUDERDALE												
524													
	PERSONNEL STAFFING PLAN												
87	CRIMINALIST II 1	1	1	1	1	1	1	1	1	1	1	1	1
88	CRIMINALIST I 1	1	1	1	1	1	1	1	1	2	2	2	2
89	CLERK STENOGRAPHER 1	1	1	1	1	1	1	1	1	1	1	1	1
525													
	PERSONNEL SALARY LEVELS												
81	CRIM II (CHEM-INSTR) 14500 14500	14500	14500	14500	14500	15370	15370	15370	15370	16298	16298	16298	16298
82	CRIM I (CHEM-INSTR) 12000 12000	12000	12000	12000	12000	12720	12720	12720	12720	13488	13488	13488	13488
83	CLERK STENOGRAPHER 6000 6000	6000	6000	6000	6000	6360	6360	6360	6360	6744	6744	6744	6744
526													
	PERSONNEL SALARY COSTS												
91	CRIMINALIST II 3625 3625	3625	3625	3625	3625	3842	3842	3842	3842	4074	4074	4074	4074
92	CRIMINALIST I 3000 3000	3000	3000	3000	3000	3180	3180	3180	3180	6744	6744	6744	6744
93	CLERK STENOGRAPHER 1500 1500	1500	1500	1500	1500	1590	1590	1590	1590	1686	1686	1686	1686

85

FDLE CRIME LAB SYSTEM
ACQUISITION PLAN

SYSTEM I REQUIREMENTS

OCT. 15, 1972
RUN 1

LINE NO.	PLANNING ITEM	1	2	3	4	5	6	7	8	9	10	11	12
FT. LAUDERDALE													
SUMMARY													
531													
530													
453	EQUIPMENT PURCHASE COST 49600	1750	1750	1750	1750	1325	1325	1325	1325	1405	1405	1405	1405
452	EQUIPMENT MAINTENANCE 0	0	0	0	0	1060	1060	1060	1060	1124	1124	1124	1124
454	SYS I SAT LAB EQUIP COST 49600	1750	1750	1750	1750	2385	2385	2385	2385	2529	2529	2529	2529
1													
460	YEAR 1 ANNUAL EQUIP COST 0	0	0	0	54850	0	0	0	0	0	0	0	0
463	YEAR 2 ANNUAL EQUIP COST 0	0	0	0	0	0	0	0	9540	0	0	0	0
466	YEAR 3 ANNUAL EQUIP COST 0	0	0	0	0	0	0	0	0	0	0	0	10116
1													
469	TOTAL 3 YEAR EQUIP COST 0	0	0	0	0	0	0	0	0	0	0	0	74506
1													
1													
90	TOT SALARY PAID EA QR 8125	8125	8125	8125	8125	8612	8612	8612	8612	12504	12504	12504	12504
94	FRINGE BENEFITS COSTS 1219	1219	1219	1219	1219	1292	1292	1292	1292	1876	1876	1876	1876

98

FDLE CRIME LAB SYSTEM
ACQUISITION PLAN

SYSTEM I REQUIREMENTS

OCT. 15, 1972
RUN 1

LINE NO.	PLANNING ITEM	1	2	3	4	5	6	7	8	9	10	11	12
451	TRAVEL, STAFF TRAINING 1250	1250	1250	1250	1250	1325	1325	1325	1325	1405	1405	1405	1405
95	SYS I SAT PERSONNEL COST 10594	10594	10594	10594	10594	11229	11229	11229	11229	15785	15785	15785	15785
1													
475	YEAR 1 PERSONNEL COSTS 0	0	0	0	42375	0	0	0	0	0	0	0	0
478	YEAR 2 PERSONNEL COSTS 0	0	0	0	0	0	0	0	44917	0	0	0	0
481	YEAR 3 PERSONNEL COSTS 0	0	0	0	0	0	0	0	0	0	0	0	63141
1													
484	TOT 3 YR PERSONNEL COSTS 0	0	0	0	0	0	0	0	0	0	0	0	150433
1													
1													
487	YEAR 1 OPERATING COSTS 0	0	0	0	97225	0	0	0	0	0	0	0	0
488	YEAR 2 OPERATING COSTS 0	0	0	0	0	0	0	0	54457	0	0	0	0
489	YEAR 3 OPERATING COSTS 0	0	0	0	0	0	0	0	0	0	0	0	73257
1													
490	TOT 3 YR OPERATING COST 0	0	0	0	0	0	0	0	0	0	0	0	224939

87

LINE NO.	PLANNING ITEM	1	2	3	4	5	6	7	8	9	10	11	12
1													
2065	EVIDENCE TRANSIT SYSTEM												
2070	VEHICLE PURCHASE 4000 0	0	0	0	0	0	0	0	0	0	0	0	0
2071	VEHICLE MAINTENANCE 304 308	311	315	319	323	327	331	335	340	344	348	348	348
2072	VEHICLE DRIVER 1822 1845	1868	1892	1915	1939	1964	1988	2013	2038	2064	2089	2089	2089
2073	TOT COST - SETS 6126 2153	2180	2207	2235	2263	2291	2319	2348	2378	2407	2438	2438	2438

88

CONTINUED

10F2

LINE NO.	PLANNING ITEM	1	2	3	4	5	6	7	8	9	10	11	12
1													
2065	EVIDENCE TRANSIT SYSTEM												
2070	VEHICLE PURCHASE 4000 0	0	0	0	0	0	0	0	0	0	0	0	0
2071	VEHICLE MAINTENANCE 304 308	311	315	319	323	327	331	335	340	344	348		
2072	VEHICLE DRIVER 1822 1845	1868	1892	1915	1939	1964	1988	2013	2038	2064	2089		
2073	TOT COST - SETS 6126 2153	2180	2207	2235	2263	2291	2319	2348	2378	2407	2438		

88

LINE NO.	PLANNING ITEM	1	2	3	4	5	6	7	8	9	10	11	12
2007	TAMPA REGIONAL LAB												
521	EQUIP ACQUISITION PLAN												
801	STEREOMICROSCOPE 0 0	3	0	1	0	1	0	0	0	0	0	0	0
802	PHASE MICROSCOPE 0 0	1	0	0	0	0	0	0	0	0	0	0	0
803	POLARIZING MICROSCOPE 0 0	1	0	0	0	0	0	0	0	0	0	0	0
804	COMPARISON MICROSCOPE 0 0	1	0	0	0	0	0	0	0	0	0	0	0
805	REFRACTOMETER 0 0	0	0	0	0	1	0	0	0	0	0	0	0
806	IR SPECTROPHOTOMETER 0 0	1	0	0	0	0	0	0	0	0	0	0	0
807	UV SPECTROPHOTOMETER 0 0	1	0	0	0	0	0	0	0	0	0	0	0
808	STILL AND STORAGE 0 0	1	0	0	0	0	0	0	0	0	0	0	0
809	DISHWASHER 0 0	1	0	0	0	0	0	0	0	0	0	0	0
810	CAMERA (MP3) 0 0	1	0	0	0	0	0	0	0	0	0	0	0
811	CAMERA (DOCUMENTS) 0 0	0	0	0	0	1	0	0	0	0	0	0	0
812	THIN LAYER CHROMATOGRAPH 0 0	2	0	0	0	0	0	0	0	0	0	0	0
813	ELECTROPHORESIS 0 0	0	0	1	0	0	0	0	0	0	0	0	0

68

FDLE CRIME LAB SYSTEM
ACQUISITION PLAN

SYSTEM II REQUIREMENTS

OCT. 15, 1972
RUN 1

LINE NO.	PLANNING ITEM	1	2	3	4	5	6	7	8	9	10	11	12
814	X-RAY DIFFRACTION UNIT	0	0	0	0	0	0	1	0	0	0	0	0
815	SPECTROGRAPH, MICROPROBE	0	0	0	0	1	0	0	0	0	0	0	0
816	GAS CHROMATOGRAPH	0	0	0	0	1	0	0	0	0	0	0	0
817	XRD GONIOMETER	0	0	0	0	0	0	1	0	0	0	0	0
818	MISCELLANEOUS EQUIPMENT	0	0	1	1	1	1	1	1	1	1	1	1
819	BENCHWORK AND FURNITURE	0	0	1	0	0	0	0	0	0	0	0	0
820	MISCELLANEOUS EXPENDABLE	0	0	1	1	1	1	1	1	1	1	1	1
821	BOOKS AND PERIODICALS	0	0	1	1	1	1	1	1	1	1	1	1
825	VEHICLE (DIRECTOR)	0	0	1	0	0	0	0	0	0	0	0	0
826	VEHICLE MAINTENANCE-DIR	0	0	1	1	1	1	1	1	1	1	1	1

06

FDLE CRIME LAB SYSTEM
ACQUISITION PLAN

SYSTEM II REQUIREMENTS

OCT. 15, 1972
RUN 1

LINE NO.	PLANNING ITEM	1	2	3	4	5	6	7	8	9	10	11	12
2007	TAMPA REGIONAL LAB												
523	EQUIPMENT EXPENDITURES												
901	STEREOMICROSCOPE	0	0	2400	0	848	0	848	0	0	0	0	0
902	PHASE MICROSCOPE	0	0	3000	0	0	0	0	0	0	0	0	0
903	POLARIZING MICROSCOPE	0	0	2500	0	0	0	0	0	0	0	0	0
904	COMPARISON MICROSCOPE	0	0	6000	0	0	0	0	0	0	0	0	0
905	REFRACTOMETER	0	0	0	0	0	0	848	0	0	0	0	0
906	IR SPECTROPHOTOMETER	0	0	12000	0	0	0	0	0	0	0	0	0
907	UV SPECTROPHOTOMETER	0	0	12000	0	0	0	0	0	0	0	0	0
908	STILL AND STORAGE	0	0	300	0	0	0	0	0	0	0	0	0
909	DISHWASHER	0	0	600	0	0	0	0	0	0	0	0	0
910	CAMERA (MP3)	0	0	1000	0	0	0	0	0	0	0	0	0
911	CAMERA (DOCUMENTS)	0	0	0	0	0	0	2650	0	0	0	0	0
912	THIN LAYER CHROMATOGRAPH	0	0	5000	0	0	0	0	0	0	0	0	0
913	ELECTROPHORESIS	0	0	0	0	1060	0	0	0	0	0	0	0

91

FDLE CRIME LAB SYSTEM
ACQUISITION PLAN

SYSTEM II REQUIREMENTS

OCT. 15, 1972
RUN 1

LINE NO.	PLANNING ITEM	1	2	3	4	5	6	7	8	9	10	11	12
914	X-RAY DIFFRACTION UNIT	0	0	0	0	0	0	10600	0	0	0	0	0
915	SPECTROGRAPH, MICROPROBE	0	0	0	0	31800	0	0	0	0	0	0	0
916	GAS CHROMATOGRAPH	0	0	0	0	10600	0	0	0	0	0	0	0
917	XRD GONIOMETER	0	0	0	0	0	0	10600	0	0	0	0	0
918	MISCELLANEOUS EQUIPMENT	0	0	3000	3000	3180	3180	3180	3180	3372	3372	3372	3372
919	BENCHWORK AND FURNITURE	0	0	30000	0	0	0	0	0	0	0	0	0
920	MISCELLANEOUS EXPENDABLE	0	0	3000	3000	3180	3180	3180	3180	3372	3372	3372	3372
921	BOOKS AND PERIODICALS	0	0	1000	1000	1060	1060	1060	1060	1124	1124	1124	1124
924	CRIME SCENE MOBILE UNIT	0	0	6000	0	0	0	0	0	0	0	0	0
925	VEHICLE (DIRECTOR)	0	0	5000	0	0	0	0	0	0	0	0	0
926	VEHICLE MAINTENANCE	0.0	0.0	300.00	300.00	318.00	318.00	318.00	318.00	337.00	337.00	337.00	337.00

92

FDLE CRIME LAB SYSTEM
ACQUISITION PLAN

SYSTEM II REQUIREMENTS

OCT. 15, 1972
RUN 1

LINE NO.	PLANNING ITEM	1	2	3	4	5	6	7	8	9	10	11	12
2007	TAMPA REGIONAL LAB												
524	PERSONNEL STAFFING PLAN												
641	DIRECTOR	0	0	1	1	1	1	1	1	1	1	1	1
642	CRIM III (PHYS ANALYSIS)	0	0	1	1	1	1	1	1	1	1	1	1
643	CRIM III (CHEM-INSTR)	0	0	1	1	1	1	1	1	1	1	1	1
644	CRIM II (BIOLOGICAL)	0	0	1	1	1	1	1	1	1	1	1	1
645	CRIM II (CHEM-INSTR)	0	0	1	1	1	1	1	1	1	1	1	1
646	CRIM I (CHEM-INSTR)	0	0	1	1	2	2	2	2	2	2	2	2
647	CRIM I (BIOLOGICAL)	0	0	1	1	2	2	2	2	2	2	2	2
648	COMP MICROGRAPHER	0	0	1	1	2	2	2	2	2	2	2	2
649	DOCUMENTS SPECIALIST	0	0	0	0	0	0	1	1	1	1	1	1
650	CLERK STENOGRAPHER	0	0	2	2	2	2	2	2	2	2	2	2
651	CLERK TYPIST	0	0	4	4	6	6	6	6	6	6	6	6
652	PHOTOGRAPHER	0	0	1	1	1	1	1	1	1	1	1	1
653	CRIME SCENE SPEC II	0	0	1	1	1	1	1	1	1	1	1	1
654	CRIME SCENE SPEC I	0	0	1	1	1	1	1	1	1	1	1	1

93

LINE NO.	PLANNING ITEM	1	2	3	4	5	6	7	8	9	10	11	12
2007													
526													
661	DIRECTOR	0	0	5000	5000	5300	5300	5300	5300	5620	5620	5620	5620
662	CRIM III (PHYS ANALYSIS)	0	0	4250	4250	4505	4505	4505	4505	4777	4777	4777	4777
663	CRIM III (CHEM-INSTR)	0	0	4250	4250	4505	4505	4505	4505	4777	4777	4777	4777
664	CRIM II (BIOLOGICAL)	0	0	3625	3625	3842	3842	3842	3842	4074	4074	4074	4074
665	CRIM II (CHEM-INSTR)	0	0	3625	3625	3842	3842	3842	3842	4074	4074	4074	4074
666	CRIM I (CHEM-INSTR)	0	0	3000	3000	6360	6360	6360	6360	6744	6744	6744	6744
667	CRIM I (BIOLOGICAL)	0	0	3000	3000	6360	6360	6360	6360	6744	6744	6744	6744
668	COMP MICROGRAPHER	0	0	3500	3500	7420	7420	7420	7420	7868	7868	7868	7868
669	DOCUMENTS SPECIALIST	0	0	0	0	0	0	3710	3710	3934	3934	3934	3934
670	CLERK STENOGRAPHER	0	0	3000	3000	3180	3180	3180	3180	3372	3372	3372	3372
671	CLERK TYPIST	0	0	4000	4000	6360	6360	6360	6360	6744	6744	6744	6744
672	PHOTOGRAPHER	0	0	2625	2625	2782	2782	2782	2782	2950	2950	2950	2950
673	CRIME SCENE SPEC II	0	0	2750	2750	2915	2915	2915	2915	3091	3091	3091	3091
674	CRIME SCENE SPEC I	0	0	2375	2375	2517	2517	2517	2517	2669	2669	2669	2669

94

LINE NO.	PLANNING ITEM	1	2	3	4	5	6	7	8	9	10	11	12
2007													
530													
930	EQUIPMENT PURCHASE COST	0	0	93600	7300	52046	7738	33284	7738	8205	8205	8205	8205
934	EQUIP MAINTENANCE COST	0	0	0	0	0	0	0	0	5248	5453	5658	5863
935	SYS II REG LAB EQUIP CST	0	0	93600	7300	52046	7738	33284	7738	13453	13658	13863	14068
1													
936	YEAR 1 ANNUAL EQUIP COST	0	0	0	100900	0	0	0	0	0	0	0	0
939	YEAR 2 ANNUAL EQUIP COST	0	0	0	0	0	0	0	100806	0	0	0	0
942	YEAR 3 ANNUAL EQUIP COST	0	0	0	0	0	0	0	0	0	0	0	55043
1													
945	TOTAL 3 YEAR EQUIP COST	0	0	0	0	0	0	0	0	0	0	0	256749
1													
675	TOT SALARY PAID EA QR	0	0	45000	45000	59890	59890	63600	63600	67440	67440	67440	67440
676	FRINGE BENEFITS COSTS	0	0	6750	6750	8983	8983	9540	9540	10116	10116	10116	10116
677	TRAVEL, STAFF TRAINING	0	0	2000	2000	2120	2120	2120	2120	2248	2248	2248	2248

