R-76-101

LAW ENFORCEMENT ASSISTANCE ADMINISTRATION
POLICE TECHNICAL ASSISTANCE REPORT

SUBJECT: Broward County, Crime Laboratory Operation Analysis

REPORT NUMBER: 75-99

FOR: Broward County, Florida, Sheriff's Department
Broward County Population: 887,500
Broward County Area: 1,200 square miles

CONTRACTOR: Westinghouse Justice Institute

CONSULTANTS: Theodore R. Elzerman
John P. Klosterman

CONTRACT NUMBER: J-LEAA-003-76

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Table of Contents

Table of Contents (continued)

Illustrations

Tables

Appendix

FOREWORD

A survey of the Broward County Sheriff's Department Crime Laboratory was requested to provide guidelines and recommendations on four primary issues:

- An objective evaluation of the current workload of the Broward County Crime Laboratory.
- A determination of the manpower required to perform this workload.
- An assessment of the qualifications for the personnel to perform crime laboratory services
- An evaluation of current practices and the recommendation of guidelines for improving the handling and security of evidence.

The total time allocated to this assignment was 6 man-days. During this limited period, a brief but intensive review of Crime Laboratory operations was conducted by the Consultants.

Requesting Agency: Broward County Sheriff's Department,
Mr. Edward J. Stack
Sheriff

LEAA Headquarters: Mr. Joseph Nardoza,
Assistant Administrator,
Office of Regional Operations

Consultants: Mr. Theodore R. Elzerman
Assistant Superintendent, Scientific Services, Illinois Bureau of Identification.

Mr. John P. Klosterman, Director,
Eastern Ohio Forensic Laboratory,
Youngstown State University

1. INTRODUCTION

The Broward County Sheriff's Department Crime Laboratory provides criminalistics service to some 30 law enforcement agencies in Broward County. The county is located on the southeast coast of Florida and has an area of 1,200 square miles. The majority of the 887,500 residents live in the coastal area of the county.

The Crime Laboratory has been created through the financial support of the Law Enforcement Assistance Administration and has now reached the point in development where four criminalists and one laboratory assistant are employed to perform tests and analyses on submitted materials.

In the conduct of the technical assistance assignment described in this report, the Consultants focused on determination of the answers to two questions:

- First, should the current personnel be able to handle the present workload and, if not, what qualifications are required for additional personnel?
- Second, are the current evidence handling and security procedures adequate and, if not, what changes should be made?

Mr. John W. Tiedeburg, administrative aide to Sheriff Edward J. Stack, was the Consultants' primary point of contact and liaison in the Sheriff's Department. All persons interviewed during the course of this assignment were members of the Sheriff's Department. These were:

- Mr. John W. Tiedeberg, Administrator - Services.
- Mr. Bernard J. Lenahan, Chief Administrator - Police Operations.
- Captain Ed Werder, Administrator, Special Projects.
- Mr. John Pennie, Director, Crime Laboratory.
- Mr. Dennis T. Gray, Criminalist, Crime Laboratory.
- Mr. Bruce Ayala, Criminalist, Crime Laboratory.

- Ms. Patricia Holloway, Senior Clerk, Crime Laboratory.

George Duncan, the other criminalist, was at the Michigan State Police Laboratory for training in serology during the period that the interviews were conducted.

2. UNDERSTANDING OF THE PROBLEM

The problem addressed is well stated in Sheriff Stack's letter requesting technical assistance described herein: "The administrative methodology and practices have been evolved mainly from the process of trial and error. Therefore, we now turn to you for assistance from LEAA to examine these procedures and methodology in order to devise improvements."

The overall objectives of the assignment were to make determinations concerning the following questions:

- Is the present staff of the Crime Laboratory adequate to perform the current workload? What measures can be used to determine this?
- If additional personnel are required, can they be technicians with lesser qualifications, and consequently lower salaries, than present personnel?
- Are current evidence handling and security procedures adequate? If not, what changes are required?

The internal influences explored included work hours, pay structure, communications problems, budget, and space. The external influences included population changes, relations with other departments, court appearances, and laws and regulations pertaining to evidence disposition.

3. ANALYSIS OF THE PROBLEM

3.1 Approach

The problems were addressed by conducting interviews, surveying procedures, and analyzing data from various reports. Interviews were conducted with members of the Laboratory staff and with departmental administrative staff involved with the Laboratory. The data sought included monthly and annual reports on case load, case types, examinations, and court appearances; information on physical facilities, such as space and equipment; personnel information as to education experience, man-hours available, and current case load; budget information; procedures on evidence receiving and custody; and reporting.

