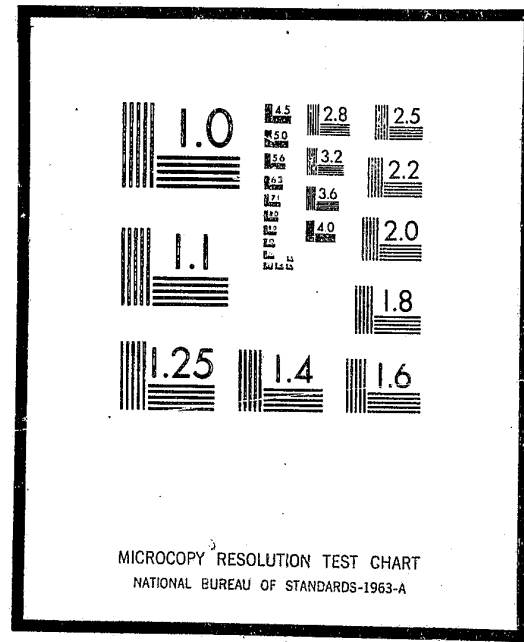


NCJRS

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

Date filmed

5/27/76



Westinghouse Justice Institute

R-73-108
January 1973

POLICE MANAGEMENT
SYSTEM STUDY
NORTH RICHLAND HILLS, TEXAS

VOLUME V-3
APPENDIXES A - I

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FOREWORD

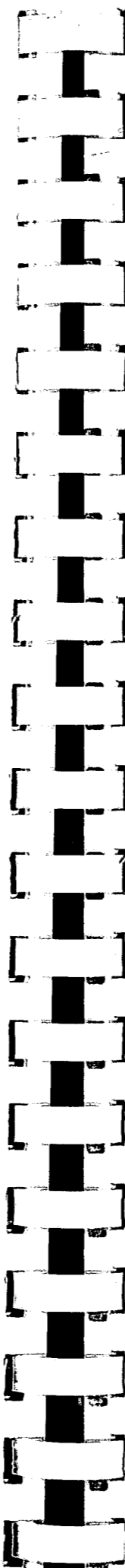
The City of North Richland Hills, Texas, requested the services of Lt. Glenn R. Walker of the Tyler, Texas, Police Department to assist in a management and records study through the Regional Office of the Law Enforcement Assistance Administration (LEAA). The LEAA Washington, D.C., office, in response authorized the Westinghouse Justice Institute (WJI) to provide the services of Lt. Walker under the terms and conditions of LEAA Contract J-LEAA-016-72, U.S. Department of Justice. This report documents in summary the technical services rendered. In addition to the discussion volume (Volume I), there are four supplementary volumes containing details of forms, methods, displays, and other material related to this study.

NOTE

Volume I contains the discussion portion of this study and a listing of 53 recommendations. The numbers inserted throughout the discussion, (1), (2), (3), etc., match the recommendation numbers and can so be referred to. Throughout both the discussion and recommendations, reference is made to the 45 figures that are included in Volumes II, III, and IV. Provided are forms, procedures, instructions, diagrams, etc. Volume V contains technical data, flowcharts, diagrams, and other material identified as Appendixes A through I. Because of the bulk of this material, Volumes II, III, IV, and V are provided only for the LEAA Regional and Washington, D.C., offices.

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APPENDIX A

THE FOLLOWING RECOMMENDATIONS CAN BE UTILIZED
AS A GENRAL ORDER FOR INITIATION OF THE NEW
RECORDS PROGRAM. CHANGE THE WORDS SHOULD TO
WILL AND SHALL.

Recommendations for installation of a centralized police records system for North Richland Hills Police Department is quoted below.