95

FDLE CRIME LAB SYSTEM
ACQUISITION PLAN

SYSTEM II REQUIREMENTS

OCT. 15, 1972
RUN 1

LINE NO.	PLANNING ITEM	1	2	3	4	5	6	7	8	9	10	11	12
680	RECRUITING COSTS	200	1700	200	950	200	650	200	200	200	200	200	200
681	PERSONNEL TRANSFER COSTS	0	0	3600	0	0	0	0	0	0	0	0	0
678	SYS II REG PERSONNEL CST	200	1700	57550	54700	71193	71643	75460	75460	80004	80004	80004	80004
1													
1													
602	YEAR 1 PERSONNEL COSTS	0	0	0	114150	0	0	0	0	0	0	0	0
605	YEAR 2 PERSONNEL COSTS	0	0	0	0	0	0	0	293757	0	0	0	0
608	YEAR 3 PERSONNEL COSTS	0	0	0	0	0	0	0	0	0	0	0	320016
1													
950	TOT 3 YR PERSONNEL COST	0	0	0	0	0	0	0	0	0	0	0	727922
1													
955	YEAR 1 OPERATING COSTS	0	0	0	215050	0	0	0	0	0	0	0	0
956	YEAR 2 OPERATING COSTS	0	0	0	0	0	0	0	394563	0	0	0	0
957	YEAR 3 OPERATING COSTS	0	0	0	0	0	0	0	0	0	0	0	375058
1													

96

FDLE CRIME LAB SYSTEM
ACQUISITION PLAN

SYSTEM II REQUIREMENTS

OCT. 15, 1972
RUN 1

LINE NO.	PLANNING ITEM	1	2	3	4	5	6	7	8	9	10	11	12
958	TOT 3 YR OPERATING COST	0	0	0	0	0	0	0	0	0	0	0	984671
2065	EVIDENCE TRANSIT SYSTEM												
2074	VEHICLE PURCHASE	0	0	4000	0	0	0	0	0	0	0	0	0
2075	VEHICLE MAINTENANCE	0	0	304	308	311	315	319	323	327	331	335	340
2076	VEHICLE DRIVER	0	0	1822	1845	1868	1892	1915	1939	1964	1988	2013	2038
2077	TOT COST - SETS	0	0	6126	2153	2180	2207	2235	2263	2291	2319	2348	2378

97

LINE NO.	PLANNING ITEM	1	2	3	4	5	6	7	8	9	10	11	12
2001	SANFORD-ORLANDO												
524	PERSONNEL STAFFING PLAN												
687	CRIMINALIST II	1	1	1	1	1	1	1	1	1	1	1	1
688	CRIMINALIST I	2	2	2	2	2	2	2	2	2	2	2	2
689	CLERK STENOGRAPHER	1	1	1	1	1	1	1	1	1	1	1	1
526	PERSONNEL SALARY COSTS												
691	CRIMINALIST II	3625	3625	3625	3625	3842	3842	3842	3842	4074	4074	4074	4074
692	CRIMINALIST I	6000	6000	6000	6000	6360	6360	6360	6360	6744	6744	6744	6744
693	CLERK STENOGRAPHER	1500	1500	1500	1500	1590	1590	1590	1590	1686	1686	1686	1686
1													
2002	EQUIP REPAIR + REPLACE	1250	1250	1250	1250	1312	1312	1312	1312	1375	1375	1375	1375

86

LINE NO.	PLANNING ITEM	1	2	3	4	5	6	7	8	9	10	11	12
2001	SANFORD-ORLANDO												
530	SUMMARY												
2002	EQUIP REPAIR + REPLACE	1250	1250	1250	1250	1312	1312	1312	1312	1375	1375	1375	1375
1													
2003	YEAR 1 ANNUAL EQUIP COST	0	0	0	5000	0	0	0	0	0	0	0	0
2004	YEAR 2 ANNUAL EQUIP COST	0	0	0	0	0	0	0	5248	0	0	0	0
2005	YEAR 3 ANNUAL EQUIP COST	0	0	0	0	0	0	0	0	0	0	0	5500
1													
2006	TOT 3 YR EQUIP COST	0	0	0	0	0	0	0	0	0	0	0	15748
1													
1													
690	TOT SALARY PAID EA OR	11125	11125	11125	11125	11792	11792	11792	11792	12504	12504	12504	12504
694	FRINGE BENEFITS COSTS	1669	1669	1669	1669	1769	1769	1769	1769	1876	1876	1876	1876
1051	TRAVEL, STAFF TRAINING	0	0	0	0	1325	1325	1325	1325	1405	1405	1405	1405
695	SYS II SAT PERSONNEL CST	12794	12794	12794	12794	14886	14886	14886	14886	15785	15785	15785	15785

89

FDLE CRIME LAB SYSTEM
ACQUISITION PLAN

SYSTEM II REQUIREMENTS

OCT. 15, 1972
RUN 1

LINE NO. PLANNING ITEM 1 2 3 4 5 6 7 8 9 10 11 12

1	1075	YEAR 1 PERSONNEL COSTS	0	51175	0	0	0	0	0	0	0	0
	0	0										
	1078	YEAR 2 PERSONNEL COSTS	0	0	0	0	0	59545	0	0	0	0
	0	0										
	1081	YEAR 3 PERSONNEL COSTS	0	0	0	0	0	0	0	0	0	63141
	0	0										
1	1084	TOT 3 YR PERSONNEL COSTS	0	0	0	0	0	0	0	0	0	173861
	0	0										
1	1087	YEAR 1 OPERATING COSTS	0	56175	0	0	0	0	0	0	0	0
	0	0										
	1088	YEAR 2 OPERATING COSTS	0	0	0	0	0	64793	0	0	0	0
	0	0										
	1089	YEAR 3 OPERATING COSTS	0	0	0	0	0	0	0	0	0	68641
	0	0										
1	1090	TOT 3 YR OPERATING COST	0	0	0	0	0	0	0	0	0	189609
	0	0										

100

EVIDENCE TRANSIT SYSTEM

2065	2078	VEHICLE PURCHASE	0	0	0	0	0	0	0	0	0	0
	4000	0										
	2079	VEHICLE MAINTENANCE	311	315	319	323	327	331	335	340	344	348
	304	308										
	2080	VEHICLE DRIVER	1868	1892	1915	1939	1964	1988	2013	2038	2064	2089
	1822	1845										
	2081	TOT COST - SETS	2180	2207	2235	2263	2291	2319	2348	2378	2407	2438
	6126	2153										

FDLE CRIME LAB SYSTEM
ACQUISITION PLAN

SYSTEM III REQUIREMENTS

OCT. 15, 1972
RUN 1

LINE NO. PLANNING ITEM 1 2 3 4 5 6 7 8 9 10 11 12

2010 JACKSONVILLE SATELLITE

1

521 EQUIP ACQUISITION PLAN

1021	STEREOMICROSCOPE	0	0	1	0	0	0	0	0	0	0	0
	0	0										
1022	PHASE MICROSCOPE	0	0	1	0	0	0	0	0	0	0	0
	0	0										
1023	POLARIZING MICROSCOPE	0	0	1	0	0	0	0	0	0	0	0
	0	0										
1024	IR SPECTROPHOTOMETER	0	0	1	0	0	0	0	0	0	0	0
	0	0										
1025	UV SPECTROPHOTOMETER	0	0	1	0	0	0	0	0	0	0	0
	0	0										
1026	STILL AND STORAGE	0	0	1	0	0	0	0	0	0	0	0
	0	0										
1027	MISC EQUIPMENT	0	0	1	0	0	0	0	0	0	0	0
	0	0										
1028	BENCHWORK AND FURNITURE	0	0	1	0	0	0	0	0	0	0	0
	0	0										
1029	MISC EXPENDABLES	0	0	1	1	1	1	1	1	1	1	1
	0	0										
1030	BOOKS AND PERIODICALS	0	0	1	1	1	1	0	0	0	0	0
	0	0										

101

LINE NO.	PLANNING ITEM	3	4	5	6	7	8	9	10	11	12
	1 2										
JACKSONVILLE SATELLITE											
2010											
1											
EQUIPMENT EXPENDITURES											
523											
1041	STEREOMICROSCOPE 0 0	0	0	848	0	0	0	0	0	0	0
1042	PHASE MICROSCOPE 0 0	0	0	3180	0	0	0	0	0	0	0
1043	POLARIZING MICROSCOPE 0 0	0	0	2650	0	0	0	0	0	0	0
1044	IR SPECTROPHOTOMETER 0 0	0	0	12720	0	0	0	0	0	0	0
1045	UV SPECTROPHOTOMETER 0 0	0	0	12720	0	0	0	0	0	0	0
1046	STILL AND STORAGE 0 0	0	0	848	0	0	0	0	0	0	0
1047	MISC EQUIPMENT 0 0	0	0	3180	0	0	0	0	0	0	0
1048	BENCHWORK AND FURNITURE 0 0	0	0	12720	0	0	0	0	0	0	0
1049	MISC EXPENDABLES 0 0	0	0	1325	1325	1325	1325	1405	1405	1405	1405
1050	BOOKS AND PERIODICALS 0 0	0	0	530	530	530	530	0	0	0	0
1055	CRIME SCENE GEAR 0.0 0.0	0.0	0.0	1855.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0

102

LINE NO.	PLANNING ITEM	3	4	5	6	7	8	9	10	11	12
	1 2										
JACKSONVILLE SATELLITE											
2010											
1											
PERSONNEL STAFFING PLAN											
524											
2011	CRIMINALIST II 0 0	0	0	1	1	1	1	1	1	1	1
2012	CRIMINALIST I 0 0	0	0	1	1	1	1	1	1	1	1
2013	CLERK STENOGRAPHER 0 0	0	0	1	1	1	1	1	1	1	1
PERSONNEL SALARY COSTS											
526											
2015	CRIMINALIST II 0 0	0	0	3842	3842	3842	3842	4074	4074	4074	4074
2016	CRIMINALIST I 0 0	0	0	3180	3180	3180	3180	3372	3372	3372	3372
2017	CLERK STENOGRAPHER 0 0	0	0	1590	1590	1590	1590	1686	1686	1686	1686

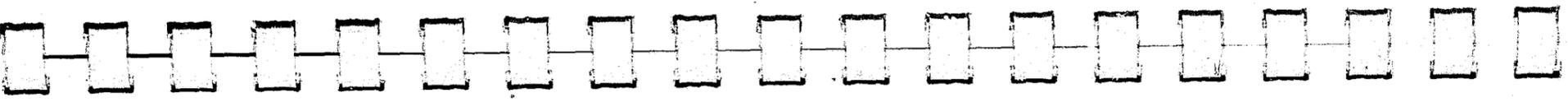
103

.....
LINE
NO. PLANNING ITEM
1 2 3 4 5 6 7 8 9 10 11 12
.....

2010 JACKSONVILLE SATELLITE

1												
530												
	SUMMARY											
1053	EQUIPMENT PURCHASE COST	0	0	0	52576	1855	1855	1855	1405	1405	1405	1405
1052	EQUIPMENT MAINTENANCE	0	0	0	0	0	0	0	1124	1124	1124	1124
1054	SAT LAB EQUIP COST	0	0	0	52576	1855	1855	1855	2529	2529	2529	2529
1												
1060	YEAR 1 ANNUAL EQUIP COST	0	0	0	0	0	0	0	0	0	0	0
1063	YEAR 2 ANNUAL EQUIP COST	0	0	0	0	0	0	58141	0	0	0	0
1066	YEAR 3 ANNUAL EQUIP COST	0	0	0	0	0	0	0	0	0	0	10116
1												
1069	TOTAL 3 YEAR EQUIP COST	0	0	0	0	0	0	0	0	0	0	68257
1												
1												
2014	TOT SALARY PAID EA QR	0	0	0	8612	8612	8612	8612	9132	9132	9132	9132
2018	FRINGE BENEFITS COSTS	0	0	0	1292	1292	1292	1292	1370	1370	1370	1370

104



.....
LINE
NO. PLANNING ITEM
1 2 3 4 5 6 7 8 9 10 11 12
.....

1051	TRAVEL, STAFF TRAINING	0	0	0	1325	1325	1325	1325	1405	1405	1405	1405
1												
2019	JACKSONVILLE PERS COST	0	0	0	11229	11229	11229	11229	11907	11907	11907	11907
1												
2020	YEAR 1 PERSONNEL COSTS	0	0	0	0	0	0	0	0	0	0	0
2022	YEAR 2 PERSONNEL COSTS	0	0	0	0	0	0	44917	0	0	0	0
2025	YEAR 3 PERSONNEL COSTS	0	0	0	0	0	0	0	0	0	0	47629
1												
2035	TOT 3 YR PERSONNEL COSTS	0	0	0	0	0	0	0	0	0	0	92547
2029	YEAR 1 OPERATING COSTS	0	0	0	0	0	0	0	0	0	0	0
2030	YEAR 2 OPERATING COSTS	0	0	0	0	0	0	103058	0	0	0	0
2031	YEAR 3 OPERATING COSTS	0	0	0	0	0	0	0	0	0	0	57745
1												
2032	TOT 3 YR OPERATING COST	0	0	0	0	0	0	0	0	0	0	160804
2065												
	EVIDENCE TRANSIT SYSTEM											
2082	VEHICLE PURCHASE	0	0	0	4000	0	0	0	0	0	0	0
2083	VEHICLE MAINTENANCE	0	0	300	304	308	311	315	319	323	327	331
2084	VEHICLE DRIVER	0	0	1800	1822	1845	1868	1892	1915	1939	1964	1988
2085	TOT COST - SETS	0	0	2100	6126	2153	2180	2207	2235	2263	2291	2319

105

FDLE CRIME LAB SYSTEM
ACQUISITION PLAN

SYSTEM III REQUIREMENTS

OCT. 15, 1972
RUN 1

106

LINE NO.	PLANNING ITEM	1	2	3	4	5	6	7	8	9	10	11	12
2038													
	PENSACOLA SATELLITE												
521													
	EQUIP ACQUISITION PLAN												
1621	STEREOMICROSCOPE	0	0	0	0	0	0	0	0	1	0	0	0
1622	PHASE MICROSCOPE	0	0	0	0	0	0	0	0	1	0	0	0
1623	POLARIZING MICROSCOPE	0	0	0	0	0	0	0	0	1	0	0	0
1624	IR SPECTROPHOTOMETER	0	0	0	0	0	0	0	0	1	0	0	0
1625	UV SPECTROPHOTOMETER	0	0	0	0	0	0	0	0	1	0	0	0
1626	STILL AND STORAGE	0	0	0	0	0	0	0	0	1	0	0	0
1627	MISC EQUIPMENT	0	0	0	0	0	0	0	0	1	0	0	0
1628	BENCHWORK AND FURNITURE	0	0	0	0	0	0	0	0	1	0	0	0
1629	MISC EXPENDABLES	0	0	0	0	0	0	0	0	1	1	1	1
1630	BOOKS AND PERIODICALS	0	0	0	0	0	0	0	0	1	1	1	1

FDLE CRIME LAB SYSTEM
ACQUISITION PLAN

SYSTEM III REQUIREMENTS

OCT. 15, 1972
RUN 1

107

LINE NO.	PLANNING ITEM	1	2	3	4	5	6	7	8	9	10	11	12
2038													
	PENSACOLA SATELLITE												
523													
	EQUIPMENT EXPENDITURES												
1641	STEREOMICROSCOPE	0	0	0	0	0	0	0	0	899	0	0	0
1642	PHASE MICROSCOPE	0	0	0	0	0	0	0	0	3372	0	0	0
1643	POLARIZING MICROSCOPE	0	0	0	0	0	0	0	0	2810	0	0	0
1644	IR SPECTROPHOTOMETER	0	0	0	0	0	0	0	0	13488	0	0	0
1645	UV SPECTROPHOTOMETER	0	0	0	0	0	0	0	0	13488	0	0	0
1646	STILL AND STORAGE	0	0	0	0	0	0	0	0	899	0	0	0
1647	MISC EQUIPMENT	0	0	0	0	0	0	0	0	3372	0	0	0
1648	BENCHWORK AND FURNITURE	0	0	0	0	0	0	0	0	13488	0	0	0
1649	MISC EXPENDABLES	0	0	0	0	0	0	0	0	1405	1405	1405	1405
1650	BOOKS AND PERIODICALS	0	0	0	0	0	0	0	0	562	562	562	562
1655	VEHICLE CRIME SCENE GEAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1967.00	0.0	0.0	0.0