Available statistical data on the Laboratory were found to be very limited. A monthly report that reflects types of evidence examined via cases reported is prepared. These reports were obtained for 1969 through November 1975 and used in the preparation of Table 3-1 which summarizes their contents.

There were no statistics that reflected the number of cases received, either total or by types of offense involved, nor were there any statistics showing the number of items examined.

3.2 Observations

3.2.1 Evidence Receiving

Evidence is generally submitted to the Laboratory in person by the police officer. When the evidence is submitted, a completed property receipt (see Figure 3-1) accompanies the evidence. This acts as the receipt and is a form provided by the submitting agency, generally modeled after the Sheriff's Department's form. The evidence is received by the criminalist who will work it, if he is available. A laboratory number is assigned, the receipt is signed in the appropriate space, and a copy is given to the submitting officer. If the receiving criminalist is not available, the evidence is assigned to another criminalist.

The evidence is marked with a Laboratory Number and placed in the evidence room to await analysis. The receipt goes to the secretary who enters it in a log book. This entry consists of the case number, submitting agency, agency number, and the name of the Laboratory employee assigned to work the case.

3.2.2 Evidence Custody

Upon completion of analyses and/or examinations, the evidence is placed in an evidence room. It is maintained there until entered in evidence in court or discarded.

TABLE 3-1

Types of Evidence Examined by Year

	75*	74	73	72	71	70	69
Amphetamines	47	91	69	97	69	77	25
Barbiturates	153	206	136	105	110	74	36
Cocaine	172	134	65	46	33	12	3
Heroin	164	157	140	169	151	172	18
Hallucinogens	179	223	222	263	185	148	36
Inhalants	4	9	12	12	7	5	--
SUB TOTAL	719	820	644	692	555	488	118
Marihuana	1,905	2,276	1,774	1,525	846	650	164
Pharm.	271	256	225	179	41	50	31
Negative	255	200	178	148	125	60	25
Blood Alcohol	39	37	42	11	--	--	--
Alcohol	40	42	15	17	17	12	8
Blood	171	58	67	11	--	--	--
Rape	141	137	76	35	4	13	--
Hairs & Fibers	52	25	19	0	2	3	--
Arson	49	42	32	18	19	11	3
Firearms	179	207	46	--	--	--	--
Paint	29	40	13	15	6	8	--
Misc.	33	72	6	7	1	--	--
Total Reports	3,919	3,985	2,923	2,351	1,473	1,135	283
Court	710	524	342	288	258	124	9

*Estimated

SHERIFF'S DEPARTMENT
BROWARD COUNTY, FLORIDA

PROPERTY RECEIPT

78. ☐ Property of Deceased ☐ Trial ☐ Found Property ☐ Laboratory (ATTACH MEMO) ☐ Stolen - Recovered

2. CASE NO. | 79. DATE - TIME RECEIVED | | 76. TYPE OF CASE

77. ADDRESS WHERE PROPERTY IMPOUNDED (GIVE EXACT LOCATION WHERE FOUND)

16. FOUND BY — ADDRESS — PHONE NO.

31. SUSPECT(S) (GIVE FULL NAME) — ADDRESS — PHONE NO.

14. VICTIM — ADDRESS — PHONE NO.

49. OWNER'S NAME — ADDRESS — PHONE NO.

80. ITEM NO.	81. QUANTITY	82. DESCRIPTION

83. I hereby acknowledge that the above list represents all property taken from my possession and that I have received a copy of this receipt.

SIGNATURE (X) _____

20. I hereby acknowledge that the above list represents all property impounded by me in the official performance of my duty as Deputy Sheriff.

DIVISION _____ BADGE NO. _____

IMPOUNDING OFFICER (X) _____

84. RECEIVED BY	REASON	DATE AND TIME RECEIVED
RECEIVED BY	REASON	DATE AND TIME RECEIVED
RECEIVED BY	REASON	DATE AND TIME RECEIVED
RECEIVED BY	REASON	DATE AND TIME RECEIVED
RECEIVED BY	REASON	DATE AND TIME RECEIVED
RECEIVED BY	REASON	DATE AND TIME RECEIVED
85. FINAL DISPOSITION	AUTHORITY	DATE AND TIME OF DISPOSITION

BSO # 13 PROPERTY ROOM

Figure 3-1. Property Receipt

The disposal procedure is beyond the control of the Laboratory. There is apparently no checking of the contents of cases upon disposition. The recording of the destruction appears adequate, although usually only one Laboratory staff person is involved.