- I. All complaints and reports received by the North Richland Hills Police Department for investigation should be typewritten by personnel on duty in records and communications, and on offense records forms suggested by this study for that purpose.
- II. Each offense or complaint report should be given a consecutive serial in the order of its receipt, regardless of its classification, such number to be stamped by a numbering machine in the space provided for that purpose on the complaint control card. The offense report or incident report requiring follow-up will be hand-written and turned over to the patrol sergeant on duty for his review. The sergeant may pick the reports up in the field and bring them to the records center.
- III. The offense report should be typed in duplicate or triplicate and a copy routed to the division or divisions concerned. The original will be held in the records room.
- IV. The reports are to be completed immediately after receipt of the original information. Failure to properly make a report on any matter referred to the North Richland Hills Police Department shall constitute a violation of the order initiating this program.
- V. Records clerks should be supplied with a supply of offense report forms to facilitate obtaining complete information necessary for typing the original report.
- VI. All "on view" arrests, regardless of the charge, should be made on an arrest report form. If it is a criminal offense then the information must be put on the proper form. In cases of Drunkenness, House Bill 602, DWI, and Traffic there is no need for an offense report other than the arrest report as this is an "on sight case". If there is a complaining witness then the Incident Report should be completed.
- VII. Requests for investigations from outside agencies received by letter, telegram or otherwise, shall also be recorded in the manner described above on the form #1 with a complete report to be filed by the officer assigned to investigate the case on the proper offense form. The original letter, telegram, photographs, or other documents so received, should be attached to the report. Copies of such documents should be made for the division and investigating officer concerned when necessary.
- VIII. No letter, telegram, warrant, photograph, or other document should be detached from the original offense report record and delivered to any investigating officer until he has signed a receipt therefor, on a form prescribed for that purpose. Such receipt should be issued by the Services Commander or by an assistant authorized by him, and said receipt shall be attached to the original offense record form which it concerns.

IX. A blank form #1 (complaint control card) number may be issued to any commanding officer on request by records and communications personnel. In all such cases only the name of the commanding officer and the date may appear on the form #1 and this information, together with the case number, shall be entered on the complaint log, as outlined below for all offense reports. The foregoing procedure should be followed in recording reports of subversive activities and certain types of vice complaints where operations must be attended with some measure of secrecy pending final disposition of the case.

X. The form #1 serves the Records Division as an instrument of control over the case to the end that the records of the department may, for administrative purposes, accurately reveal the total amount and nature of work being performed by the department.

A blank offense report form will be assigned this case number and where possible the proper offense classification number so that the proper statistical and follow-up procedure can be followed.

XI. Upon final disposition of such cases, the division concerned shall furnish the Records Division with information necessary for typing the case on the original blank offense report. In rare instances following disposition, detailed records and information of a highly confidential nature bearing upon the case may, if necessary, be retained by the division concerned on the authority of the Chief of Police; but such records must be attached to a duplicate copy of the offense report on file in that division and be subject to inspection by the Services Commander.

XII. Authorization for the retention of such supplementary records should be granted only in exceptional cases and such authorization, together with an enumeration of documents so retained by the division concerned shall be attached to the original case report on file in central records. No case should be allowed to remain silent for a period exceeding thirty days from the date the blank number from the form #1 is issued to commanding officer, except on authorization of the Chief of Police. Such authorization should be attached to the original case report on file in Central Records.

XIII. It should be the full intent of this system, both expressed and implied, that no case involving a violation of city, state, or federal laws, nor any other case, report or complaint, should be investigated by any member of North Richland Hills Police Department except under the authority of a case number issued by Central Records.

XIV. After being recorded as previously outlined, each offense report, regardless of classification, should be entered in numerical order on the Central Records Bulletin. Immediately prior to the end of each tour of duty, this bulletin should be copied in sufficient quantity to supply a copy to the operations commander, the Chief of Police and the Services Commander. The briefing sheet should be continued as an addition to the above bulletin. This bulletin will only contain the case number, the type service requested, the address and the officer assigned to investigate the case. The briefing

bulletin should contain the case number, the complainant, and a short narrative of the case, wanted persons, stolen or wanted property, found property, etc. If the commander wants any further information on any case that is listed on the bulletin, he can have the original report pulled.