LINE NO.	PLANNING ITEM	1	2	3	4	5	6	7	8	9	10	11	12
2038	PENSACOLA SATELLITE												
524	PERSONNEL STAFFING PLAN												
1287	CRIMINALIST II	0	0	0	0	0	0	0	0	1	1	1	1
1288	CRIMINALIST I	0	0	0	0	0	0	0	0	1	1	1	1
1289	CLERK STENOGRAPHER	0	0	0	0	0	0	0	0	1	1	1	1
2038	PENSACOLA SATELLITE												
526	PERSONNEL SALARY COSTS												
1291	CRIMINALIST II	0	0	0	0	0	0	0	0	4074	4074	4074	4074
1292	CRIMINALIST I	0	0	0	0	0	0	0	0	3372	3372	3372	3372
1293	CLERK STENOGRAPHER	0	0	0	0	0	0	0	0	1686	1686	1686	1686

801

LINE NO.	PLANNING ITEM	1	2	3	4	5	6	7	8	9	10	11	12
2038	PENSACOLA SATELLITE												
530	SUMMARY												
1653	EQUIPMENT PURCHASE COST	0	0	0	0	0	0	0	0	55750	1967	1967	1967
1652	EQUIPMENT MAINTENANCE	0	0	0	0	0	0	0	0	0	0	0	0
1654	SYS III SAT LAB EQP CST	0	0	0	0	0	0	0	0	55750	1967	1967	1967
1													
1660	YEAR 1 ANNUAL EQUIP COST	0	0	0	0	0	0	0	0	0	0	0	0
1663	YEAR 2 ANNUAL EQUIP COST	0	0	0	0	0	0	0	0	0	0	0	0
1666	YEAR 3 ANNUAL EQUIP COST	0	0	0	0	0	0	0	0	0	0	0	61651
1													
1669	TOTAL 3 YEAR EQUIP COST	0	0	0	0	0	0	0	0	0	0	0	61651
1													
1													
1290	TOT SALARY PAID EA QR	0	0	0	0	0	0	0	0	9132	9132	9132	9132
1294	FRINGE BENEFITS COSTS	0	0	0	0	0	0	0	0	1370	1370	1370	1370

601

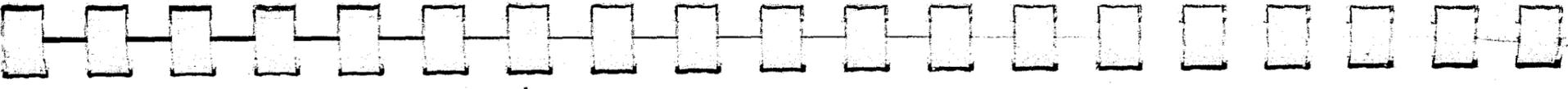
FDLE CRIME LAB SYSTEM
ACQUISITION PLAN

SYSTEM III REQUIREMENTS

OCT. 15, 1972
RUN 1

LINE NO.	PLANNING ITEM	1	2	3	4	5	6	7	8	9	10	11	12
1651	TRAVEL, STAFF TRAINING	0	0	0	0	0	0	0	0	1405	1405	1405	1405
1295	SYS III SAT PERSN CST	0	0	0	0	0	0	0	0	11907	11907	11907	11907
1													
1675	YEAR 1 PERSONNEL COSTS	0	0	0	0	0	0	0	0	0	0	0	0
1678	YEAR 2 PERSONNEL COSTS	0	0	0	0	0	0	0	0	0	0	0	0
1681	YEAR 3 PERSONNEL COSTS	0	0	0	0	0	0	0	0	0	0	0	47629
1													
1684	TOT 3 YR PERSONNEL COSTS	0	0	0	0	0	0	0	0	0	0	0	47629
1													
1													
1687	YEAR 1 OPERATING COSTS	0	0	0	0	0	0	0	0	0	0	0	0
1688	YEAR 2 OPERATING COSTS	0	0	0	0	0	0	0	0	0	0	0	0
1689	YEAR 3 OPERATING COSTS	0	0	0	0	0	0	0	0	0	0	0	109281
1													
1690	TOT 3 YR OPERATING COST	0	0	0	0	0	0	0	0	0	0	0	109281

110



FDLE CRIME LAB SYSTEM
ACQUISITION PLAN

SYSTEM III REQUIREMENTS

OCT. 15, 1972
RUN 1

LINE NO.	PLANNING ITEM	1	2	3	4	5	6	7	8	9	10	11	12
1													
2065	EVIDENCE TRANSIT SYSTEM												
2086	VEHICLE PURCHASE	0	0	0	0	0	0	0	0	4000	0	0	0
2087	VEHICLE MAINTENANCE	0	0	0	0	0	0	0	0	304	308	311	315
2088	VEHICLE DRIVER	0	0	0	0	0	0	0	0	1822	1845	1868	1892
2089	TOT COST - SETS	0	0	0	0	0	0	0	0	6126	2153	2180	2207

111

FDLE CRIME LAB SYSTEM
ACQUISITION PLAN

TALLAHASSEE FACILITY

OCT. 15, 1972
RUN 1

LINE NO.	PLANNING ITEM	1	2	3	4	5	6	7	8	9	10	11	12
TALLAHASSEE FACILITY													
1900													
1													
1901	PROF STAFF PLAN 17	17		11	11	10	10	10	10	10	10	10	10
1													
1902	PROF SALARY COSTS 56228	56228		36383	36383	34725	34725	34725	34725	36463	36463	36463	36463
1905	SUPPORT SALARY COSTS 6000	6000		6000	6000	6300	6300	6300	6300	6600	6600	6600	6600
1906	TOTAL SALARY COSTS 62228	62228		42383	42383	41025	41025	41025	41025	43063	43063	43063	43063
1907	FRINGE BENEFITS COST 9334	9334		6357	6357	6154	6154	6154	6154	6459	6459	6459	6459
1908	STAFF TRAINING 1010	1021		1031	1042	1052	1063	1074	1085	1096	1107	1119	1130
1909	TOT SALARY RELATED 72572	72582		49771	49782	48231	48242	48253	48264	50618	50629	50641	50652
1													
1910	EQUIP REPAIR + REPLACE 3750	3750		3750	3750	3750	3750	3750	3750	3750	3750	3750	3750
1													
EVIDENCE TRANSIT SYSTEM													
2065													
2066	VEHICLE PURCHASE 4000	0		0	0	0	0	0	0	0	0	0	0
2067	VEHICLE MAINTENANCE 304	308		311	315	319	323	327	331	335	340	344	348
2068	VEHICLE DRIVER 1822	1845		1868	1892	1915	1939	1964	1988	2013	2038	2064	2089
2069	TOT COST-SETS 6126	2153		2180	2207	2235	2263	2291	2319	2348	2378	2407	2438
1													
1911	TOT OPERATING COST 82448	78485		55701	55738	54216	54254	54294	54333	56716	56757	56798	56840

112

FDLE CRIME LAB SYSTEM
ACQUISITION PLAN

OPTIONAL LAB REQUIREMENT

OCT. 15, 1972
RUN 1

LINE NO.	PLANNING ITEM	1	2	3	4	5	6	7	8	9	10	11	12
OPTIONAL REGIONAL LAB													
2050													
1													
2051	EQUIPMENT PURCHASE COST 0	0		0	0	0	0	0	0	100000	8000	56000	8500
2052	EQUIP MAINTENANCE COST 0	0		0	0	0	0	0	0	5000	5000	5000	5000
2053	TOTAL EQUIP COST 0	0		0	0	0	0	0	0	105000	13000	61000	13500
2054	YEAR 3 EQUIP COST 0	0		0	0	0	0	0	0	0	0	0	172500
1													
2055	TOT SAL PAID BY QR 0	0		0	0	0	0	0	0	65000	65000	82000	82000
2056	FRINGE BENEFITS COSTS 0	0		0	0	0	0	0	0	9750	9750	12300	12300
2057	TRAVEL STAFF TRAINING 0	0		0	0	0	0	0	0	2500	2500	2500	2500
2058	RECRUITING COSTS 0	0		0	0	0	0	2000	2000	500	500	200	200
2059	PERSONNEL TRANSFER COST 0	0		0	0	0	0	0	5000	0	0	0	0
1													
2060	TOT PERSONNEL COST BY QR 0	0		0	0	0	0	2000	7000	77750	77750	97000	97000
2061	YEAR 3 PERSONNEL COST 0	0		0	0	0	0	0	0	0	0	0	358500
2063	YEAR 3 OPERATING COST 0	0		0	0	0	0	0	0	0	0	0	531000

113

FDLE CRIME LAB SYSTEM
ACQUISITION PLAN

TOTAL CONFIGURATION

OCT. 15, 1972
RUN

LINE NO.	PLANNING ITEM											
	1	2	3	4	5	6	7	8	9	10	11	12
.....												
1800	TOTAL CONFIGURATION											
530	SUMMARY											
1												
1												
1801	EQUIPMENT PURCHASE COST											
	49600.00	1750.00	95350.00	9050.00	105947.00	10918.00	36464.00	10918.00	166765.00	20982.00	68982.00	21482.00
1802	EQUIP MAINTENANCE COST											
	8750.00	8750.00	8750.00	8750.00	9872.00	9872.00	9872.00	10996.00	16371.00	16371.00	16371.00	16371.00
1803	TOTAL QRTLQ EQUIP COST											
	58350.00	10500.00	104100.00	17800.00	115819.00	20790.00	46336.00	21914.00	183136.00	37353.00	85353.00	37853.00
1												
1804	YEAR 1 ANNUAL EQUIP COST											
	0.0	0.0	0.0	190750.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1805	YEAR 2 ANNUAL EQUIP COST											
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	204859.00	0.0	0.0	0.0	0.0
1806	YEAR 3 ANNUAL EQUIP COST											
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	343695.00
1												
1807	TOTAL 3 YEAR EQUIP COST											
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	739304.00
1												
1808	TOT SALARY PAID EA QR											
	135348.00	135348.00	156503.00	156503.00	181961.00	181961.00	181961.00	181961.00	273070.00	273070.00	290070.00	290070.00

114

FDLE CRIME LAB SYSTEM
ACQUISITION PLAN

TOTAL CONFIGURATION

OCT. 15, 1972
RUN

LINE NO.	PLANNING ITEM											
	1	2	3	4	5	6	7	8	9	10	11	12
.....												
1809	FRINGE BENEFITS COST											
	20302.00	20302.00	23475.00	23475.00	27294.00	27294.00	27294.00	27294.00	40960.00	40960.00	43511.00	43511.00
1810	TRAVEL, STAFF TRAINING											
	3010.00	3021.00	5031.00	5042.00	5292.00	5303.00	9434.00	14445.00	10840.00	10851.00	10563.00	10574.00
1811	TOT PERSONNEL COST/QR											
	158660.00	158660.00	185009.00	185020.00	214547.00	214558.00	218689.00	223700.00	324870.00	324881.00	344144.00	344155.00
1												
1812	YEAR 1 PERSONNEL COST											
	0.0	0.0	0.0	687349.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1813	YEAR 2 PERSONNEL COST											
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	871494.00	0.0	0.0	0.0	0.0
1814	YEAR 3 PERSONNEL COST											
	0	0	0	0	0	0	0	0	0	0	0	1338050
1												
1815	TOT 3 YR PERSONNEL COST											
	0	0	0	0	0	0	0	0	0	0	0	2896893
1												
1816	YEAR 1 OPERATING COSTS											
	0.0	0.0	0.0	878099.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1817	YEAR 2 OPERATING COSTS											
	0	0	0	0	0	0	0	1076353	0	0	0	0
1818	YEAR 3 OPERATING COSTS											
	0	0	0	0	0	0	0	0	0	0	0	1681745
1												
1819	TOT 3 YR OPERATING COSTS											
	0	0	0	0	0	0	0	0	0	0	0	3636197

115

LINE NO.	PLANNING ITEM	1	2	3	4	5	6	7	8	9	10	11	12
1	2097 TOT COST-SETS	24505.00	10711.70	1345.00	13081.00	17244.00	13410.00	13577.00	15847.00	20045.00	16246.00	16449.00	16655.00
1	2099 TOT 3 YR SETS COST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	192616.00
1	2100 TOT 3 YR OPER + SETS CST	0	0	0	0	0	0	0	0	0	0	0	3826613

Prices shown for equipment are for standard line hardware with no reference to particular brand names or model. Actual costs could, therefore, deviate substantially from that shown if individual preferences and requirements dictate specific items of equipment. Likewise, personnel costs are consistent with comparable salaries paid in other laboratories and related industries around the country adjusted for the Florida labor market. Availability of manpower in a given skill category will, of course, ultimately determine salary and related personnel costs.

The line number preceding each planning item is generated by a computer program and is useful for reference purposes.

Cost Summary and Analysis

Although no attempt will be made to reference each line in the planning model, several summary points are worthy of note concerning the overall plan. Personnel costs (salary and related) are approximately 80-85 percent of total operating costs (personnel plus equipment) once a laboratory reaches full service. (Compare for example, line 514 and line 519.) The cost to support a satellite laboratory averages about one-fifth that to sustain a regional lab (see, for example, line 489 compared with line 357).

Total cost to fund the system the first year is \$878,099 (line 1816). The second year cost is \$1,076,353 (line 1817), and the third year cost is close to \$1.7 million (line 1818). Thereafter, annual costs to sustain the system at this level would remain close to this figure, increasing only according to inflationary cost spirals.

In anticipation of specific funding requests which might result from implementation of this plan, it should be recognized that several elements of criminalistics now operating in the state could significantly alter start-up costs. Further, it should be noted that no costs have been budgeted for building new facilities or renovation of existing structures to meet floor space requirements (this chapter) for the laboratories. Construction costs will likely comprise a significant portion of initial costs, the exact cost dependent upon the extent of new building requirements and the time phasing of the implementation plan.

Floor Space Requirements

Figure 31 provides general guidelines for obtaining a physical facility adequate to house a regional laboratory. The requirements shown are conservative; additional floor space, were it available, could be effectively utilized. Floor space needs are shown for four basic modules as

well as for administration requirements and evidence storage. The floor space indicated for individual components (e.g., 1,500 square feet for microbiological/trace material) represents total requirements for that particular function and does not necessarily depict a need for a single room having the requisite area. Many of the services of the laboratory can be carried out more efficiently if the total available area is partitioned into specialized work units.

Chemical Analysis	=	1,200 square feet
Microbiological/Trace Material	=	1,500 square feet
Physical Analysis/Marks-Impressions	=	1,200 square feet
Documents	=	<u>1,200</u> square feet
Subtotal		5,100 square feet
Administrative and Storage (minimum)		<u>1,000</u> square feet
Total Floor Space Requirements		<u><u>6,100</u></u> square feet

Figure 31 - Floor Space Requirements, a Florida Regional Crime Laboratory.

Expected Annual Case Load

Figure 32 provides planning estimates of the expected annual case load capability of a regional laboratory operating in the state system and having attained full-service status. Factors used are approximate only and should be used as planning guidelines and not as performance standards. The number and skill level of personnel are consistent with that depicted in the computer planning model in this chapter. Actual case load per day capability may vary substantially from that shown in accordance with individual case characteristics. The cases per day factor likewise varies with the complexity of the particular case. In general, however, advanced criminalists average fewer cases per day due to the complexity of cases in which they become involved and their additional supervisory responsibilities.

Skill Level	Number Personnel	Type Cases	Capability Cases/Day	No. Days Available			Expected Annual Case Load Capability ^{f/}
				Total	Bench Work	Court Testimony	
Criminalist III	2	Advanced Criminalistics	0.50	245	208 ^{b/}	37	208
Criminalist II	2	Intermediate Criminalistics	0.75	245	220 ^{c/}	25	330
Criminalist I	4	Drug, General Criminalistics	5.5 ^{a/}	245	233 ^{d/}	12	5126 ^{e/}
Comp Micrographer	2	Tool Marks, Impressions	1.00	245	220 ^{c/}	25	440
Documents Specialist	1	Document Examination	0.75	245	208 ^{b/}	37	156

- a/ Assumes 10 cases/day drugs, 1 case/day criminalistics and case load divided evenly.
- b/ Assumes 15 percent court testimony.
- c/ Assumes 10 percent court testimony.
- d/ Assumes 5 percent court testimony.
- e/ Calculated as (number of personnel) x (cases/day) x (bench work days).
- f/ Includes both drugs and criminalistics cases.

Figure 32 - Expected Annual Case Load, Florida Regional Crime Laboratory

Under the assumptions and constraints stated in Figure 32, the expected output from one regional lab would be 3,752 cases (1,600 criminalistics, 2,152 drugs). Thus, the three regional labs in the state could be expected to contribute 11,256 cases. The satellite labs, upon reaching their full complement, will consist of three analysts, each with a capability of 10 cases per day. Assuming 233 days available for benchwork annually per analyst indicates that 6,990 cases could be processed by each satellite or that 18,246 drug cases could be output from the three satellite labs. Assuming that four lab analysts at the Tallahassee facility could operate at the 0.75 cases per day level, another 660 cases would be handled by the system. Therefore, expected annual case load capability of the recommended system is 30,162 cases. The CPO equivalent is 2.5, a realistic state goal in view of the current 1.4 CPO level.