A memorandum from the State Attorney's Office, dated December 9, 1975, should be of assistance when large amounts of evidence are involved in a case (see Figure 3-2). It must be strongly emphasized that *no* evidence should be discarded without *written* authority for the Laboratory file, particularly in felony cases.

3.2.3 Case Reporting

Structured work sheets are used for serology and firearms cases. Other cases are written up in the form of notes made by the criminalist; these notes become a part of the case file. The results are given to the secretary who types the report (see Figure 3-3). She also makes entries in the log book on the type of examinations conducted. This then provides the information for the monthly statistical report.

3.2.4 Time Recording

During interviews with departmental administrative staff, the work week was given as 40 hours exclusive of lunch periods. This was to be generally in the 8:00 a.m. to 5:00 p.m. time period, with exact hours set within the Laboratory. Laboratory personnel stated, however, that they worked 8:30 a.m. to 4:30 p.m., or 9:00 a.m. to 5:00 p.m., with a 1-hour lunch. This would be a 35-hour week. A log book is maintained in the Laboratory in which personnel sign in and out. There is also maintained a court log that shows court appearances and testimony, and the time involved in court (see Figure 3-4). In addition, a time sheet was instituted by the department administration (see Figure 3-5). This is to show the actual time in the Laboratory and the time away from the Laboratory and for what purpose.

3.2.5 Budget

No budgetary data are maintained by the Laboratory, although the departmental books do itemize the amounts spent by the Laboratory and for what purpose. Although the Laboratory is not allocated a specific budget, the Laboratory staff members indicated no problems in obtaining supplies or other operating items.

3.2.6 Equipment

The Crime Laboratory's equipment is very basic, with one exception. A scanning electron microscope was purchased in the past fiscal year with the assistance of Law Enforcement Assistance Administration funds.

MEMORANDUM

TO: DIVISION SECRETARIES
AND MISDEMEANOR SECRETARIES

FROM: J. DAVID BOGENSCHUTZ
CHIEF ASSISTANT STATE ATTORNEY
TRIAL OPERATIONS

DATE: DECEMBER 9, 1975

RE: DISPOSITION OF CRIME LAB EVIDENCE

It has come to my attention that Crime Lab personnel who are subpoenaed to appear in Court are never notified as to the disposition of the cases and/or a continuance, so that they can consider themselves "off call". Henceforth, it will be the duty of the division secretary to notify the Crime Lab on any cases where it is necessary for one of the personnel from the Sheriff's Office, the 7th floor, to be subpoenaed to Court, either on a narcotics case or some other type of comparison that John Penney and his crew have to examine.

Also, if the case is plead out, they should be notified at sentence date so that they can begin to count thirty days to determine whether or not evidence they are holding in that particular case can be destroyed.

J. DAVID BOGENSCHUTZ

cc Bob Holloway

JDB:jd 2/3

Figure 3-2. Memorandum Concerning Disposition of Evidence

BROWARD COUNTY SHERIFF'S OFFICE

P. O. BOX 9507
FT. LAUDERDALE, FLA. 33310

APPENDIX F

CRIME LABORATORY
LABORATORY ANALYSIS REPORT

To:

Date:
Lab No.
BSO Case #
Agency Case #
Victim:
Defendant:

The below listed evidence was submitted to this laboratory on:
by:

BSO # 17

automated business controls, inc.

U11560

Figure 3-3. Laboratory Analysis Report

			COURT APPEARANCES					
#	CHEMIST	LAB #	COURT	RM#	IN	OUT	DISPOSITION	D
				[illegible]				

Figure 3-4. Court Appearances Log

NAME _____
(use separate line for each entry)

ATE	LABORATORY TIME IN	LABORATORY TIME OUT	COURT APPEARANCES TIME IN	COURT APPEARANCES TIME OUT	OTHER TIME IN	OTHER TIME OUT	PURPOSE

Figure 3-5. Time Sheet

As it is now used in the Laboratory, this instrument has limited value. With the addition of an energy dispersive X-ray with multichannel analyzer and associated hardware, it would be a valuable and powerful tool for elemental analysis.

Other equipment in the Laboratory is adequate for current needs, with one exception. A more modern gas chromatograph, adequate for both drug analyses and organic analysis via pyrolysis, is needed. With this should be a digital log electrometer or similar equipment, needed to provide a chart recording of four decades of signal normally encountered with complex organic structured materials such as paint. The ultraviolet and infrared are still functioning, but are at an age such that replacements should be budgeted for in the next few years. Certain other items of equipment would be required to expand the capabilities of the Laboratory. An example would be equipment for making comparisons of glass samples.