- XV. A file of the Central Records Bulletins for the immediate 30-day period should be maintained in the operations office for the convenience of the officers, and a similar file should be maintained in Central Records. The Central Records should maintain a Bulletin File in unbroken sequence from the beginning.
- XVI. When this system is initiated each patrolman should be held responsible for all offenses, regardless of classification, originating during his tour of duty in the area he patrols. Final disposition of felony cases should be the responsibility of members of the Detective Division. Final disposition of misdemeanor cases should be the responsibility of the patrolman. At the end of his tour the patrolman should file a preliminary report, on forms that have been suggested for that purpose, covering the investigation of each offense originating in his patrol area during his tour of duty. Such reports should bear the case number appearing on the original offense records form #1. When the word processing system is implemented, the patrolman should record this information as soon as possible after the incident is investigated.
- XVII. Since the patrolman should be held responsible for the disposition of non-felony cases originating during his tour of duty in the area patrolled by him, he should file at regular intervals a follow-up report covering his continued investigation of any uncleared case pending its final disposition. This procedure should continue until the case is disposed of or until the patrolman's commanding officer permits the case to be declared inactive. Any uncleared case should be considered a direct charge against the patrolman and his commanding officer. The Services Commander should institute the necessary follow-up procedure for control purposes to the end that the Records Division may have on file current investigative reports evidencing continued attention to uncleared cases. The foregoing procedure should also apply to those members of the department charged with the disposition of felony cases.
- XVIII. At the end of each tour of duty, or during the tour when the patrol sergeant picks up the field reports, all offense reports and officers reports should be routed to the Records Division where they will be assembled and processed in accordance with special instructions covering this phase of records procedure. It should be a responsibility of the Services Commander to maintain the highest degree of accuracy in meeting the requirements of the Uniform Crime Reporting; and it should also be his responsibility to compile a daily consolidated report, monthly reports, annual reports, and particularly, special studies and analyses dealing with present or emerging situations for the administrative use of the Chief of Police and the Operations Commander.

- XIX. All arrest should be recorded in chronological order and assigned an arrest number. This should be done on the arrest blotter by personnel on duty in central records, and this number should be assigned to the arrest form provided for that purpose. The duplicate should be filed in the Criminal History Jacket. The original copy of the arrest card should be held at the booking counter until the individual concerned is no longer in city jail. At that time, the date of release is entered on the original copy of the arrest report, and it will be processed by Central Records and filed by arrest number. Hence, the arrest cards on file at the booking desk will provide a continuous inventory of the jail population.
- XX. Further implementing this system, all calls for service should be routed to the Central Records or Dispatch Room. Where the request for police service is presented in person, records personnel should record the information on the complaint form #1 and assign the report to a patrolman. The same procedures as outlined above for any report should be followed.
- XXI. Further, the operation of all communications facilities should be under the direct supervision of the Services Commander. All records procedure covering the control of prisoners' property, found property, recovered property, impounded property and evidence should be under the supervisory control of the Services Commander.
- XXII. This system should require no change in the records procedure utilized on traffic citations.
- XXIII. The term "Offense Report" used in this suggested system refers to any violation of city, state, or federal laws, exclusive of minor traffic violations, or any other case report or complaint referred to the Department for investigation.
- XXIV. All records procedure heretofore employed which are in conflict with this system should be countermanded.

In the foregoing suggestions, it will be noted that the respective jurisdictions and responsibilities of patrolmen and detectives are redefined to some extent with a substantial increase in the responsibility of the patrolmen. This is in agreement with an observable trend in the American Police Services today, although prevailing practice generally too often, still conforms to the obsolete principle that the investigative function should be located exclusively in the detective division.

APPENDIX B

LATENT FINGERPRINTS

GENERAL: Impressions of friction ridges found at crime scene

I. TYPES FOUND:

- A. Latent - those that cannot be seen
- B. Patent - those that can be seen
 - 1. Blood
 - 2. In grease
 - 3. In dust
 - 4. Putty, etc.