Satellite Lab Capabilities

Although the primary mission of the satellite labs in the beginning is to provide drug and narcotics analyses, their potential capability extends into areas of true criminalistics as well. Figure 33 depicts the equipment and skill levels recommended for satellite labs in Florida and provides examples of the applications of equipment items and skill levels to both drug analyses and criminalistics. Note that with a nucleus of six major pieces of equipment and personnel at the BS Chemist level, many laboratory analyses in the functional categories of serology, physical matches, and comparisons are possible, in addition to testing narcotics and dangerous drugs. While limited unstaffed equipment dedication to drug work may impose constraints on the extent of involvement of the satellite lab in true criminalistics cases, the potential for expansion exists from the very onset of operations. Dedicated and imaginative personnel, effective administration, and expanded operating budgets will largely determine the rate at which the satellite lab achieves full-service status.

Guidelines for expansion of the satellite lab are obtained from the priorities established for planned growth of the regional labs. In the Phased Implementation Plan just presented, equipment and personnel requirements are depicted on the basis of an early, intermediate, and late criminalistics capability. Accordingly, high priority items such as stereomicroscopes are added at the beginning while a low priority service area such as documents examinations dictate that a documents camera not be added until late in the buildup period. (After the first full year of operation in each regional lab.) Corresponding personnel are likewise phased in, according to the priority of the particular function(s) which they are to support.



Primary Service	Equipment	Skill Level	Application	
			Drug Analysis	Criminalistics
Identify* and quantify samples of heroin, marijuana; barbiturates, amphetamines, cocaine, hallucinogens, methadone	Thin-layer chromatograph	BS Chemist	Separate desired evidence material from transporting medium, e.g., small quantities of a hallucinogen on sugar cube. Can also be used to separate drugs.	Observe agglutination of blood cells.
	Glassware		Extraction of solutions.	
	IR spectrophotometer	BS Chemist	Examine structural characteristics of unknowns; differentiate between closely alloyed compounds.	Species determination of hairs, general comparison of hairs and fibers.
	UV spectrophotometer	BS Chemist	Used for both identification and quantification of drug samples. Quantity of absorbent in solution determined by absorption curves.	
	Analytical balance, rapid readout		Determines quantity of drug submitted to lab	Preparation of test reagent solutions
	Polarizing microscope	BS Chemist	Identify the geometry of crystal patterns in drugs, determine refractive index of sample according to axes of crystal	Compare glass fragments by their refractive index, hair and fiber matches by scale count, medullary characteristics, refractive index; safe insulation comparisons and eliminations; observe agglutination of blood cells; semen detection; preliminary typing of physiological fluids.
	Benchwork: two hoods eight lab benches 2 sink benches		Provides suitable work areas for testing means of exhausting fumes and refuse disposal.	
	Storage: two dry and wet cabinets		Assures the safe keeping of drug evidence samples both before and after processing	
	Centrifuge	High school plus	Separate suspended blood cells, sperm in liquid samples	
	Hardware (hot plate, ultra-violet lamp, heating lamp, drying oven)		Prepares evidence for processing; observation of color changes in spot tests.	
Reference material	BS Chemist	Comparison of spectrograms of samples with those of knowns in reference books.		
Literature	BS Chemist	Maintain contact with researchers in related technical fields.		
Expendables		Chemicals and various materials consumed during laboratory testing procedures.		
Maintenance				

* Does not include capability to extract drugs from physiological materials.

Figure 33 - Satellite Laboratory Capabilities; Equipment and Personnel by Skill Level

In establishing the plan for expansion of an individual satellite lab into a full-service operation it may be necessary to modify the regional plan to the extent that the planning horizon is expanded or else scaled down. Factors which will exert a major influence on the ultimate decision but which are unpredictable at the present, include the then current demand for drug analyses imposed upon the lab in question and around the state in general (and, hence, the availability of personnel and equipment dedicated to drug work) and the status of implementation of the phased criminalistics plan elsewhere in the state. Regardless of the time frame involved, priorities established in the Phased Implementation Plan should be maintained for expansion of both the regional and satellite lab components.

A 6-Year Criminalistics Plan

The Phased Implementation Plan found in this report presents criminalistics requirements for the state by quarterly increments for a 3-year planning horizon. Since currently no uniform state criminalistics system exists, per se, such a level of detail and time frame seems warranted so as to provide a vehicle to adequately monitor the implementation of the recommended system during the initial stages. This section of the analysis focuses on possible expansion of the criminalistics system beyond the level of the basic 3-year plan. The level of detail addressed, however, is not as specific as that shown in the earlier plan. Moreover, since personnel costs represent over 80 percent of the total operating costs of the criminalistics system (see "Cost Summary and Analysis" section), and since qualified personnel will likely represent the scarcest commodity, attention is given to establishing an overall state requirement for trained criminalists. No attempt is made to assign examiners to specific geographical areas within the state since the requirement for additional personnel will vary according to the developmental status of each lab upon completion of the 3-year plan.

A 6-year plan projecting personnel requirements during the period 1973-1978 is shown in Figure 34. The basis for these planning items includes the following assumptions:

- (1) Population projections for the state through 1978.
- (2) Increases in the cases as per officer ratio (CPO) as discussed earlier in the report, due to increased evidence generation on the part of user agencies as the impact of the criminalistics training programs, evidence transit system (if adopted) and general acceptance of the crime laboratory as an element of the criminal justice system, is felt. Implementation of SETS would probably accelerate attainment of CPO goals in concert with other factors as well; however, it is impossible to develop apriori measures of this effect.



LINE NO.	PLANNING ITEM	SIX-YEAR PHASED PLAN						1978
		1973	1974	1975	1976	1977	1978	
10	POPULATION PROJ (THOU)	7403.68	7592.96	7782.25	7971.53	8160.81	8350.10	
12	CPO RATIO	2.17	2.33	2.50	2.67	2.83	3.00	
11	UNIFORMED OFFICERS RQD	12364	12680	12996	13312	13629	13945	
14	EXPECTED CASES-TO-LAB	26789	29587	32491	35500	38614	41834	
15	NUMBER OF EXAMINERS RQD	36	41	52	58	63	68	

FDLE SIX YEAR PLAN

SIX-YEAR PHASED PLAN

PUN NOV. 21, 1972

Figure 34 - Florida Criminalistics System - A 6-Year Phased Plan

(3) An assumption that the present number of sworn officers in the state is adequate for the population served and the current officers/population ratio will be maintained throughout the planning period.

(4) The mix of laboratory cases (largely drugs vs. nondrug cases) will not change appreciably. (The number of examiners required is based on an average of 615 cases per examiner annually. This figure is consistent with that discussed above in "Expected Annual Case Load" and assumes a relatively large proportion of drug cases to total case load. A decline in the proportion of drug cases to lab with the total cases-to-lab as shown in line 14, Figure 34, would obviously increase the requirement for examiners in the lab.)

The number of examiners indicated for 1973-1975 is in agreement with that depicted earlier in the Phased Implementation Plan. The greatest increase occurs during the first half of the 6-year plan; beyond 1975 an annual increase in the total number of examiners for the state is indicated although the rate of buildup is somewhat diminished. The requirement for 68 examiners in 1978 achieves a goal of 3.0 cases-to-lab per officer in the state.

The 68 criminalists indicated for the state in 1978 represents a requirement for 16 additional criminalists beyond that originally projected in the detailed 3-year plan by end of 1975. These additional criminalists are to be assigned according to areas of greatest need at the time they are added to the state system. Possibilities for their assignment include:

(1) Assignment to satellite laboratories expanding to achieve full-service status.

(2) Assignment to regional laboratories in instances in which the work load demands and travel time requirements exceed the capabilities of the basic regional lab as originally recommended in this report.

(3) Assignment to laboratories newly created in response to new demands for criminalistics services.

GUIDELINES FOR MANAGEMENT OF THE CRIME LABORATORY SYSTEM

The creation of a well-endowed criminalistics system will not assure a high level of service unless policies reflect an understanding of proper management philosophy. Critical areas of concern are (1) personnel, (2) quality control, (3) efficient and effective utilization of resources, (4) client relationship, and (5) management and evaluation of the crime laboratory system. Suggestions for each of these are discussed below.

Personnel Management

The impulse to establish a crime laboratory may move a department to recruit or assign personnel with substandard education and training. Moreover, the decisions that must be made in the evaluation of evidence require staff of unimpeachable backgrounds. In addition, premature exposure of laboratory personnel to the role of expert witness may cause serious harm to the stature of the individual and the system, not to mention the harm to the defendant. It is therefore imperative that personnel examining and evaluating evidence in the State of Florida be selected with a view to the responsible and sensitive role in which they will be engaged in the criminal justice system. Following a suitable selection, training of a variety of sorts should be undertaken depending on the recruitment material and the ultimate goal for the individual. Final accreditation for court should insure that the trainee is capable of that judgment and skill that will guarantee that no injustice will result from incompetence or ignorance of proper procedures. Where a laboratory is to be established and supervised outside of the proposed state system, the state should establish minimum standards of performance and education and should include such outside agencies in the quality control system.

Once established, a criminalistic facility becomes people intensive, that is, resources for production are represented in the effort and skill of the staff. The immediate evidence of this is in the ratio of salaries to other operational costs which will be heavily weighted toward personnel costs. Less tangible is the accumulation of knowledge and experience represented by the staff, collectively and individually. Nurturing and preserving this resource is one of the primary responsibilities of management. Furthermore, criminalistics is not a static endeavor. Changes in science, even changes in criminal modus operandi, require new and often imaginative solutions to problems.

The best utilization of personnel will be found where morale is high. This requires that salaries at any time remain competitive with other crime laboratories and with job opportunities elsewhere in science. In addition, staff must feel that reasonable professional ambitions can be realized. A system of incentive promotional steps must be available.

A program of enriching educational opportunities should provide for the intellectual growth of the staff. These might take the form of support for (a) ongoing education while working; (b) sponsorship at criminalistics related workshops (for example industry workshops in gas chromatography, spectroscopy or thin-layer chromatography); or (c) sabbatical leaves to pursue training and education related to work responsibility. Allocation of budget in this area should be on a par with equipment maintenance allocation.

New problems or new views to the handling of old problems demand some sort of research effort. Experience has shown that relevant solutions are not always produced by scientists, outside the criminalistics arena. The research movement already begun in Florida should be continued and expanded. This expansion should take a variety of forms. In addition to full-time research positions, criminalistics staff should be given some amount of time to explore solutions to problems arising out of their efforts to analyze and evaluate physical evidence. The division of time should be flexible enough to apply to the problem need. Some research problems may be handled parallel with daily work (a released portion of each day) others may require allocated blocks of time. In either instance, time that is somewhat inviolate should be available for research. Such effort can contribute much to the effectiveness and efficiency of the service, as well as serving as a morale booster for staff. Properly employed research should make Florida one of the leading resources in criminalistics.

Quality Control

All industry is concerned with zero defect. The consequences of error in criminalistics are certainly as great as they are in any other endeavor. A "missed" suspect who victimizes again is as serious as a wrong analysis that jeopardizes an innocent suspect. Either contingency can be minimized if management uses some system of quality control. Although a novel idea in crime laboratories, there is no valid reason to exclude the work of the criminalist from review and checks. Reliance on court action to discover error is unrealistic and excludes from consideration the error of "missed" detections.

A procedure should be developed whereby management, at their control, regularly submits referee specimens for analysis to various segments of the system. Control specimens should be both open and blind. The use of quality controls should alert management to training and research needs. Hopefully, disciplinary action would be rare or unnecessary.

A second component of a quality control system would be the development of a pool of standards in a variety of areas such as hair, fibers, paints, bullets, etc., that might provide the basis for day-to-day reference and research.

Preparation of control specimens should be the responsibility of that segment of the system embracing research and management.

Efficient and Effective Utilization of Resources

As the system expands and requests for service increase, management should keep a careful inventory of skills and unit utilization. A good record system will provide work load data and effectiveness indices. By this means management can plan recruitment, training, equipment acquisition and research needs.

Economic use of high price facilities and equipment may require some move in the direction of automated analyses. Computer programmed instrumentation can maximize the use of staff where routine analyses must be performed. In addition, the accuracy and credibility of some methods can be improved by the use of minicomputers. A further economy and improvement in service may be realized through the use of multiple shifts. This is particularly possible in areas of high volume, routine examinations.

Service to investigation often demands timely, rapid response to inquiries. Maintenance of a "firehouse," emergency pressure for long periods of time is not possible without a breakdown in morale. Where the need justifies overtime this extra effort should be compensated by incentive overtime pay. The alternative of "time off" for scarce staff is not realistic. Properly managed, incentive pay can improve the output of the criminalistic system and assure a greater utilization by user agencies.

As new technology shows potential utilization in criminalistics, ways of exploring its use should be open to criminalistic management. In some instances, leasing of equipment may be the most effective way to acquire "hands on experience." In others it may be more expedient to contract for evaluation studies. Exploratory purchases may be the least desirable approach since an aborted idea may leave the system with an expensive "white elephant." Criminalistics should not be the "last to know" about available help. The interval between idea and implementation is often too long, at best. With the accelerated expansion of knowledge, criminalistics must guard against obsolescence.

Client Relationship

The Florida State Criminalistics System is intended to provide service to all duly constituted law enforcement agencies in the state. Realism requires that the various ethical and legal goals of each agency be recognized in the way in which service is rendered. Even-handed treatment is the key to good rapport with client agencies. No agency should be given the feeling that its problems are of secondary importance to the ongoing needs of some other agency. Where decisions of response priority must be made, and just users will recognize the hierarchy of crimes and their solution, criminalistic management must be certain that all effected parties are aware of the status of matters.

When results of analyses are transmitted, reports should go to the submitting agency only, unless the agency directs otherwise. Information "leaked" to another agency resulting in a "stolen" arrest is fatal to ongoing relations with the first client. At no time should the criminalistics system be the initial source of news, unless agreed to by the submitting agency. Ideally, the criminalistic system should function as though its entire capability were housed in the client agency, no matter what size. Where abuse of the product of criminalistic effort or any other dysfunction exists, the problem should be resolved by management through training and other effective measures.

Experience has shown that management shares a large responsibility for the success of criminalistics enterprises. Whether this success is the result of a charismatic leader or a succession of good managers, the underlying philosophy that "gets things done" is probably the key to an effective crime laboratory operation.

Management and Evaluation of the Crime Laboratory System

The expansion of the crime laboratory system for the State of Florida will represent a significant investment in equipment, facilities and personnel. This investment will be made with the expectation that it will increase the involvement of the crime laboratory in serious crime cases in Florida. It also assumes positive contribution to law enforcement by increasing clearance and conviction rates.

It will be a simple matter to obtain sufficient work to keep each element of the state crime laboratory system fully occupied. Criminalists, like other researchers, have a tendency to expand the problem to fill the available time. Often, it is the pressure of other cases or a time deadline which determines how many examinations are "enough" to prove the fact. The real problem in managing the crime laboratory system will be to insure that the laboratory resources are being expended where they are needed and

will do the most good. It is not enough that the crime laboratory examiners are busy responding to requests by police departments. Eventually, there must be a sound basis for judgment as to the impact the investment in crime laboratory support has had on the law enforcement and criminal justice system of Florida.

Florida has an excellent opportunity to be one of the pioneers in establishing measures of effectiveness of the crime laboratory as a part of the development of their statewide crime laboratory system. While there may be some disagreement as to what are appropriate measures of effectiveness of the various elements of the law enforcement and criminal justice system in general, and the crime laboratory in particular; there is little question that such judgments are best made by a careful analysis of available fact and data, rather than relying on emotion and recall. To this end, it is highly advisable that a system of record keeping and data collection be established within the crime laboratory system which will support such factual evaluations. Needless to say, this system should yield the maximum information possible, while generating minimum interference with the productive work of the crime laboratories.

The crime laboratory record system can provide the basis for internal management of the professional staff, work load analysis, equipment utilization analysis, distributions of type cases to the laboratory (including seasonal variations and department of origin), etc.

Publications within law enforcement circles of information concerning use of the laboratory by police departments, examples of the contribution of the laboratory to apprehension of suspects, indictment, or court testimony would tend to encourage increased use of the laboratory by all law enforcement officers, and would rapidly increase the cases per officer (CPO) average. The laboratory record system could provide the basis for such a publication.