3.2.7 Physical Plant

The facilities are relatively new. The space is adquate for current needs and could probably accommodate twice the staff with equipment necessary to expand the capabilities of the Laboratory.

3.2.8 Types of Analyses

As with most crime laboratories, especially those started in the last few years, a large percentage of the case load involves drugs. This, however, is changing. Percentage figures that show this trend are presented in Table 3-2.

TABLE 3-2

Case Load Trend

	1975	1974	1972	1970
Total Reports	3,919	3,985	2,351	1,135
Marihuana (%)	49	57	65	57
Other Drugs (%)	32	32	43	53
Criminalistics (%)	17	15	4	3

It will be noted that the percentage figures do not total 100 percent. This illustrates the type of problem encountered by the Consultants in examining the present statistics because only data on evidence types examined were available. The general trend of drug cases is shown. The other significant factor is the increasing percentage of criminalistics cases. This is an important factor in the man-hours required, because criminalistics cases take significantly more time to work.

Another recent change is the State Attorney's requirement to have reports on drug cases within 5 days. This interferes with the usual priority of cases, which is:

- First -- Investigative Information.
- Second -- Court Requirements.
- Third -- First In/First Out.

Some types of evidence, such as blood stains, must be done within a few days because of enzyme deterioration and bacterial action that can destroy much of the potential meaningful results.

4. FINDINGS AND CONCLUSIONS

The general observations were that, with a few exceptions, the Crime Laboratory has the potential to meet the needs of Broward County now and in the near future. The space is sufficient to allow some expansion; it is doing a reasonable, but not ideal, job with its current functions; the pay scale is quite adequate; and, with some additions and upgrading, the equipment would be adequate. There is, however, need for improvement in several areas, particularly in added services and management.

4.1 Current Capabilities

It should be kept in mind that, in the limited time available for the undertaking of this assignment, no evaluation could be made as to the technical competence of the individuals. The only observations that could be made were as to whether reasonable procedures were being used and whether the resources to carry out these procedures were available.

4.1.1 Drugs

Since the inception of the Laboratory, emphasis has been on drug analysis. It would appear that only the minimum required is done in this area insofar as the depth of analysis and the number of samples analyzed per case are concerned. The methods used appear to be adequate although the absolute minimum desirable. For example, even though procedures appeared adequate to avoid errors, it would be possible to miss a second or third controlled substance in a drug mixture.

4.1.2 Firearms

The depth of examinations appeared to be somewhat greater in this area. No potential technical problem areas were noted. The lack of more than one person trained in the area could cause a problem due to vacation, illness, resignation, or other absence.

4.1.3 Trace Evidence

Because of the drug workload, this is an area which has been neglected, with the possible exception of serology. The amount of other types of trace evidence examined, especially in burglaries, is minimal.

4.1.4 Serology

It appears that this type of evidence is being utilized more extensively than other types of trace evidence. New techniques are being developed, as was evidenced by the absence of one staff member for training in another laboratory. At present, only one staff person has the ability to perform serological analysis.

4.2 Pay Scales

The salaries for the Crime Laboratory staff are now based on the Dade County pay scale. This puts them in a very competitive position nationally and rather high in the department. A copy of the current scale, together with comparable figures from other labs, are attached as Appendix A.

4.3 Space

Current Laboratory space is about 3,000 square feet. This is adequate for current needs and allows for expansion in the near future.

4.4 Instrumentation

Current instrumentation is almost adequate for present usage, but minimal for a full-service laboratory. Two priority items should be instrumentation for elemental analysis and an upgraded gas chromatograph that would provide capabilities for drug analysis and pyroloysis. Other smaller items of equipment will be required as additional types of examinations are instituted.

4.5 Training

There are two aspects to the training required for effective crime laboratory usage: First, technical training for laboratory personnel; and, second, training of using officers in the handling and use of physical evidence, and in the employment of laboratory capabilities. Training for laboratory personnel appeared to be no problem. Additional training will be required as services are added.

Training for users appears to be minimal, based on the small usage of trace evidence. This may also be due to the lack of laboratory capability in many criminalistics areas, as well as slow response time.

4.6 Statistics and Management

This is one of the greatest problem areas, if not the greatest. Statistics to adequately show the workload and changes in workload are lacking. This causes communications problems between the Laboratory and the department administration.

According to the Laboratory Director, he spends about 10 percent of his time on management. With the current staff size and potential workload, this is not adequate.