II. REASONS FOR LATENT PRINTS:

- A. Secretion from sweat glands
 - 1. Contains approximately 99% water
 - 2. Contains salts, fats, and amino acids
 - 3. Hair oils from brushing hair
 - 4. Touching foreign materials such as blood, grease, dust, etc.

III. LIFE OF LATENT FINGERPRINTS:

- A. Atmospheric conditions
 - 1. Heat.
 - 2. Rain
 - 3. Dust
- B. Object latent left on
 - 1. Smooth, hard surface
 - 2. Clean and dry
 - 3. Rough and dirty
- C. Person leaving latent
 - 1. Rock mason
 - 2. Young
 - 3. Older Persons (ridge pores close)

IV. DEVELOPMENT OF LATENT PRINTS TO PATENT PRINTS:

- A. Powders and dusters
 - 1. Magna brush and powders
 - a. Brush on surfaces (except metals)
 - b. Powder adheres to latent print
 - 2. Feather duster and powders
 - a. Pour powder on card or in paper cup
 - b. Dip duster into powder and brush across surface (Powder adheres to latent)
 - 3. Camel hair brushes
 - a. Same as feather duster - only a stiffer duster
 - 4. Precautions:
 - a. Don't use excess powder
 - b. Don't try to blow powder off with mouth; flakes of sputum will destroy ridges
 - c. Use only tip of duster or brush, as sides are jagged and will destroy ridges
 - d. Don't powder wet prints, allow to dry
 - e. Don't try to use two colors of powder on one print. If in doubt as to proper powder, make a print on same surface in another place and check action of powder.

- B. Dead Prints
 - 1. Breathe over print
 - 2. Powder

- C. Chemical treatment
 - 1. Iodine
 - a. Fumer
 - b. Cabinet
 - 2. Fumer
 - a. Made of
 - 1. $\frac{1}{2}$ " glass tubing about 8" long
 - 2. Layer of glass wool
 - 3. Layer of calcium chloride to remove moisture
 - 4. Layer of glass wool
 - 5. Layer of iodine crystals
 - 6. Layer of glass wool
 - 7. Rubber tube to be affixed to end of tubing above calcium chloride
 - b. How used
 - 1. Blow through rubber tube so breath will pass through fumer
 - 2. Direct fumes from open end of fumer over the surface where prints are suspected
 - 3. Development is quite rapid
 - 3. Cabinet
 - a. Made of air-tight wooden or glass container, such as a fruit jar (use inverted)
 - b. How used
 - 1. Place suspected surface within container
 - 2. Place small amount of iodine crystals in lower portion of container in a porcelain bowl
 - 3. Heat porcelain bowl until fumes rise
 - 4. Allow fumes to engulf the object believed to have prints
 - c. Precautions
 - 1. Fumes developed in this manner rapidly disappear
 - 2. Fumes will prove irritating if inhaled
 - 3. Surface fumed will be discolored
 - 4. Silver Nitrate
 - a. Solution of 3 or 4 percent silver nitrate
 - b. How used
 - 1. Treat surface with solution by
 - a. Submerging by bath
 - b. Spraying over surface
 - 2. Remove excess by blotting
 - 3. Place under bright light - sunlight best
 - 4. Developed prints can be made permanent
 - a. Photograph is positive
 - b. Place in total darkness
 - c. Precautions
 - 1. Avoid getting solution on clothes
 - 2. Use rubber gloves if possible or clothes pins. as it discolors hands
 - 3. Do not allow surface to soak