The exchange of information between the laboratory system, investigators, prosecutors, and the judiciary, should provide the basis for factual evaluation of the contribution of the crime laboratory at various echelons of the law enforcement and criminal justice system. A measure of the effectiveness of the crime laboratory can thus be obtained.

This study has recommended a state crime laboratory system and that recommendation presupposes, professional cooperation and exchange of information between all of the crime laboratories operating within the state. Similarly, it would appear advantageous for the same record and data keeping system to be employed by all crime laboratories in the state so as to provide a basis on which to allocate funds for the continued expansion of the crime laboratory support.

APPENDIX A

A SUGGESTED CRIME SCENE
SEARCH TRAINING PROGRAM

DAY/TIME

SUBJECT

Monday

0800 - 0900 Introduction, Orientation, Report Forms
 1000 - 1200 Crime Scene Photography
 1300 - 1700 Crime Scene Photography

Tuesday

0800 - 0900 Sketching the Crime Scene
 0900 - 1200 Latent Prints
 1300 - 1600 Casting Technique (Plaster)
 1600 - 1700 Casting Technique (Silicone)

Wednesday

0800 - 0900 Basic Concepts Concerning Trace Evidence
 0900 - 1030 Physiological Fluids and Drugs
 1030 - 1200 Hairs, Fibers, Paint, Glass
 1300 - 1500 Firearms and Toolmarks
 1500 - 1600 Report Writing, Note Taking
 1600 - 1700 General Review (Photography, Casting and Fingerprints)

DAY/TIME

SUBJECT

Thursday

0800 - 1700 Crime Scene Investigations--Practical Exercises:
 Burglary Scene
 Homicide Scene
 Auto Scene

Friday

0800 - 1200 Critique of Exercises and Practical Work
 1300 - 1700 Open Time (For Assignment to Above or New Subject Areas)

There is, of course, nothing that constrains a training program of this sort to precisely 40 hours; however, that number is considered to be minimum.

In a course of this type, emphasis must naturally be placed on practical work. However, there should also be provision for the course to mesh with a program of in-service training. The success of in-service crime scene training is primarily dependent on the amount of command emphasis placed on it. However, a series of training bulletins published by the Florida Department of Law Enforcement and particular provisions made for officers who graduate from the resident crime scene search course to perform photographic exercises would greatly enhance in-service training. In Appendix B is a suggested list of equipment that is considered as minimal but adequate to allow performance of competent, crime scene searches. The list shows equipment that is considered essential and some other items that could be added as local conditions may dictate. The equipment is organized into four kits: camera, evidence collection, casting, and fingerprint. The equipment shown in the list as minimum essential is estimated to have the following approximate costs:

Camera Kit	\$500
Casting Kit	100
Evidence Kit	110
Fingerprint	<u>75</u>
Total	\$785

It is likely that the equipment can be obtained for somewhat less than the estimated costs shown; however, the estimates anticipate good quality and some costs for special containerization.

The requirements for resources posed by a crime scene training program can easily become competitive with the needs of the crime laboratory itself. This competition is most likely to develop in Florida if the expansion of the crime laboratories and the development of the crime scene training program are treated separately, instead of as integral parts of the same system. It is obvious that what is needed to expand the criminalistics system in Florida is a far higher input of cases to the laboratory than has heretofore been experienced, coupled with a greatly expanded laboratory capability that is organized on a regional basis. This is, of course, the objective of the training program described above.



APPENDIX B

SUGGESTED EQUIPMENT FOR CRIME SCENE SEARCH

The equipment will be organized into four kits: camera, fingerprint, casting and evidence collection. The object is for each kit to be as handy and portable as possible.

<u>Item</u>	<u>Unit</u>	<u>Number</u>
<u>Camera Kit</u>		
4 x 5 in. Speed Graphic with solenoid flash	each	1
Adapter for fingerprint photography for above	each	1
4 x 5 plate holders	each	8
Flood lamp	each	2
Tripod for flood lamp	each	2
Tripod for camera	each	1
Flashbulbs	box (1 doz.)	2
Solid 6 in. rule	each	1
Adhesive ruled tape	roll	1
<u>Fingerprint Kit</u>		
White powder	bottle	2
Black powder	bottle	2
Brushes, featherdusters or nylon substitutes	each	2
Magna brush	each	1
Magnetic powder, black	bottle	2
Magnetic powder, white	bottle	2
Camel hair brush, small	each	2
Inkpad	each	1
Hinge lifters	assortment	1
Fingerprint tape	roll	2
10-finger pad (for elimination prints)	pad	2
4 x 5 mounting cards	each	50
Hand lens, small, 3-5 power	each	1
Fingerprint ink remover	package	2
Small plastic bags	package or roll	1
Scissors	each	1
Card holder and inking plate	each	1

Casting Kit

Plaster of Paris	pound	10
Mixing bowls	each	3
Water can, 1 qt. (or unbreakable bottle)	each	1
Silicone spray	can	2
Spatula	each	1
Mixing spoon, large, stainless steel	each	1
2 x 4 sheets of wire mesh	sheet	40
<u>Casting frames, metal:</u>		
For tire impression	each	1
For shoe impression	each	1
Paint brush, 2 in.	each	1
Liquid silicone rubber	pound	2
Quick catalyst	tube	2

Evidence Collection Kit

Shell vials (glass), with polyethylene stoppers	each	12
Small vials (about 5 x 1/2 in.), distilled water, with medicine dropper top	each	2
"Occultest"	bottle	1
Medium-sized plastic bags (of variety used in kitchens)	roll	1
Scalpels, stainless steel, 1 piece (no replacement blades)	each	3
Forcep, stainless steel, large	each	1
Forcep, stainless steel, medium	each	1
Tweezers ("Vigor," stainless steel, nonmagnetic, type TW 605)	each	2
Set of small screwdrivers	each	1
Small wrench set	each	1
Hammer	each	1
Pliers, combination side cutter	each	1
Pliers, needle nose	each	1
Wood chisel	set	1
Tin shears	each	1
Shears, large library type	each	1
Linoleum knife	each	1
Measuring tape, steel, 50 ft.	each	1
Measuring tape, steel, 8 ft.	each	1
Single-edged razor blades	box	1
Chalk, marking	sticks	2
Grease pencils, black	each	3
Carborundum tipped stylus for marking	each	1
Packing twine	ball	1

Evidence Collection Kit, concluded

Spatula	each	1
Tool box	each	1
Extension cords, 25 ft.	each	2
Extension cords, 100 ft.	each	1
Spoon	each	1
Medicine droppers	each	3
Evidence tape, pressure-sensitive	roll	2
Evidence tags	each	50
Coin envelopes	each	50
Pill boxes, round	each	space dependent
Pill boxes, square in three accordion sizes, largest size being about 4 x 2-1/2 in.	each	space dependent
Paper bags, large, medium, small, largest of approximate size of shopping bag	each	space dependent
Adhesive labeling	roll	1
Scotch tape	roll	1
Tongue depressors	package	1
Marking pen, indelible	each	2

The evidence collection kits for use by the lab-based crime scene search teams will be as above, with the addition of the following:

A fingerprint camera (concurrently deleting adapter for 4 x 5 camera)
35 mm camera and infrared filters
Hard hats, overalls, rubber boots
A more complete set of tools, including power tools
A lightweight tent of the type that would allow two men to work under it
and sufficiently large to cover and protect a vital outdoor area in inclement weather
Battery powered lights, camper variety
Portable generator, with leads
Gas, oil can
Shovel
Pick
Rope
Portable metal detector
Aluminum stepladder
Body bags

APPENDIX C

INTERVIEWS CONDUCTED

CRIME LABORATORIES

Florida Department of Law Enforcement Crime Laboratory Tallahassee	Edward G. Bigler, Director
Region IV Laboratory Sanford	William Ragsdale, Director
Dade County Department of Public Safety Crime Laboratory Miami	B. Edward Whittaker
Broward County Sheriff's Crime Laboratory	John Pennie, Director

DRUG LABORATORIES

Health and Rehabilitation Services Laboratories Jacksonville	Dr. W. R. Hofford
Health and Rehabilitation Lab Tampa	Ward E. Huston, Chemist
Bureau of Narcotics and Dangerous Drugs Lab Miami	Anthony Romano, Chemist

POLICE DEPARTMENTS

Pensacola Police Department	Lt. John Haner Lt. Bob Grant
Gainesville Police Department	William D. Joiner, Chief Capt. Charles C. Snowden
Tampa Police Department	Lt. Col. Allison H. Wainwright Major B. F. Bowen, Jr.
St. Petersburg Police Department	Harold C. Smith, Chief Lt. R. White Lt. Larry Reese
Bradenton Police Department	Chief Clyde Gill Major L. Diehl
Ft. Lauderdale Police Department	Chief Robert W. Johnston Sgt. Ronald C. Hammond
Miami Police Department	Bernard L. Garmire, Chief

SHERIFF'S DEPARTMENTS

Escambia County Sheriff	Sheriff Royal Untreiner Charles Grant, Chief of Identification Department
Duval County Sheriff Jacksonville	Capt. R. A. Miley, F.D. Boree W.O. Leonard, D.L. Sova Sgt. Mills
Orange County Sheriff Orlando	Sgt. Calude L. Trubey
Seminole County Sheriff Sanford	Sheriff John Polk
Hillsborough County Sheriff Tampa	Sheriff Malcolm E. Beard
Pinellas County Sheriff St. Petersburg	Sheriff Donald S. Genung
Broward County Sheriff Ft. Lauderdale	Sheriff Edward J. Stack
Dade County Public Safety Department	E. Wilson Purdy, Director
Dade County Public Safety Department	Charles Zmuda, Chief
Palm Beach County Sheriff	William Bennet, Chief

Tallahassee Community College Police Administration Program	Ken Katsaris, Director
Florida Department of Community Affairs (Police Standards Board)	Don Fish, Director
Daytona Beach Community College Department of Criminology	A. Everett Leonard, Chairman
Pinellas County Police Academy Highpoint, Fla.	Mario Vitelle, Commandant
St. Petersburg Jr. College Department of Police Administration Florida Institute for Law Enforcement	Lee O. Henley, Instructor and Associate Director
Indian River Jr. College Ft. Pierce	Dr. Don Peterson
LEGAL AND JUDICIAL	
State Attorney Tallahassee	William D. Hopkins
State Attorney Pensacola	Curtis Golden
State Attorney Bradenton	Frank Schaub
State Attorney Dade County	Seymour Gelber Richard Gerstein
Judicial Administrative Commission Tallahassee	Harry Guerry
Judicial Council Tallahassee	Col. A. D. Core, Executive Director
Hillsborough County Solicitor	Anthony Salcinas

Dade County Medical Examiner

Dr. Joe Davis

HIGHWAY PATROL

Highway Patrol Headquarters
Tallahassee

Inspector A.E. Reddick

REGIONAL PLANNERS

Region II Planning Council
Gainesville, Florida

Henry Lovern, Executive Director
of the Governor's Council on Criminal
Justice, Regional Planning Council II

Region III Planning Council
Jacksonville, Florida

Patrick Putnam, Executive Director
of the Governor's Council on
Criminal Justice, Regional Planning
Council III

Region IV Planning Council
Orlando, Florida

Hans E. Boehm, Executive Director
of the Governor's Council on
Criminal Justice, Regional Planning
Council IV

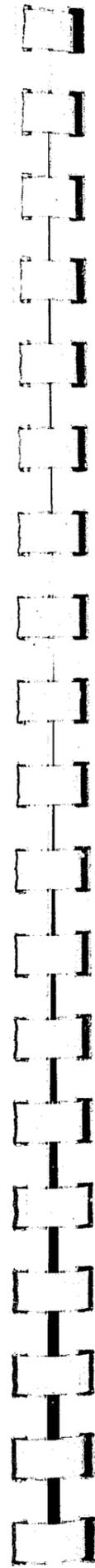
Region V Planning Council

Sid Hilliard, Planning Coordinator
of the Governor's Council on Criminal
Justice, Regional Planning Council V

STATE PLANNING AGENCY

Governor's Council on
Criminal Justice

James R. Stewart, Executive
Director



APPENDIX D

JOB DESCRIPTIONS

DIRECTOR
(Chief of Crime Laboratory)

Distinguishing Characteristics of Work

This is highly responsible professional work in directing the activities of the Crime Laboratory Bureau of the Department of Law Enforcement.

The employee in the position allocated to this class is responsible for planning, organizing, directing, controlling and coordinating the activities of the Firearms and Toolmarks, Microanalysis, Chemistry, Latent Fingerprint, Documents and Photography Sections in conducting scientific examinations of physical evidence involved in criminal investigations. Duties include directing the operation of the laboratory, experimental testing and research services; establishing, directing, administering and supervising the processing of physical evidence submitted by statewide law enforcement agencies for examination; establishing and maintaining standards for the accomplishment of laboratory work in accordance with criminal court trial procedures as defined by the Florida statutes and interpreted by the courts; and developing policies and procedures for the maintenance of effective and efficient laboratory operations.

Work is performed under the general direction of the Director of Operations and is reviewed for achievement of desired results.

Examples of Work Performed

(Note: These examples are intended only as illustrations of the various types of work performed in positions allocated to this class. The omission of specific statements of duties does not exclude them from the position if the work is similar, related, or a logical assignment to the position.)

Directs and administers the operation of the laboratory and supervises experimental testing and research services for all divisions.

Develops policies and procedures for the maintenance of effective and efficient laboratory operations.

Supervises the processing of all forms of physical evidence submitted to the laboratory for examination by law enforcement agencies throughout the state.

Develops and maintains standards for the accomplishment of all laboratory work in keeping with criminal court trial procedures as defined by the Florida statutes and interpreted by the courts.

Consults with law enforcement officers and prosecuting attorneys with reference to matters involving the crime laboratory.

Testifies as an expert witness in court.

Performs duties as a special agent, if sworn.

Performs related work as required.

Minimum Training and Experience

Graduation from an accredited 4-year college or university with major course work in chemistry, physics, criminology, or related sciences and 7 years of experience in a crime laboratory recognized by the Department of Law Enforcement, 2 years of which must have been at the Crime Laboratory Analyst II level or higher.

Graduate training may be substituted on a year-for-year basis for the required experience.

CRIMINALIST III
(Chemical-Instrumental Analysis,
Crime Laboratory Analyst III)

Distinguishing Characteristics of Work

This is advanced professional technical work in supervising the activities of a section in the crime laboratory of the Department of Law Enforcement.

An employee in a position allocated to this class plans, assigns, reviews, and evaluates laboratory investigations relating to the analysis and identification of evidence; selects methods of analysis using a variety of instruments; and supervises the microanalytical evaluation of evidence such as blood stains.

Assignments are performed under the general supervision of the Crime Laboratory Supervisor, who reviews work for the achievement of desired results.

Examples of Work Performed

(Note: These examples are intended only as illustrations of the various types of work performed in positions allocated to this class. The omission of specific statements of duties does not exclude them from the position if the work is similar, related, or a logical assignment to the position.)

Plans, assigns, reviews and evaluates laboratory investigations relating to the analysis and identification of evidence.

Selects methods of analyses using a variety of instruments such as microphones, gas chromatographs and spectrophotometers.

Supervises the examination, identification and authentication of documents and handwriting.

Supervises investigations of firearms and ballistics including the comparison of bullets and casings, restoration of obliterated weapon serial numbers, powder burns and related evidence.

Supervises the microanalytical evaluation of evidence such as blood stains.

Serves as an expert witness in court.

Performs related work as required.

Minimum Training and Experience

Graduation from an accredited 4-year college or university with major course work in chemistry, physics, criminology, or related sciences and 5 years of experience in a crime laboratory recognized by the Department of Law Enforcement.

Graduate training may be substituted on a year-for-year basis for the required experience.

CRIMINALIST II
(Chemical-Instrumental Analysis,
Crime Laboratory Analyst II)

Distinguishing Characteristics of Work

This is advanced professional technical work in conducting complex laboratory investigations that involve analyzing and determining the validity of evidence.

An employee in a position allocated to this class examines a large variety of items and materials microscopically for traces of paint, plaster, fibers, soil, or other substances under investigation. Work involves assisting agencies in searching crime scenes and in collecting and preserving physical evidence. Duties include examining unknown materials for the presence of foreign materials.

Assignments are performed under the general supervision of a Crime Laboratory Analyst III, who reviews work for the achievement of desired results.

Examples of Work Performed

(Note: These examples are intended only as illustrations of the various types of work performed in positions allocated to this class. The omission of specific statements of duties does not exclude them from the position if the work is similar, related, or a logical assignment to the position.)

Examines and identifies bone materials and determines the approximate length of exposure to elements.

Performs chemical tests on various items for presence of blood, semen, poisons, and narcotics.