4.7 Personnel Qualifications

All technical personnel have a minimum of a bachelor's degree. They appear to have had reasonable training in the areas in which they are working. Additional training will be required to go into new evidence examination areas.

4.8 Evidence Custody and Disposition

When cases are received in the Laboratory, they are already recorded on individual department evidence receipts (see Figure 3-1). If possible, the examiner who will work the case receives it. A Laboratory case number is assigned to the evidence, and the evidence is placed in the evidence room. It was noted by the Consultants that the evidence room in the Laboratory is not always locked when not in use.

The general security of the Laboratory is good in that the doors are kept locked. A potential safety hazard exists, however, in that the rear door cannot be opened without a key. The security of the evidence while in the custody of the Laboratory appears good. The evidence rooms outside the Laboratory were not seen. Comments from staff were that the fifth floor evidence room has problems with water leakage and is generally insecure in a remote, unguarded area of the building.

General procedures for disposition of the evidence are beyond the control of the Laboratory. The mechanics of disposition were studied and the potential for abuse was noted in that there was no rechecking of the contents of the packages being destroyed.

4.9 Hours and Workload

4.9.1 Hours Worked

According to department administrative personnel, the work week is 40 hours. According to Laboratory staff members, the work day is 8:30 a.m. to 4:30 p.m., or 9:00 a.m. to 5:00 p.m., with a 1-hour lunch period (although the lunch period varies with the work requirements). This is a discrepancy which is apparently causing some misunderstanding. Analysis of time sheets for the four Laboratory staff representing 73 man-days showed that they actually worked a total of 550-3/4 hours out of an available 584 hours. The 584 hours is based on a 8-hour work day.

Analysis of the time sheets showed the staff to be involved in the following activities:

- In court, waiting to testify in court, and in pretrial conferences -- 8.9 percent.
- Giving lectures, going to and from evidence rooms, conferences with law enforcement and administrative staff, test firing weapons away from the Laboratory; crime scene investigations, and other related duties -- 6.0 percent.

- In the Laboratory working on cases, etc. -- 85.1 percent.

4.9.2 Workload

The workload, as described in the data available, was analyzed on the basis of reports per man for the years of operation of the Laboratory. This is summarized in Table 4-1. 1975 is adjusted to predict a full year. The figures are based on the number of reports written, which is not a good measurement of actual workload, but is useful for comparative purposes.

TABLE 4-1

Number of Reports/Man

Year	Man-Years	Total	Drugs and Alcohol	Criminalistics
75	4.0	980	808	164
74	3.9	1,022	931	149
73	2.4	1,219	1,199	108
72	2.0	1,176	1,286	43
71	1.7	866	932	19
70	1.4	811	900	25
69	0.6	472	576	5

The lack of agreement between total reports and the sum of the two nominal components thereof is illustrative of the problems noted with the statistics available.

The drop in the total reports per man does not indicate less work but rather reflects the decreased drug case load and increased criminalistics case load.

5. RECOMMENDATIONS

The Crime Laboratory has grown without any real guidance or planning. As a result, there is little available in the way of management information. Similarly, administrative procedures reflect no coordination. This results in gaps in some areas and duplication in others.

Basic needs are to establish the means of obtaining management information and a refinement of administrative procedures. The latter would include improved evidence control. In addition, the technical operation needs to be reviewed in more detail with the idea of improving procedures for greater depth of analyses and expanding into evidence areas not now included.

Most staff members should be capable of conducting drug analyses. The criminalists should develop a specialty in one or two areas (i.e., firearms, trace, serology). In areas which the case load is over 75 percent of one person's time, a second should be trained to provide backup for vacation, illness, or other absence.

Specific recommendations are subdivided into the same areas as Section 4.

5.1 Current Capabilities

As previously stated, the time was too short to evaluate individual performance. One general observation was the lack of depth of analyses and examinations in certain areas.

5.1.1 Drugs

The analysis of drugs is an example of the lack of depth in an area. Only the minimum amount of analysis is being done. Samples should be checked for the possible presence of more than one controlled substance. Dosage type samples (capsules, tablets, cigarettes, etc.) should be counted. Loose samples (powders, marihuana) should all be weighed. A larger sampling should be analyzed with the specific items analyzed being marked.

5.1.2 Firearms

As stated, procedures appeared adequate; no specific improvements were identified.