5. Ninhydrin - Process (amino acids)

- a. In the development of prints by the ninhydrin method no set time for development can be given. Some latent prints develop almost immediately and others have developed as late as 30 days after processing in some cases.
- b. The following mixing procedure is based on an overall quantity of 1000 cc. This procedure should be followed with precision for efficacy of the solution. A smaller amount may be made by reducing quantity proportionately. 7.5 grams of ninhydrin (triketohydrindene hydrate) are dissolved in 40 cc of methyl alcohol. When the ninhydrin is completely dissolved, 950 cc of petroleum ether - B.F. 30° - - 60°C (also known as petroleum benzine or ligroine) are added and stirred for several minutes. The mixture is poured into a separatory funnel and allowed to stand for 5 to 10 minutes. Two layers are formed, a small quantity of deep yellow liquid on the bottom, and a much larger quantity of less viscous pale yellow liquid on the top. The deep yellow phase on the bottom is drawn off and discarded as it contains methyl alcohol, deleterious to ballpen inks. The pale yellow upper phase is used to process documents. It will not cause bleeding or dissolution of inks normally encountered.

A ninhydrin solution of acetone stored in this manner has been stored and used effectively up to one month in the laboratory. The other mixtures have a tendency to deteriorate more rapidly.

Once the solution is used it should be discarded instead of returning it to the unused stock solution. All new stock solution should be tested before using to assure yourself that the ingredients are active. On several occasions in the laboratory a mixture was prepared which would not react to latent prints, indicating that the powder can become inactive before solvent is added, or apparently a "beta" form of ninhydrin is encountered which is not a color indicator for the proteinaceous and amino acid residue in perspiration. Ninhydrin may be used on documents by spraying, dipping in solution or applied with a brush. When exhibits are dipped they should be emerged in the solution and removed immediately, then placed on hangers to permit evaporation of the excess solvent. Use rubber gloves or tongs. Do not get solution on skin.

- c. Triketohydrindene hydrate is available in a white powder form and has a tendency to irritate the cough glands. This is also true of some of the solvent agents such as acetone, therefore, care should be used in mixing chemicals, and a fume hood or other suitable exhaust system is advisable to dispense with the toxic or possibly toxic vapors generated by the ninhydrin mixture. This is especially true when ethyl ether is used as a solvent.

- d. Ninhydrin is generally mixed with one of the following solvents:
1. Acetone
 2. Ethyl ether
 3. Petroleum ether
 4. Ethyl acetate
 5. Methyl alcohol
 6. Ethyl alcohol, etc.
- The choice of solvent depends upon the particular problem confronting the examiner.

"CHEM PRINT"

6. A. "Chem Print" is a spray, and the manufacturer claims the following: "Chem Print" is an extremely sensitive chemical solution for the development of latent prints on fabrics, wood, cardboard, and all paper products. It may also be applied to documents without fear of obscuring or destroying most written material. Do not handle surface after spraying as your print will develop on surface.
- B. "Chem Print" is applied by spraying all surfaces of the evidence until it is thoroughly wet. Allow it to completely air dry, then subject to 200° Fahrenheit and latent prints will develop in a matter of seconds. If it appears desirable, questionable areas may be re-treated to obtain additional contrast. The chemical reaction is not concluded by the use of heat and latents may continue to develop for several hours.
- NOTE: If the heating process is not applicable, the evidence may be sprayed in the same manner and development will occur within a few hours at a temperature of approximately 75° Fahrenheit. This is a completely satisfactory method when time permits. Latent prints developed by either method will remain stable for six months to a year, allowing the technician reasonable time for photographing or in some cases the original could be presented in Court. Prints cannot be lifted.

V. Preservation of Developed Prints

- A. Photography
1. Folmer Fingerprint Camera
 2. Always photograph first
- B. Lifting
1. Always photograph first
 2. Kinds of tape
 - a. Black
 - b. White
 - c. Transparent
 3. Methods of use
 - a. Select contrasting colored tape