Conducts microscopic physical and chemical comparisons of questionable material recovered from crime scenes or suspects with standard materials submitted.

Examines unknown materials for the presence of foreign materials including sugar in motor oil or marijuana in cigarettes.

Compares bullets and casings on file with those fired by weapons under investigation.

Performs related work as required.

Minimum Training and Experience

Graduation from an accredited 4-year college or university with major course work in chemistry, physics, criminology, or related sciences and 2 years of experience in a crime laboratory recognized by the Department of Law Enforcement.

Graduate training may be substituted on a year-for-year basis for the required experience.

CRIMINALIST I
(Chemical-Instrumental Analysis,
Crime Laboratory Analyst I)

Distinguishing Characteristics of Work

This is professional technical work in conducting laboratory investigations to analyze and identify material evidence.

An employee in a position allocated to this class examines a variety of items and materials microscopically and analytically for traces of paint, safe insulation, glass, metal, wood, hairs, fibers, chemicals or any other substance under investigation in assisting agencies in searching crime scenes and collecting and preserving physical evidence.

Work is performed under the immediate supervision of a higher level laboratory analyst.

Examples of Work Performed

(Note: These examples are intended only as illustrations of the various types of work performed in positions allocated to this class. The omission of specific statements of duties does not exclude them from the position if the work is similar, related, or a logical assignment to the position.)

Performs chemical and serological examination upon stains for the presence of blood, semen and related materials and performs species determination and identification, and blood stain typing.

Examines unknown materials for the presence of narcotics, marijuana, dangerous drugs and toxic agents.

Examines substances for foreign materials, such as accelerants in an arson investigation and materials used in sabotage and vandalism.

Conducts examinations and comparisons of handwriting, typewriting, paper, inks, alterations of documents, fraudulent checks and related materials.

Conducts all types of firearms identification or ballistics examinations that may be required on a weapon or related material in an investigation.

Performs related work as required.

Minimum Training and Experience

Graduation from an accredited 4-year college or university with major course work in chemistry, physics, biology, criminology or related fields.

CRIMINALIST
(Biological Analysis, Forensic Serologist)

The crime laboratory analyst performs specialized analytical and comparative laboratory examinations in connection with the identification and comparison of objects, materials and individuals and the evaluation of physical evidence in criminal cases and prepares reports of findings and testifies in courts of law.

Specific Duties

1. Identifies blood, blood stains, and semen stains.
2. Determines species of blood, blood stains and semen stains.
3. Performs serological and enzymatic determinations for group or type of blood, blood stains, semen stains and other physiological fluids.
4. Prepares detailed reports concerning the facts established in the analysis of evidence and testifies in court regarding these facts.
5. Operates complex laboratory equipment in the analysis of evidence.
6. Upon request, may assist in collecting and preserving evidence at crime scenes.
7. Performs other duties as required or assigned.

Knowledge, Abilities and Skills

Requires a 4-year degree with a strong background in biology and clinical chemistry with a working knowledge of serological and general laboratory techniques.

Requires a variety of crime laboratory skills in the area of serology and clinical chemistry.

Requires ability to present ideas effectively, orally and in writing.

COMPARATIVE MICROGRAPHER
(Microanalyst)

The crime laboratory analyst performs specialized analytical or comparative laboratory examinations in connection with the identification and comparison of objects, materials and individuals and the evaluation of physical evidence in criminal cases and prepares reports of findings and testifies in courts of law.

Specific Duties

1. Makes macroscopic and microscopic examinations of clothing, tools and other objects to identify and compare materials such as hair, fibers, paint, glass, safe insulation, soil and grease and evaluate their significance as evidence.
2. Make macroscopic and microscopic examinations of impressions and patterns such as tire tracks, shoe prints, and fabric marks and compare them with corresponding materials to evaluate their significance as evidence.
3. Make macroscopic and microscopic examinations of sets of broken or torn materials to determine whether or not they at one time joined together.
4. Examine light filaments to determine whether or not they were burning at the time of an impact.
5. Operate a variety of complex laboratory equipment in the analysis of evidence.
6. Upon request may assist in collecting and preserving evidence at crime scenes.
7. Performs other duties as required or assigned.

Knowledge, Abilities and Skills

Requires a 4-year degree with a strong background in chemistry, biology, mineralogy and textiles with a working knowledge of analytical laboratory techniques and equipment.

Requires a variety of laboratory skills in the area of analytical instrumentation, general analytical techniques and specialized sample handling procedures.

Requires the ability to present ideas effectively, orally and in writing.

CRIMINALIST
(Physical Analysis, Firearms and Tool
Marks Examiner)

The examiner is required to have 2 to 3 years intensive understudy training, after which qualifying examinations are written. Part of the training consists in the study and "on-site" observation of manufacturing techniques employed by various firearms and ammunition companies.

He is required to conduct technical and scientific examinations of exhibit material submitted by various law enforcement agencies throughout Florida. (Some materials examined are bullets, cartridge cases and shot shells; firearms for mechanical and functioning conditions; clothing and human tissue for propellant powder residues; numerous articles such as safes, doors, windows, cash boxes, security cabinets, soft drink and other dispensers for tool mark identifications; firearms, bicycles, automobile engines, motorcycles and various other stolen articles for obliterated serial number restorations.) To prepare reports concerning the findings and conclusion. To attend courts for the presentation of "expert" testimony regarding these findings and conclusions.

To operate and maintain reference standards and materials related to this particular field as required by the work of the section.

To have a knowledge of the proper use and care of comparison microscopes, low power binocular microscopes, scales, micrometers and other measuring devices, soft x-ray machines and photographic equipment.

To periodically prepare material for publication respecting collection, care, and submission of physical evidence for scientific examinations, as an instruction and aid for field investigators.

To prepare and present lectures on the functions and services of the section to various law enforcement bodies and other interested groups and agencies.

To do research work when and as required by case work--to solve a specific problem arising from a matter under examination or to solve a general problem in the interests of the advancement of the field.

Section Supervisor-Firearms and Tool Marks Section

In addition to the above duties the supervisor is required to conduct the administrative affairs of the section with respect to the maintenance of statistical and other records, the care and procuring of equipment and supplies, the security of exhibits, the training of understudies, the processing of correspondence and the handling of routine matters within the section.

DOCUMENT SPECIALIST
(Document Examiner)

Makes examinations, comparisons, and analyses of documents: to establish genuineness or to expose forgery, or to reveal alterations, additions or deletions; to identify persons through documents or parts of documents, as by showing the authorship of handwriting, or the source of typewriting.

Typical problems in this field are the identification of handwriting, typewriting, ink, paper, writing instruments, and establishment of the date, source, sequence, and relationships of documents. Other problems are the decipherment and sometimes restoration of obscure, deleted, or damaged parts of documents.

Knowledge of use of the microscope and other optical aids, of photographic cameras, and of a wide variety of photographic material adaptable for use with a variety of lighting methods including radiations in infrared and ultraviolet.

Has a general knowledge of the manufacturing processes and the materials which go into the production of documents, as well as the methods, machines and instruments by which the parts of documents are formed or brought together.

Collects and maintains files of typeface to aid in the identification of typewritten material.

Writes reports of findings and is available to give testimony at criminal trials and judicial proceedings which require the demonstration, by use of visual aids, of reasons for conclusions or determinations.

Examiners shall have a Bachelor's degree, shall have 2 years experience in the examination of questioned documents and shall be able to perform examinations without detailed technical supervision.

CRIME SCENE SPECIALIST
(Crime Laboratory Technician Position)

Distinguishing Characteristics of Work

This is subprofessional technical laboratory and/or field work involving the application of independent judgment to a variety of crime laboratory or field work procedures.

An employee in a position allocated to this class conducts complete crime scene searches including photography, diagraming, and sketching; latent fingerprint search; and the collection and preservation of evidence. Lab duties include making comparison of known and unknown latent prints as well as maintaining administrative control of all evidence submitted to the laboratory; serving as librarian for the laboratory by maintaining records of library materials; and preparing charts and diagrams for lectures and training programs.

Work is performed under the immediate supervision of the Crime Laboratory Supervisor who makes assignments and reviews work while in progress and upon completion for compliance with established procedures and policies.

Examples of Work Performed

(Note: These examples are intended only as illustrations of the various types of work performed in positions allocated to this class. The omission of specific statements of duties does not exclude them from the position if the work is similar, related, or a logical assignment to the position.)

Performs subprofessional technical laboratory examinations and tests.

Conducts complete crime scene searches including photography, diagraming and sketching; makes fingerprint searches; and collects and preserves evidence.

Maintains records on incoming evidence and the location of evidence while in the crime laboratory.

Serves as Librarian by maintaining records of materials and keeping them in order.

Prepares charts and diagrams for the selection of training programs.

Conducts appropriate literature research.

Orders and maintains common laboratory supplies.

Performs related work as required.

Minimum Training and Experience

Graduation from a standard high school and 3 years of experience in performing subprofessional laboratory duties.

Course work at the junior college or university level in chemistry, physics, biology, or related fields may be substituted on a year-for-year basis for a maximum of 2 years of the experience outlined above.

An equivalency diploma issued by a state department of education or by the United States Armed Forces Institute, or a qualifying score on the State Personnel Board Educational Attainment Comparison Test may be substituted for high school graduation.

SECURE EVIDENCE TRANSIT SYSTEM (SETS) DRIVER

Distinguishing Characteristics of Work

This is a subprofessional laboratory position involving field work requiring the application of independent judgment along with adherence to routine procedures. An employee in a position allocated to this class is responsible for driving the evidence transit vehicle to the department requesting service from the laboratory. Duties include maintaining proper evidence handling and chain of custody procedures at all times.

Work is performed under the immediate supervision of the Crime Laboratory Director to whom he is assigned.

Minimum Training and Experience

The qualifications for the SETS driver are the same as those for a police officer as discussed in the Police Standards Act of 1967 (Section 23.068).

PHOTOGRAPHER

Distinguishing Characteristics of Work

This is supervisory and/or highly skilled technical work in photographing and producing still and/or motion pictures in black and white and in color.

An employee in a position allocated to this class is responsible for producing photographs and motion pictures of a variety of subjects using highly complex cameras, lighting, and related photographic equipment. Duties include taking aerial and angle photographs of damage to roads, bridges, and other related road equipment which may be admissible as evidence in a court of law; photographing objects using microphotographic equipment which may be used for educational purposes; producing motion pictures which are used for national advertisement for the State of Florida, and/or supervising photographers or photographic laboratory technicians.

Work is performed under the general supervision of a higher level technician or agency official and is reviewed for results obtained.

Examples of Work Performed

(Note: These examples are intended only as illustrations of the various types of work performed in positions allocated to this class. The omission of specific statements of duties does not exclude them from the position if the work is similar, related, or a logical assignment to the position.)

Photographs reenactments of accidents involving the State Road Department.

Takes and develops still and motion pictures in black and white and in color.

Requisitions, stores, and safeguards cameras, developing equipment, and related materials.

Edits and splices motion pictures to insure continuity, creativeness, completion, and quality of films produced.

May supervise and train lower level photographers and photographic laboratory technicians.

Retouches negatives and positive prints in order to accentuate highlights.

Operates drying, enlarging, retouching devices, and microphotographic equipment.

Prepares chemicals for developing negatives.

May perform research on other professional work to determine best utilization of photographic equipment.

Performs related work as required.

Minimum Training and Experience

Graduation from a standard high school and 3 years of experience in varied photographic work, two of which shall have been as a professional photographer; or 1 year as a Photographer I.

An equivalency diploma issued by a state department of education or by the United States Armed Forces Institute, or a qualifying score on the State Personnel Board Educational Attainment Comparison Test may be substituted for high school graduation.



APPENDIX E

TABULATION OF LABORATORY SERVICES

This tabulation of laboratory services is an attempt to describe a "full-service crime laboratory," embodying the bulk of procedures and responsibilities commonly encountered. The categories and their definitions and limits are approximations and are not intended to be rigid benchmarks.

Service Category--a laboratory division frequently used to separate functions, according to specialties, instruments or procedures.

Evidence Input--form of evidence.

Tests--procedures performed or objectives of tests.

Time Required--approximate maxima and minima. Time is a function of inherent minimum for procedure and difficulties imposed by form, quantity and purity of evidence.

Equipment/Costs--instruments commonly employed with price range, recognizing that any instrument may be purchased with the most exacting tests in mind, recognizing that it might also function on a cruder basis.

Reference Standards--either established collections or case comparison material.

Technician Skill-Degree--minimum training and minimum formal education.

Degree of Identity vs. Identification--the results of a test might serve as an aid to investigation, as classifying information or as positive or negative identity of unique source.

Crimes--A general suggestion of the crime that might generate items of clue material. An activity might produce all or none of the range of physical evidence.

TABULATION OF LABORATORY SERVICES

Service Category Crime Scene Service

EVIDENCE INPUT	TESTS	TIME REQUIRED	EQUIPMENT/COST	REFERENCE STANDARDS	TECHNICIAN SKILLS-DEGREE	DEGREE OF IDENTITY vs IDENTIFICATION	CRIMES
2D and 3D reproductions; foot and tire prints, tool marks, fabric impressions, fingerprints	Casts of impressions in soil and on suitable surfaces are made using plaster of Paris or silicone rubber, as conditions dictate. Scaled photographs precede casting. Choice of media for casting depends upon size and detail of impression	30 min - 1 hr., depending on technique required	Expendable, \$.25-1.00/cast		Practice with technique, H.S.+	The resulting cast is used for comparison with suspect objects	Homicide Agg. assault Sex offenses Burglary Hit and run Arson Armed robbery
Location, preservation, identification, collection, transportation of physical evidence and crime scene standard*	Physical evidence may be any solids, liquids, or gases, pure or mixed, organic or inorganic, that will reconstruct the suspicious event or link a suspect to some criminal activity. The degree of importance of any single item will vary with the circumstances of the crime. What evidence is collected, how it is treated will depend on the experience, training and supervision of the collector. Remote location of laboratory facilities may require shipment by mail, express or other secure means.	1-2 hr., depending on extent of crime; scene, number of technicians involved, and gravity of crime vs. available time and case load.	Usually a special vehicle, van, truck or station wagon provides magnets, vacuum cleaners, boxes, bags, tools, etc. in a wide variety of sizes and modes. \$2,000-5,000		Wide general knowledge of crime laboratory and evidence capabilities. H.S.+	Depends on evidence collected, analyzed and compared.	All crimes
Assistance to investigator	Provide general knowledge of a wide variety of criminal and bizarre behavior patterns, i.e., burglary M.O., unusual sexual behavior (autoeroticism), atypical suicides, etc. Often the crime scene technician can link multiple crimes through similar M.O. or similar evidence, and suggest suspects to the investigator.	30 min. +		Extensive library support in periodicals and texts.	Somewhat scholarly and imaginative approach to his responsibility H.S.++		All crimes
Identity of unidentified bodies	Record fingerprints where tissue is suitable. Collection of clothing and other associated evidence for tags, labels, laundry marks, etc. Record dental patterns. Assist pathologist in removal of hands or fingers if laboratory development of fingerprints is necessary.	1-2 hr.			Experience and understanding of requirements of fingerprints or other personal identification procedures. H.S.+	Positive, if resulting comparison with known standards produces sufficient matching detail.	Homicide Sex offenses