5.1.3 Trace Evidence

Comparison of trace evidence (paint, glass, hairs, fibers, etc.) is another area in which depth is lacking. Effort should be put into expanding the analysis and examination techniques in this area. This will, however,

require additional equipment, training, and analysis time. Effort also should go into increasing the utilization of these types of evidence by investigators, particularly in burglary cases. A very small involvement in burglary cases by the laboratory was noted. The examination of tools, clothing, etc., for trace evidence can be extremely useful to an investigation and prosecution of these cases. This would require that training be given to officers in the value and usage of burglary evidence.

5.1.4 Serology

The implementation of new techniques in this area is being undertaken. This should be continued and encouraged, since it can be very valuable. It should be pointed out, however, that some of the reagents involved are expensive. Consideration should be given to the purchase of cellulose acetate strips. These are much less time-consuming and require lesser quantities of reagents. The existing power supply could be utilized so the equipment cost would be minimal.

5.2 Pay Scales

As stated, it is felt that the pay scales are more than adequate, especially for the levels of experience. It is recommended that the pay scales be removed from the connection with Dade County and placed within the Broward County professional pay scale. Future increases should be based on yearly merit increases and cost of living increases within the Broward County pay scale. There is also justification for a chemist classification at a lower pay range than that of the criminalist.

5.3 Space

No additional space will be required in the near future. Rearrangement and/or additional bench work might be required to accommodate increased functions and personnel.

5.4 Instrumentation

As previously stated, added instrumentation is needed in three areas. First, in elemental analysis, an energy dispersive X-ray unit added to the scanning electron microscope would provide greater utilization of that instrument. Second, another gas chromatograph with greater capability is needed for drug analysis and pyrolysis analysis of items such as paints, plastics, rubber, fibers, and other organics. The present instrument could be dedicated to certain procedures and so would still be useful. Third, as new techniques are added, additional items would be needed. An example would be a hot stage and monochrometer for glass, hair, and fiber examinations, as well as additional stereo microscopes.

5.5 Training

Training of new personnel will be required, as well as additional training of current personnel to expand their capabilities. Another important aspect is the training of officers by Laboratory personnel in the value and usage of physical evidence, particularly trace evidence. Within their limited contact, the impression of the Consultants is that current Laboratory personnel may not have adequate background to accomplish this.

5.6 Statistics and Management

A complete overhaul of the Laboratory statistics and management information is required. This should be divided into three phases:

- Input -- This would include information on the number of cases (related to incidents, not lab work), the number of specimens submitted, the type of offense, and the submitting agency.

- Cases on Hand -- Data should be kept on the number and type of unworked cases on hand (backlog) and length of time they have been in the Laboratory. For example, how many cases for 0 to 15 days, 15 to 30 days, over 30 days. Also, a system should be developed to determine the turn-around time (how many days from receipt to report) for various types of cases.

- Output -- Information within this area gives a more adequate measure of workload. Included should be the number and types of items examined and compared. This should be keyed by examiner for determination of individual workloads.

Since the new statistical system would bear no relationship to the current system, it is recommended that the present system be maintained as a back-up system for a year to provide continuity.

According to his estimate, the Laboratory Director spends about 10 percent of his time on administration and supervision. With even the current small staff, this should be at least 30 percent. During the laboratory redevelopment period, this should even be higher. He should also spend some time in other labs to obtain ideas on statistical gathering procedures and should take some management training courses.

5.7 Personnel Qualifications

It is recommended that anyone hired who will be testifying in court have at least a backelor's degree. There is insufficient work that can be done by a technician assisting a criminalist during analysis of drugs to warrant utilizing someone in this capacity.

5.8 Evidence Custody and Disposition

Only the evidence room in the Laboratory was viewed. There was no question raised about the security of evidence while in the custody of the Laboratory evidence room. The only comment about evidence storage outside the Laboratory was a water problem in the fifth floor evidence room. It was noted that the door to the Laboratory evidence room was not kept locked at all times. This should be locked except when someone is actually in the room. A third evidence storage area for drugs is within the property room and is reported to be secure. Evidence security could be greatly improved by adding an alarm system to the evidence storage areas.

The lock on one door to the Laboratory should be modified so that it can be opened from the inside without a key. The current situation could be disasterous in case of a fire, which is always a possibility in a laboratory.

As previously stated, the disposition process is beyond the control of the Laboratory. There should be some means of checking on the integrity of the evidence until it is discarded. The following steps are recommended:

- A count of dosage units at time of analysis.
- Weighing of loose powder and vegetable material.
- Two Laboratory members taking part in disposition.
- Checking of the seals on all packages.
- Reweighing (counting) and reanalysis of random cases set for disposition. The selection to be done by a non-Laboratory member of the department.