1. White tape for
 - a. Red powders
 - b. Black powders
2. Black tape for
 - a. Bronze powder
 - b. Aluminum powder
 - c. White powder
3. Transparent tape - all powders
- b. Cut off strip of tape sufficient to fully cover print. If black or transparent tape is used, allow sufficient length to place identifying mark on label under and one tape
- c. Application
 1. Pull celluloid loose; avoid touching sticky surface with fingers
 2. Place sticky side of tape one-half to one inch to the side of the print
 3. Press remainder of tape down upon print
 4. Remove tape
 5. Reaffix celluloid protection, roll out air bubbles
4. Precautions
 - a. Don't allow tape to slip
 - b. Press tape firmly over treated print to secure entire ridge formation
 - c. Don't lift until all excess powder has been removed from print
 - d. Print is reversed with opaque tape

VI. Identification of Latent Prints

- A. By developing officer
 1. Place label near print, to be included in photograph, bearing
 - a. Officer's initials
 - b. Date
 - c. Case identification, if you know your case number ahead
 2. Black and transparent tape: Place label between protector sheet and tape
 - a. Officer's initials
 - b. Date
 3. White tape: Record data on back of tape in ink
 - a. Officer's initials
 - b. Date
- B. By Searching Officer
 1. Classification
 - a. Batly System: Searching single fingerprint file
 2. Comparisons
 - a. With those of suspect
 - b. With all persons having access to crime scene

VII. Locating Latents at Crime

- A. Entry

1. Windows
 - a. Pane
 - b. Sill
 - c. Facing
2. Doors
 - a. Knobs
 - b. Facing
 - c. Glass, if glass pane is in door
3. Transoms
 - a. Pane
 - b. Facing
 - c. Frame
4. Skylights
 - a. Pane
 - b. Frame

B. Departure

1. Windows
 - a. Panes
 - b. Sill
 - c. Facing
 - d. Frame
2. Doors
 - a. Knobs
 - b. Frame
 - c. Glass
3. Transoms
 - a. Pane
 - b. Facing
 - c. Frame
4. Skylight
 - a. Pane
 - b. Frame

C. Articles Handles During Crime

1. Furniture
 - a. Chairs
 - b. Desks
 - c. Bedsteads
 - d. Radios
 - e. Tables
 - f. Dressers
2. Boxes
 - a. Money boxes
 - b. Jewelry boxes
 - c. Miscellaneous boxes
3. Silverware
 - a. Knives
 - b. Forks
 - c. Spoons
 - d. Other type
4. Chinaware
 - a. Cups
 - b. Saucers
 - c. Plates
 - d. Other types

- 5. Safes and Vaults
- 6. File Cabinets
- 7. Cash Registers
- 8. Ice Boxes

VIII. Marking Location of Latent

- A. Purpose: For proper court procedure
- B. Movable or small articles
 - 1. Keep article with print on it, if possible
- C. Stationary and immovable objects
 - 1. By drawing diagram
 - a. Measurements
 - b. Witnesses
 - 2. Using marking tool
 - a. Diamond point needle
 - b. Have witnesses
 - c. Draw location
- D. Importance
 - 1. For Court Procedure
 - a. Newton Grice Case
 - b. Nassau Murder Case

IX. Position of Latent in Relation to Each Other

- A. Importance
 - 1. Helps man in office saves searching
 - 2. Also helps you in Court
- B. Right Hand
 - 1. Single print
 - 2. Two prints side by side
 - 3. Three prints side by side
 - 4. Four prints side by side
- C. Left Hand
 - 1. Single Print
 - 2. Two prints side by side
 - 3. Three prints side by side
 - 4. Four prints side by side

X. Preparation of Evidence for Court

- A. Enlargement: 8 X 10 inches or more if possible
 - 1. Of latent print
 - 2. Of suspect's print
 - 3. Of equal size
- B. Mount on heavy cardboard
- C. Draw out and number
 - 1. Each corresponding point of identification
 - 2. Select ten points of comparisons or more
 - a. Court takes judicial notice of such identification
 - b. Lesser number if usual design are to be considered
- D. Psychology of Evidence: If more than ten points are evident, omit one or two of most noticeable characteristics
 - 1. Juror makes his own identifications on obvious points and accepts the others

Page 8.