Data Source

Figure E-1

TABULATION OF LABORATORY SERVICES

Service Category Crime Scene Service

EVIDENCE INPUT	TESTS	TIME REQUIRED	EQUIPMENT/COST	REFERENCE STANDARDS	TECHNICIAN SKILLS-DEGREE	DEGREE OF IDENTITY vs IDENTIFICATION	CRIMES
Photography	General crime scene coverage. Macrophotography of various evidence, i.e., blood stains, wounds, impressions, location of physical evidence, etc. Microphotography of tool marks, impressions, trace evidence. Aerial photography. Motion pictures (video tape) All of the above records may be processed in the crime laboratory photo facility, making whatever copies are required. Note: Although a great deal of the evidence submitted is collected by the case investigator, the shallow depth and narrow breadth of coverage clearly indicates that the vast majority of criminal investigations can profit by specialized assistance. Reference was made to this need in the President's Commission Report, <u>The Challenge of Crime in a Free Society</u> . Complete coverage of this topic in <u>Svensson and Wendell, The Techniques of Crime Scene Investigation</u> , American Elsevier.	1-5 hr.	35 mm camera \$300 4 x 5 camera \$300-400 Accessory lighting, tripods, etc. \$200		2-4 weeks training H.S. +	Provides record of scene in various media, principally for court presentation. Microphotos may be used for comparisons and identifications. Aerials may be used to orient witnesses and/or jury. Motion pictures may be used for court, training, investigative aid, etc.	Homicide Agg. assault Sex offenses Burglary Hit and run Arson Armed robbery
Crime scene sketches	The exact location of evidence is recorded by precise (1/4 in.) measurements. The exact dimensions of the crime scene and major items are recorded. When needed for courtroom presentation, a scaled drawing is produced in the laboratory. The scaled drawing serves to place evidence and witnesses in the crime scene area with the degree of precision that both defense and prosecution may be aided. In a few major cases, measurements have been translated into scaled models.	2-4 hr., depending on number of tech. and area covered.	Measuring tape, drawing instruments, \$100.		Some skill in measurement and mechanical drawing and/or model making H.S. +	Places evidence and witnesses with same exactness	Homicide Agg. assault Sex offenses Burglary Hit and run Arson Armed robbery
Latent fingerprint development and collection, at crime scene	All suitable surfaces are examined using appropriate lighting, and processed for fingerprints or other skin impressions, using appropriate powders, fumes or solutions. When made visible, the impressions are photographed (macro) and "lifted" or preserved on a portable object.	1-8 hr. depending on area to be processed and number of technicians employed. Case load/man dictates extent of coverage.	Fingerprint brushes and powder, etc. \$25-50		Practice with technique H.S. +	When compared with the known prints of suspects, the identity can be positive if sufficient matching points are found.	All major and minor crimes have potential latent impressions.
Assistance to pathologist and medical examiner	Provide a link between crime scene and autopsy in order that pathologist can aid in reconstructing the activities of the victim. Assist the pathologist in the preservation of pertinent evidence through photography and evidence collection procedures. Often the crime scene technician suggests special and routine items for collection.	2-3 hr.	Normal evidence collection equipment and photographic equipment		Some understanding of autopsy procedures and a wide general knowledge of crime laboratory and evidence capabilities. H.S. +	Depends on evidence collected and circumstances surrounding case.	Homicide Sex offenses

Data Source

Figure E-1 (Continued)

TABULATION OF LABORATORY SERVICES

Service Category Firearms Identification

EVIDENCE INPUT	TESTS	TIME REQUIRED	EQUIPMENT/COST	REFERENCE STANDARDS	TECHNICIAN SKILLS-DEGREE	DEGREE OF IDENTITY vs IDENTIFICATION	CRIMES
Weapons; revolvers, pistols, rifles, shotguns, machine guns, zip guns, etc.	Determine possible owner from fingerprints and debris in mechanism. Usually performed by other associates in lab. Recency of firing by debris in barrel or decay of NO ₂ vs. time Operating condition of weapon; trigger pull, effective operation of safeties and other parts. If parts are broken, assess recency of break and restore to working order -- Fire tests Comparison with bullets and cartridges in case See: Cartridge and bullet sheets	20-30 min. 20 min. - 2 1/2 hr. 20-60 min.	stereomicroscope stereomicroscope \$700 spectrophotometer \$500-\$5000	standards of suspects' fingerprints and pocket debris Lit. or slide collection collection of guns or parts	Specialty in fingerprint development and comparison Specialty in fiber and trace analysis Skill in microanalysis and instrumental analysis HS + Intimate knowledge of operation of guns -- 6 mos. - 1 yr. HS +	possible to positive May be used to refute alibi Investigative aid	Homicide Agg. Assault Armed Robbery Homicide Agg. Assault Armed Robbery
Bullets; fired and unfired	Evidence of ricochet; adhering debris Blood and tissue adhering (usual blood tests employed) Class characteristics; type of weapon Comparison between two or more bullets in case to establish one or more guns. Also, comparison with open case file. Identification of weapon by comparison of tests vs. evidence bullet.	10-20 min. 10 min. - 6 hr. 10 min. - 30 min. 20 min. - 3 hr. per bullet. Greater than for ctgs due to possible mutilation	Stereomicroscope \$700 stereomicroscope \$700 stereomicroscope \$700 Comp. microscope; \$1200 - \$5000	literature and standards from scene usual blood standards collection of fired bullets case tests Open file	If present, work shared with microanalyst HS + ES + 2-3 weeks training H.S. Skill developed by comparing several hundred pairs of fired bullets matched and mismatched, under supervision; 3-4 months; HS → BS	Aid in reconstruction of event Aid in reconstruction of event. Determines possible guns as invest. aid. can be positive if sufficient impression is available	Homicide Agg. Assault Armed Robbery Homicide Agg. Assault Armed Robbery
Cartridges, fired and unfired	Manufacture, caliber and type, type of weapon Comparison; fired in same or different weapons Recency of fire; accumulated debris Gain or loss of weight vs. time Decay of NO ₂ Identification of weapon by comparison with tests from suspect gun. Also comparison with open case file.	10 min. - 30 min. 30-60 min. 15 min. 1-3 days 1-2 days 20-60 min. per ctg.	stereomicroscope \$700 comp. microscope -- \$1200 - \$5000 stereomicroscope \$700 Balance analyt. \$300 - \$500 spectrophotometer \$500 - \$5000 Comp. microscope \$1200 - \$5000	cartridge collection case specimen Lit. Lit. case tests open file	2-3 weeks H.S. 2-3 months H.S. + 1-2 weeks BS BS Skill developed by comparing several hundred pairs of fired ctgs., matched and mismatched 2-3 months concentration under supervision HS → BS	Investigative Aid positive identification Investigative Aid Investigative Aid can be positive identification if sufficient marks are available	Homicide Armed Robbery Agg. Assault Homicide Armed Robbery

Data Source

Figure E-1 (Continued)

TABULATION OF LABORATORY SERVICES

Service Category Fingerprint Identification (including powder residue)

EVIDENCE INPUT	TESTS	TIME REQUIRED	EQUIPMENT/COST	REFERENCE STANDARDS	TECHNICIAN SKILLS-DEGREE	DEGREE OF IDENTITY vs IDENTIFICATION	CRIMES
Powder patterns; shot patterns	Detection of powder particles by infra red photography, visual examination, chemical detection (Walker test), spectroscopic identification of lead, barium and antimony, soft x-ray detection of lead. All of the above tests are used to determine distance of shooting; some are sensitive 0-9 ft., other 0-24 in. Determination of distance requires preparation of a series of test patterns using gun and ammo of same make and lot.	2-6 hr. depending on test used and problems offered by support material	stereomicroscope \$700 spectrograph \$5,000 + soft x-ray \$1000-\$5000 camera, etc. \$200 - \$400	case patterns; case weapon case ammo	skill varies from 1-2 wks for easily visual patterns to 2-3 mo. for complex instrumentation HS BS +	Distance may be determined to 1/2" - 1/4" for powder patterns to 1' to 6' for shot patterns	Homicide Agg. Assault Armed Robbery
Finger residues; Harrison test or HAA	Harrison test - 0.1MCL swabs of hands in 5-7 regions. Swabs tested for Pb, Sb and Ba. controls of gun tests and fired cartridges. HAA - irradiation of wax gloves of suspects hands	2-4 hr/test 2-6 days	expensables contract testing \$150/test	case ctgs. and weapon	considerable practice in performance of test. 2-3 wks BS + Ph.D	Fairly good presumption of firing of gun. Investigative Aid Fairly good presumption of firing of gun Investigative Aid	Homicide Agg. Assault Armed Robbery Homicide Agg. Assault Armed Robbery

Data Source

Figure E-1 (Continued)

TABULATION OF LABORATORY SERVICES

Service Category Questioned Documents

EVIDENCE INPUT	TESTS	TIME REQUIRED	EQUIPMENT/COST	REFERENCE STANDARDS	TECHNICIAN SKILLS-DEGREE	DEGREE OF IDENTITY vs IDENTIFICATION	CRIMES
Handwritten documents	Evaluation of the school of penmanship or the social and ethnic background of writer. (This is not graphology or character analysis. Any attempt to evaluate the personality of the writer is considered scientifically unsound and beyond the needs of forensic certainty.) Comparison of handwriting or handprinting with standards from specific suspects. Based on a variety of repeated peculiarities in the individual's writing.	2 hr. - 1-2 days depending on quantity & quality of evidence & standards	Stereomicroscope \$700 Cameras \$200-500 Comparison microscope \$1,200-3,000	Collection of penmanship styles, ethnic and grammatical characteristics	Knowledge of cultural and educational impact on writing of people in area. H.S. + Training under qualified expert, 1-2 yr., examining a large volume of simulated and actual case material B.S. +	Investigative aid With adequate quantity of writing, standards and questioned, a qualified document specialist is often able to render an opinion as to the writer of a document.	Homicide Investigation Obscene literature Extortion or threatening letters Fraud Smuggling Larceny Bombs
Typewritten documents	Class characteristics of type and typewriter. Comparison of questioned document with standard typing from suspect machine. Comparison of questioned document with known typing of suspect on known machine.	1-2 hr. 2 hr. - 1-2 days	Stereomicroscope \$700 Photographic equipment \$200-500 Comparison microscope \$1,200-3,000 Ditto above	Extensive collection of known typewriter standards Standards from suspect machine	Knowledge of variations in typewriters and experience in mfg. identification, 3-6 months training and experience A.A. + Extensive training under qualified expert, 1-2 yr. (concurrent with training in handwriting comparison). Examination of large volume of simulated and actual case material. B.S. +	Identification of possible manufacture, age and model of machine Identification of specific machine and, occasionally, indication as to typist.	Homicide Investigation Obscene letters Extortion or threatening letters Fraud Entertainment Arson Bombs
Printed material, hand stamps, commercial printing	Questioned documents, such as checks, may be prepared for a limited use by means of hand presses, hand stamps, etc. Separate documents may be linked by comparing printing or documents may be compared to stamp or type source if suitable comparison material is available. Where documents are prepared by extracting material from mass media, the possible source may be identified by type style, mode of reproduction, etc.	1-4 hr. 1-4 hr.	Stereomicroscope \$700 Cameras \$200-500 Comparison microscope \$1,200-3,000	Literature and collection standards of type faces, stamps, various means of reproduction	Extensive knowledge of graphic arts and printing practice.	May be positive as to source, if suitable material is available.	Extortion Threat or harm Obscene material Slander Fraud Forgery Bombs

Data Source

Figure E-1 (Continued)

TABULATION OF LABORATORY SERVICES

Service Category Questioned Documents

EVIDENCE INPUT	TESTS	TIME REQUIRED	EQUIPMENT/COST	REFERENCE STANDARDS	TECHNICIAN SKILLS-DEGREE	DEGREE OF IDENTITY vs IDENTIFICATION	CRIMES
Writing material, pen, pencil, etc., for comparison or elimination	Documents of unknown source may be traced through an identification of the possible sources of the writing material. Tests involving micro identification of components as well as instrumental comparisons with standard reference collections or case reference standards might identify or eliminate general and specific sources. TLC, paper chromatography, electrophoresis, spectrophotometry, special wavelength photography represent some of the methods in this area.	1+ days	Appropriate to method used \$50-10,000	Extensive collection of appropriate material	Analytical training plus experience with micro and instrumental procedures	Elimination of source can be certain. Identification of source can be based on probability factors	Fraud Larceny Forgery Obscene matter Threat or extortion Bombs
Special problems: Erasures	Restoration of erasures might use special wavelength photography, fuming, or the application of special solutions.	Since these problems are infrequent and often unique, they may be time-consuming in terms of literature research and experimentation. Therefore, no time estimates are possible.	Cameras \$200-1,000 Stereomicroscope \$700	Extensive literature in document problems	Some of these problems will be handled exclusively by the document expert; others will be performed together with or under the supervision of the document expert by staff photographers or chemists. B.S.++	The use to which successful results will be put depends on the nature of the case. The reconstruction alone may show criminal activity or some facet of suspicious nature. In some cases unique identity is possible.	Fraud Embezzlement Threatening or extortion notes Bombs or other Anonymous packages Gambling
Indented writing	Development of indented writing usually involves oblique light photography.						
Obscured writing	The disclosure of obscured writing may depend on mechanical or chemical removal of the overlying material or the physical detection by special wavelength photography.		Special lighting \$100-200 Misc. chemicals				
Writing or typing sequence	Questions of order of writing and/or age detection by additions over folds can be answered by the use of low power microscopy or macro/micro photography.						
Pasteners and adhesives	The attachment of documents, sealing and resealing of adhesives can be studied by physical, instrumental and chemical examinations.						

TABULATION OF LABORATORY SERVICES

Service Category Latent Fingerprint Development

EVIDENCE INPUT	TESTS	TIME REQUIRED	EQUIPMENT/COST	REFERENCE STANDARDS	TECHNICIAN SKILLS-DEGREE	DEGREE OF IDENTITY vs IDENTIFICATION	CRIMES
Various objects; or checks and other documents, glass, weapons, containers, etc.	Because of a lack of local skilled technicians, various objects suspected of having been handled by a criminal may be collected, preserved (often inappropriately, i.e., the weapon in a handkerchief) and transported to the crime laboratory for processing. Suitable methods will be employed by the laboratory. These procedures may involve photography, fuming, immersion in solutions, etc. The fingerprint or skin impressions developed will be given to fingerprint experts for comparison with suspects.	1 hr.-days (in the case of difficult photography)	Photographic cameras and special lights, chemicals, etc. \$200-1,000	Note: Fingerprint files will be found in identification division of department. Degree of classification (single vs. other groupings) will depend upon staffing & department needs.	Expert photographers, and skill in the development of fingerprints on unusual surfaces. H.S.+	Can be positive if suitable characteristics can be developed.	All crimes

Data Source

Figure E-1 (Continued)

TABULATION OF LABORATORY SERVICES

Service Category Microanalysis

EVIDENCE INPUT	TESTS	TIME REQUIRED	EQUIPMENT/COST	REFERENCE STANDARDS	TECHNICIAN SKILLS-DEGREE	DEGREE OF IDENTITY vs IDENTIFICATION	CRIMES
Blood stains	Preliminary tests - Benzidine, IMG, Luminal (color, spot test) Phenolphthalein	10 min/test	stereomicroscope \$700	dried blood	1 day exp. no degree	could be blood	homicide
	Teichmann or Takayama (crystal test)	10 min/test	100 x microscope burner \$250 - \$2,000	dried blood	1-2 day exp. No degree-AA	is blood yes - no	rape/rob
	Species determination (precipitin, immunodiffusion)	30 min/test	centrifuge - \$80 stereomicroscope \$700	control sera blood antisera	5 day exp. AA - BS	human or other species	assault
	Blood type absorption - inhibition	8 hr/test	100 - 200 x microscope \$250 - \$2,000 refrigerator	known stain known blood antisera	2-3 weeks AA - BS	A B O grouping	homicide/rob
Blood stains	absorption - elution	2 hr/test	100 - 200 x microscope \$250 - \$2,000 refrigerator oven	known stain known blood antisera blood of suspect	2-3 months ES +	A B O grouping NH	narcotic invest.
	Note: Since five laboratories have reported using agar gel, or various forms of electrophoretic separation, these have not been included. Age of blood is a constant problem. Dynamics may be determined from geometry of stain, often more important than typing.						
Genital Stains	Differentiation between venous, fetal and menstrual blood by associated cells and fibrin content	1 - 3 hr.	Microscope \$250 - \$2000		Knowledge of cell morphology and fibrin determination	Invest. aid. important to refute alibi	Abortion
	Ultraviolet and visual examination	10 min/garment	UV lamp - \$40		1 day exp. no degree	location of suspect area	homicide
	Florence Crystal	10 min/test	100 - 200 x microscope and burner \$250 - \$2,000		1 - 2 day exp. No degree - AA	False neg. and false positive possible	Rape Fornication
Genital Stains	Acid Phosphatase	15 min/test	Visual color or quantity by spectrophotometer \$4 - \$6,000	color stds King-Armstrong units	5 day exp. AA - BS	strong indication of prostatic fluid. Certainty dependent upon circumstances	Child molest
	Microscopic identification of spermatozoa in extract of stain	30 min - 3 hr	Centrifuge - \$70 200 x - 400x microscope \$250 - \$200	standard slide of spermatozoa, human and other animals	1 - 2 weeks (several exams) AA - BS Biology	pos. ident. of seminal material indicates a next episode without index of legality	Sodomy
	Species - immune tests; for human semen or blood type	8 hr.	microscope, centrifuge, agar plates	anti sera, known stains blood type of victim and subject	2-3 weeks (several tests) BS + (biology, microbiology)	Type, if donor species, seminal material without legal index	

Data Source

Figure E-1 (Continued)