5.9 Hours and Workload

5.9.1 Hours Worked

There should be an understanding between the department administration and the Laboratory staff as to the minimum work week. Whether it is 35 or 40 hours is not so important as that it is clearly defined.

It is not recommended that the work schedule be firmly fixed. This is difficult with court appearances and the type of work involved. At the salary levels involved, overtime should not be an issue unless legally required. Seeing that Laboratory personnel work the minimum week should be the responsibility of the Laboratory Director. A single time sheet should be designed to record the data that are now kept on the three separate logs.

5.9.2 Workload

As noted in Sections 3 and 4, there has been a leveling off of drug and marihuana cases in the past 2 years. This does not mean a reduced workload, since the criminalistics cases are on the increase. Analysis of data available in Table 3-1 shows a decrease of drug and marihuana evidence case types by 10 percent in 1975 as compared to 1974, but there was an increase of criminalistics evidence case types of 20 percent in the same period.

It should also be noted there were increases in court appearances and court testimony through November 1975 by 30 percent and 40 percent, respectively, over the same period of 1974. These cannot be related to the percentage of time away from the Laboratory because the time data for the periods mentioned above were not readily available.

A typical ratio of drugs to criminalistics cases is 50:50, ± 10, for an established laboratory. This would predict a potential criminalistics load of 2,000 to 3,000 cases per year. This is compatible with the size of Broward County, particularly considering the growth experienced in the past 5 years.

Fixing an anticipated workload per examiner is difficult because of the many variables. Experience has shown that there are some limits, and these are listed below. These figures are based on number of cases and take into consideration items such as vacation, holidays, sick leave, and court time. They also include time for receiving, marking, unpacking, packaging, and other handling of items of evidence. It should be kept in mind that the variance in time spent on any type of case can be tenfold or more, such as a multiple homicide.

The "moderate" level includes time for in-depth examinations and/or analyses that should be done on most cases. It includes almost no time for method development and improvement. To do this and put the load into the "ideal" range would require a 10- to 20-percent reduction in load.

The "maximum" level permits only the minimum quantity of analyses. It is felt that this is the level that is being done on drug and trace evidence in the Laboratory.

The "medium" level provides for a more complete analysis and should actually be considered the maximum acceptable level. Working above this promotes short-cuts that are potentially disasterous.

For purposes of these compilations, the following were grouped:

- Other Drugs -- All except marihuana, including negatives.
- Alcohol -- Blood and liquor.
- Serology -- Blood and rape.
- Trace -- All others.

TABLE 5-1

Cases Per Year Per Man

Type Case	Mod.	Med.	Max.
Marihuana	2,100	2,700	3,000
Other Drugs	600	750	900
Alcohols	2,100	2,700	3,000
Serology	250	325	400
Firearms	250	325	400
Trace	250	325	400

By application of the figures in Table 5-1 to the case load for selected years in this Laboratory, the man-year data were calculated; these data are presented in Table 5-2. The maximum rate was applied for marihuana, other drugs, alcohol, and traces; the medium rate was used for serology

and firearms. From interviews with Laboratory staff members, it appeared that these were the levels of analyses and examinations they conducted.

TABLE 5-2

Man Years for Evidence Type for Selected Years

Evidence Types	1975	1974	1972	1970
Marihuana	0.64	0.76	0.51	0.23
Other Drugs	1.38	1.42	1.13	0.66
Alcohols	0.03	0.03	0.01	0.01
Serology	0.96	0.60	0.01	0.04
Firearms	0.55	0.64	0.0	0.0
Trace	0.41	0.45	0.10	0.06
Total Man Years	3.97	3.90	1.76	1.00
Actual Staff	4.00	3.90	2.00	1.40

The conclusion of this data is that the Laboratory staff is barely able to keep up with the workload by doing the minimum necessary on many cases.

The following specific recommendations are made:

- Ensure that the Director has adequate time for management of the Laboratory.
- Provide additional scientific man-hours.
- Provide the additional man-hours required to gather statistical information for providing the basis for sound decisions.

5.10 Action Plan

To provide the means of implementing the above items, the following steps are recommended:

- Personnel -- First, hire a "drug chemist" to specialize in drug analysis. This would provide added scientific help at reasonable cost. It would also provide the Laboratory Director time for management functions and allow other criminalists more time for criminalistics work. Second, if the individual is suited to the required tasks, make the present part-time technician full-time so that he can assist with statistical maintenance. He could also receive evidence to avoid a criminalist's signing for evidence he will not examine.