TABULATION OF LABORATORY SERVICES

Service Category Microanalysis

EVIDENCE INPUT	TESTS	TIME REQUIRED	EQUIPMENT/COST	REFERENCE STANDARDS	TECHNICIAN SKILLS-DEGREE	DEGREE OF IDENTITY vs IDENTIFICATION	CRIMES
Organic environmental traces; seeds, pollen, botanical fragments as food on clothing, in body orifice on objects such as tools	(This is a little used area, although reported for many years starting in C. Doyle and Hans Gross. Because the objects to be studied are microscopic and not tripped over the investigator seldom collects or considers their importance. In defense of the investigator, few crime laboratories are equipped to handle this type of evidence in a creditable fashion.)	may be substantial, depending on entrainment material and obscurity of items.	Stereomicroscope \$700 100-1000x phase microscope \$2000 SEM seems to have real potential because of extreme depth of field. \$80,000-\$100,000	Standard text; Standards from known sources; Standards from known case source	considerable experience in micro botanical techniques some understanding of frequency of distribution of objects studied; BS +	Identity of source would depend upon total probability; May be of value for exclusion	Homicide Sex offenses Assault Burglary Theft
	Microscopic examination and comparison						
Cosmetics; Powders, perfumes, lipstick	Visual and low power microscopic comparison.	20-30 min.	Stereomicroscope	case stand.	Familiarity with color matching - BS +	Preliminary sort	Homicide Sex Offenses Assault
	Chromatography; TLC	30 min - 2 hr.	\$50 - \$200	case stand.	1-3 weeks experience analyzing and comparing similar material BS +	Probable match Probable source	Homicide Sex Offenses Assault
	IR & UV Spectra	20-60 min.	UV or IR spectrophotometer -- \$4000 - \$10,000	case stand. Reference spectra	Familiarity with technique; BS +	Probable match - Probable source	Homicide Sex Offenses Assault
	Olfactronics - GLC, applicable to essential oils and perfume	20-60 min.	collection and concentration equipment - \$1000 GLC - \$3000 - \$10,000	graphs of known oils; case stand.	Familiarity with application to this class of materials; 1-2 Weeks	Similarity of scent, probable source	Homicide Sex offenses Assault
Explosives and products of explosion	Spot test with diphenylamine reagent	5 min/test			1-2 day use of reagent B.S.	Any oxidizing agent including powder residue	Homicide Bombing
	GLC - olfactronics	30 min +	Collection and concentration equipment \$1,000 -- GLC \$4-10,000	Charts of known explosives & residue	2-4 weeks familiarization with application B.S. +	Compound used in explosion	Arson Burglary
	Microscopic examination of objects close to explosive	20-30 min.	Stereomicroscope \$700		Familiarity with appearance of bomb fragments B.S.	Identification as bomb fragments	

Data Source

Figure E-1 (Continued)

TABULATION OF LABORATORY SERVICES

Service Category Microanalysis

EVIDENCE INPUT	TESTS	TIME REQUIRED	EQUIPMENT/COST	REFERENCE STANDARDS	TECHNICIAN SKILLS-DEGREE	DEGREE OF IDENTITY vs IDENTIFICATION	CRIMES
Saliva	Ptyalin (action on starch)	30 min.			1 - 2 hrs B.S.	Invest. Aid	Extortion letters
	Type, blood factors	3-8 hr.	100 - 200 x microscope - \$250 - \$2000	Known blood sera known standard cells	2-3 weeks AA - BS	ABO grouping	Sex Offenses, Oral
Fecal stains	Parasites and food residue - comparisons vs. standards	3-8 hr.	100 - 400 X microscope	known standard slides; comparison std. from suspect	Understanding and experience in parasitology microbiology B.S. +	May be specific depending on factors studied	Sex Offenses Burglary
	Blood type factors	8 hr.	100 - 200 x microscope \$250 - \$2000	anti sera; known blood of suspect	2-3 months BS +	ABO grouping	Sex Offenses Burglary
Fibers	Physical comparison; class, type, color, etc. by micro determination of refractive index, action on polarized light, etc.	1-3 hr.	Stereomicroscope \$700 Petrographic microscope - \$1000 to \$3000	Immersion liquids; standard fiber collection; fibers from known case source	Familiarity with petrographic tests Experience with identification of fibers, 2-3 months; BS +	Each fiber can be identified as to mfg. class Some understanding of frequency of distribution of particular fiber may permit a total probability evaluation	Homicide Sex offense Burglary Theft Agg. Assault
	Chemical comparison -- UV, IR, Dye extraction, DTA, GLC, Mass spect.	3-5 hr.	Equipment specific for test performed; \$5000 - \$50,000	Fiber collection; fibers from known case source	Considerable skill in instrumental analysis; High level of familiarity with the results of particular tests on fibers. 1-2 yrs. BS +	Identification might extend to lot of manufacture, or to environmental changes affecting fiber polymers	Homicide Sex offense Burglary Theft Agg. Assault
Hairs	Species Identification	30 min/specimen	stereomicroscope -- \$700 100 - 400 x microscope - \$250 - \$2000 Hardy micrometer \$100	Books and slides of animal hairs	2-3 months practice AA - BS	Positive for major animal class	Homicide Sex offenses Burglary Theft
	Comparison, if human -- using color, diameter, medullary structure, ref. index, scale count, etc., comparing characteristics to those of standard from suspect.	1-4 hr.	100 - 400 x microscope - \$250 to \$2000 AO comp. microscope \$4000 Filar micrometer \$100	standards from suspect	4-6 months studying many samples of human hairs from a variety of sources. BS+	Exclusionary, some possibility of moderate identity by NAA	Agg. Assault
	Blood type - absorb. - inhibition	8 hr.	Microscope - 100 - 200 x \$250 - \$2000; Ultrasonic generator - \$500	Known anti sera; Known blood	4-6 months BS +	ABO	

Data Source

Figure E-1 (Continued)

TABULATION OF LABORATORY SERVICES

Service Category Microanalysis - Instrumental Analysis

EVIDENCE INPUT	TESTS	TIME REQUIRED	EQUIPMENT/COST	REFERENCE STANDARDS	TECHNICIAN SKILLS-DEGREE	DEGREE OF IDENTITY vs IDENTIFICATION	CRIMES
Hairs	Neutron Activation Analysis	1-8 + days	reactor and counter (may be irradiated elsewhere and counted at crime lab) \$10,000 - \$250,000	elemental standards	BS - PhD with considerable skill and experience with hair	Identity is questionable at this time since current data is conflicting	Homicide sex offense Burglary Theft Agg. Assault
Objects stained with soil (earth), safe insulation; building material	Low power examination and sorting. Color comparison, particle size distribution, particle classification	2-4 hr.	Stereomicroscope \$700 Seives Comparison microscope - \$1200 -- \$3900	material collected from crime scene as standards	2-3 months experience with trace analysis BS +	Moderate identity, if enough components are available	Burglary Homicide Sex offenses Auto Theft
	Density gradient comparisons	3-24 hr.	Expendables	case standards collected at scene	considerable experience cross matching many specimens of similar nature 2-3 months BS +	According to Kirk, may be specific for source; not widely evaluated at this time	Burglary Homicide Sex offenses Auto Theft
	Chemical - instrumental; XRD, DTA, NAA, petrography, emission spect., electron microprobe	3hr.-8 days	appropriate to technique used;	case stand. from scene, known component collection	considerable instrumental experience BS ++	with suitable components, could be moderately specific as to identity	
Paint; on suspect, on objects	Low power sort and comparison of color. Layer comparison, if possible	30 min - 2 hr.	stereomicroscope \$700	case standard, paint	1-2 days AA - BS	Only with several matching layers, is identity possible	Burglary Hit & Run Homicide Theft
	Chemical - instrumental; XRD, DTA, NAA, OLC, Mass Spect., solvent response, emission spect., electron microprobe. Note: The order of testing would be from totally non-destructive → totally destructive. Note: Many of the tests above and others available in research laboratories, have not received the degree of exploration to assess their value for identity. The present use exposes the evidence to some technique with subsequent testimony based on a "gut" feeling of identity. Where some attempt has been made to run lot by lot studies on paint using normally available instruments, the results have shown an inability to differentiate. Perhaps years of experience might refine methods to suitable sensitivity.	3 hr.-8 days	Appropriate to technique used \$3000 - \$60,000+	Case standards collected at scene	Considerable experience cross matching many specimens of similar nature 2-3 months BS + +	See note under Tests	Burglary Hit & Run Homicide Theft

Data Source

Figure E-1 (Continued)

TABULATION OF LABORATORY SERVICES

Service Category Comparative Micrography

EVIDENCE INPUT	TEST	TIME REQUIRED	EQUIPMENT/COST	REFERENCE STANDARDS	TECHNICIAN SKILLS-DEGREE	DEGREE OF IDENTITY vs IDENTIFICATION	CRIMES
Tool marks; hand tools. Power tools, manufacturing operations	Marks range in scope from scratches on staples to shovel marks in clay. Action of tool may be cutting, sliding, shear, compression, drawing in die. Test consists of duplicating case action with case tool in an appropriate media and comparing with case tool mark. Class characteristics and individual characteristics.	3 hr. to several days depending on the degrees of freedom of tool	hand tools. benches, machine tools, \$1-2,000 comp. microscope \$1,200-5,000	tool catalogs	5-12 mos. experience matching tool marks under supervision; requires ability in shape and line recognition. H.S. +	positive identity depending on quantity of available opinion evidence	Burglary Bombs Arson Homicide Theft of auto parts
Tools, suspected of involvement	Tools are examined for adhering debris indication of case contact. Also examined for adhering debris or fingerprints that identify owner. Test made in appropriate media and compared under comparison microscope. Intermediate casts are made if case material is in form of casts.	20-30 min. per tool 3 hr. to several days depending on the degrees of freedom of test					
Three-dimensional impressions, shoe and tire marks, fabric impressions	Comparison of case casts and/or scaled photographs with tests made of suspect objects. Note: literature in this area is very scarce. No clear-cut guidelines exist that can aid a technician in knowing when enough points exists for an identity of source	2-6 hr.	visual and stereomicroscope \$700 Photographic equipment	heel and tire collection	2-4 months training in comparison examinations an appreciation for probability theory. H.S. +	positive opinion depending on available detail	All crimes
2-D impressions, shoe prints, glove prints, skin prints	Comparison of case material with tests made of suspect objects. Note: see note above	2-6 hr.	visual and stereomicroscope \$700 Photographic equipment				
Serial Number Restoration	Application of suitable etchants to make visible stress due to die marks. Application of magnetic powders in magnetic field.	15 min. - 6 hrs.	Reagents, glassware magnet.		B.S. +	Traced to files when restored	Burglary Auto theft Homicide
Paper, wood, glass, metal objects, paint, tape	Edge match of fracture or tear Physical match of transferred material from one surface to another; left and right hand geometric correspondence i.e., stain from one metal surface transferred in negative to contact areas.	1 hr.-day 1-3 hr.	Stereomicroscope \$700 Photographic \$200-1,000 Stereomicroscope \$700 Photographic \$200-1,000	Case standard from crime source	Appreciation for probability theory Ability to recognize form & shape	Opinion of identity of source	Burglary Homicide Armed robbery Theft of auto parts

Data Source

Figure E-1 (Continued)

TABULATION OF LABORATORY SERVICES

Service Category Chemical-Instrumental Analysis

EVIDENCE INPUT	TESTS	TIME REQUIRED	EQUIPMENT/COST	REFERENCE STANDARDS	TECHNICIAN SKILLS-DEGREE	DEGREE OF IDENTITY vs IDENTIFICATION	CRIMES
Blood and other fluids for ethyl alcohol content	Separation and analysis by distillation, aeration, diffusion, followed by oxidation reactions	1-3 hr. (batched)	\$100 titration \$500+ spect.	standard alcohol solutions	training in chemical-instrumental analysis; B.S.+	quantitation and ident. of alcohol	DWI liquor law violation
	GLC analysis of head gas over blood specimen	15-20 min.	GLC \$2,500-\$4,000	"	"	"	hit and run
	Alcohol dehydrogenase quantitation	2-4 hr.	UV spect. \$1,200-\$4,000	"	"	"	homicide
Toxic material in non-fatal and, on occasion, fatal cases; in humans & domestic animals	Physical and chemical separation; identification by chemical reactions and instrumental tests	1-24 hr.	TLC, chemical equipment	lit. standards of chemicals sought	training in microchemical analysis. Some appreciation of toxicology. B.S.+	identification of toxic material	animal poisoning food adulteration attempt homicide

TABULATION OF LABORATORY SERVICES

Service Category Microanalysis - Instrumental - Chemical

EVIDENCE INPUT	TESTS	TIME REQUIRED	EQUIPMENT/COST	REFERENCE STANDARDS	TECHNICIAN SKILLS-DEGREE	DEGREE OF IDENTITY vs IDENTIFICATION	CRIMES
Narcotics, dangerous drugs	Spot tests; i.e., Marquis, Koppanyi	minutes (may be batched)	spot plate	collection of drugs for comparison	familiarity with color changes; understanding of chemistry. B.S. +	preliminary sorting	narcotics dangerous drugs
	Microcrystalline tests - microfusion	10-20 min. (may be batched)	100-200 x micro-film \$250-2000, hot stage	"	"	identification of class and individual compound	
	IR and UV spectra, GLC with pyrolysis; TLC for separation	20-60 min.	\$5-20,000 UV and IR spectrophotometer	collection of drugs, collection of spectra	familiarity with instrumental procedure and spectra recognition; B.S.+	identification and quantification of compound; ident. of diluent	
XRD		1-2 hr.	\$10-20,000 XRD with goniometer and camera	ASTM cards standard graphs and film	familiarity with technique B.S.+	ident. of compounds in excess of 1%	

Data Source

Figure E-1 (Continued)

TABULATION OF LABORATORY SERVICES

Service Category Instrumental Analysis

EVIDENCE INPUT	TESTS	TIME REQUIRED	EQUIPMENT/COST	REFERENCE STANDARDS	TECHNICIAN SKILLS-DEGREE	DEGREE OF IDENTITY vs IDENTIFICATION	CRIMES
Petroleum Products; inflammables, tars, rubber	Distillation; vacuum or carrier to separate volatiles	3-6 hr.	Vacuum or petroleum distillation equipment \$150		Familiarity with technique; 1-2 days	separation	Arson Hit & Run Burglary
	GLC with or without pyrolysis	1-2 hr.	GLC with pyrolysis and collection unit	Case standards; general collection of typical petroleum products	Experience in GLC and pyrolysis BS +	Classification, and, if mixture, probability of source if it matches suspect material	Arson Hit & Run Burglary
	UV and IR Spectra	1-3 hr.	UV & IR spectrophotometer \$4000-\$10,000	standard spectra; collection of standard petroleum products	Experience with technique BS +	Classification of material and possible identification of source, if a mixture	Arson Hit & Run Burglary

TABULATION OF LABORATORY SERVICES

Service Category Cryptography

EVIDENCE INPUT	TESTS	TIME REQUIRED	EQUIPMENT/COST	REFERENCE STANDARDS	TECHNICIAN SKILLS-DEGREE	DEGREE OF IDENTITY vs IDENTIFICATION	CRIMES
Codes, gambling slips, etc.	Although it is rare to find a criminalist with skill in cryptography, request for service in the area needs consideration in selected cases. As vice enforcement intensifies, gamblers resort to codes, combustible or soluble paper, to minimize detection and prosecution. As a special problem, these are first submitted to the crime laboratory for assistance and advice. In some cases in-house research can handle the problem. In others, outside consultants may be employed.						Gambling Subversive activity

TABULATION OF LABORATORY SERVICES

Service Category Evidence Referrals

EVIDENCE INPUT	TESTS	TIME REQUIRED	EQUIPMENT/COST	REFERENCE STANDARDS	TECHNICIAN SKILLS-DEGREE	DEGREE OF IDENTITY vs IDENTIFICATION	CRIMES
	When special and infrequent problems arise, the laboratory may serve as a referring agency, coordinating the submission of evidence with specialists and aiding in the interpretation of analytical results to investigation needs.						All crimes

TABULATION OF LABORATORY SERVICES

Service Category Training Support and Public Relations

EVIDENCE INPUT	TESTS	TIME REQUIRED	EQUIPMENT/COST	REFERENCE STANDARDS	TECHNICIAN SKILLS-DEGREE	DEGREE OF IDENTITY vs IDENTIFICATION	CRIMES
	In order to establish liaison with investigators and other law enforcement officials and to provide information and procedures concerning laboratory utilization, laboratory staff participates in training programs, seminars, law enforcement education, etc. All levels of law enforcement and criminal prosecution may be contacted. The percentage of time involved will depend upon departmental interest and available laboratory staff time. Although peripheral, this is an important part of crime laboratory operation. In addition, laboratory personnel may provide talks and lectures to schools and local civic groups.						

Data Source

Figure E-1 (Concluded)

END