- Management Information -- Establish a completely new statistical system, keeping the present system for 1 year so as to have a basis for comparison during the transition state. Implementation of this recommendation may require outside technical assistance since none of the staff members has experience in this area.

- Equipment -- Develop a proposal for grant funds to add to the present equipment in three areas:

  - Energy dispersive x-ray for the scanning electron microscope.
  - Gas chromatograph with pyrolysis capability.
  - Apparatus for refractive index determinations.

- Training -- Increased training of county officers in the utilization of physical evidence, particularly in burglary cases.

- Evidence Security -- Initiate the recommended steps to improve security to reduce the potential for drug diversion.

- Future Personnel -- Beyond those listed above, as the case load increases, additional personnel would be required in the following order:

- A second drug chemist, reducing the drug load of the criminalists.

- A second clerk typist.

- An additional criminalist.

The additional positions recommended above should be justified by the statistical recordkeeping recommending in Section 5.6.

APPENDIX A

Typical Crime Laboratory Pay Scales, 1974-1975

Agency - Title of Position	Education	Experience	Yearly Salary Range
Broward County Sheriff's Department			
Criminalist I	Degree	None	$13,934-$17,640
Criminalist II	Degree	?	$16,249-$20,569
Criminalist III	Degree	4 years	$20,569-$25,923
Laboratory Director	Degree	3 years	$24,710-$31,148
Florida Department of Public Safety (1975)			
Criminalist I	Degree	None	$9,333-$12,632
Criminalist II	Degree	2 years	$11,609-$15,973
Criminalist III	Degree	4 years	$13,237-$18,457
Section Supervisor	Degree	5 years	$14,114-$19,856
Laboratory Supervisor	Degree	5 years + 2 years Supv.	$15,200-$21,360
Illinois Bureau of Identification (1975)			
Associate Criminalist	Degree	None	$11,316-$15,072
Criminalist	Degree	1 year	$12,660-$16,992
Supervising Criminalist	Degree	3 years	$14,280-$19,188
Administrative Criminalist	Degree	5 years	$17,280-$23,400
Scientific Services Director	Degree	5 years + 2 years Supv.	$21,120-$28,788

Agency - Title of Position	Education	Experience	Yearly Salary Range
Ohio Criminal Bureau of Identification and Investigation (1975)			
Criminalist I	Degree	None	$10,483-$12,730
Criminalist II	Degree	2 years	$12,730-$15,445
Supervising Criminalist	Degree	5 years	$15,475-$19,739
Contra Costa County, California (1974)			
Criminalist I	Degree	None	$13,020-$15,816
Criminalist II	Degree	1 year	$16,212-$19,728
Criminalist III	Degree	4 years	$17,016-$20,676
Supervising Criminalist	Degree	5 years	$18,816-$22,872
Criminalistics Lab Chief	Degree	5 years + 2 years Supv.	$21,528-$26,160
Los Angeles County Sheriff's Department, California (1974)			
Criminalist I	Degree	None	$12,240-$15,252
Criminalist II	Degree	2 years	$15,672-$19,524
Criminalist III	Degree	1 year as II	$17,028-$21,204
Supervising Criminalist	Degree	2 years as III	$17,988-$22,404
Chief Criminalist	Degree	2 years as III	$18,996-$23,676

Agency - Title of Position	Education	Experience	Yearly Salary Range
Phoenix Police Department, Arizona (1974)			
Criminalist I	Degree	None	$12,168-$15,312
Criminalist II	Degree	3 years	$13,980-$17,616
Criminalist III	Degree	3 years as II	$15,312-$19,380
Criminalist Supervisor	Degree	5 years + 2 years Supv.	$16,788-$21,468
Director	Degree	Extensive + 4 years Supv.	$18,492-$23,820
Drug Enforcement Administration (October 1975)			
GS-5 Forensic Chemist	Degree	None B+ Ave.	$8,925-$11,607
GS-7 Forensic Chemist	Degree	None	$11,046-$14,358
GS-9 Forensic Chemist	Degree	1-2 years	$13,482-$17,523
GS-11 Forensic Chemist	Degree	3 years	$16,255-$21,133
GS-12 Forensic Chemist	Degree	4 years	$19,386-$25,200
GS-13 Forensic Chemist or Supervisor	Degree	5 years	$22,906-$29,782
GS-14 Forensic Chemist or Supervisor	Degree	5 years	$24,861-$34,916
GS-15 Laboratory Director	Degree	3 years at 14	$31,305-$38,617

END