2. Prepare one exhibit for each of two jurors
 - a. To promote competitive spirit
 - b. To secure greater weight to evidence

XI. Keeping Evidence

A. Purpose for Use in Court

1. Mark Case Number
2. Fix or place where latents will not be destroyed
 - a. Cover latents with transparent tape

XII. Shipping Evidence

A. Insure or mail registered

B. Pack Well

1. Don't use paper or absorbants in direct contact
2. Pack so glass will not break

XIII. Cautions

A. Never handle any articles at scene of crime

B. Warn fellow workers and all who have authority to be at crime scene not to handle articles.

END

42F-1

PHOTOGRAPHY IN LAW ENFORCEMENT

Today the camera has a very definite place in all fields of endeavor, and especially as it is applied to Law Enforcement work. Law Enforcement officials everywhere realize the importance of photographing a crime scene for evidential purposes.

Every officer should have some knowledge of photography, its uses, and what it means to the law enforcement officer. This type of photography has increased quite a lot in the last few years, and we are going to endeavor to give you a fair working knowledge of the subject. It plays a very important part in identification work, such as photographing latent fingerprints, making photographic exhibits of handwriting and fingerprint cases for court, mugging the criminal and many others. It also plays an important part in traffic accidents which the officer of today is confronted with.

In the laboratory, photography aids in the unfoldment and preservation of evidence. This includes the revelation of hidden clues by means of Ultra-Violet and Infra-Red photography, as well as other highly specialized photographic techniques. By passing a parallel ray of light across the surface of a piece of paper or ordinary appearance, it may be noticed that indentations stand out before the eyes of the scientific investigator, revealing important facts which may be instrumental in solving a case. Photography preserves these indentations for future use in our courts. Innocent appearing documents when photographed under the Ultra-Violet or Infra-Red light rays may reveal information of value.

Duties of the Law Enforcement Photographer.

1. Making photographs at the scene of crime
2. Photographing latent fingerprints.
3. Photographing tire tracks.
4. Photographing foot prints
5. Mugging the criminal
6. Preparing photographic and photomicrographic exhibits of
 - a. Latent fingerprints
 - b. Handwriting
 - c. Bullets
 - d. Cartridge cases
 - e. Tool markings
 - f. Hairs
 - g. Fibers
 - h. Glass
 - i. Paints
7. Photography by the use of the Ultra-Violet light
 - a. Photographing secret or invisible writing
 - b. Photographing writing that has been eradicated
 - c. Photographing stains, such as blood stains, seminal stains, etc.
8. Infra-Red photography
 - a. Eradicated writing
 - b. Blood stains
 - c. Burned or charred papers
 - d. Bullet holes
 - e. pictures of old and faded documents
 - f. Distant shots on cloudy or hazy days.

There are many other types of photographic work that the Police or Law Enforcement photographer might be called upon to do. It is often necessary for the police photographer to make photographs of traffic accident scenes, laboratory methods of crime detection, etc., both movies and stills, to be used for educational purposes. These photographs and motion pictures are very beneficial for use in Police training schools, as well as acquainting the public with problems that the law enforcement officials are confronted with.

Detailed information is usually lacking as to just what type of pictures the photographer will be called upon to make, therefore, it is best to be prepared for any emergency before leaving to cover the assignment. The following is a list of equipment and supplies necessary to cover most any type of case:

CAMERA

A camera for use in this type of photography should be one equipped with the following:

- a. Double extension bellows
- b. Ground glass for focusing
- c. Coupled range finder
- d. Photoflash Synchronizer
- e. Normal focal length lens
- f. Wide angle lens
- g. Film pack adapter
- h. Film holders for cut film

In our opinion, the most desirable camera for this type of photography is the crown graphic, preferably a 4 x 5 or 3 1/4 x 4 1/4. This camera can be purchased with all of the above mentioned accessories. They are of exceptionally rigid construction and are built to withstand many of the hard knocks they will get if carried around in a police car, and that is where your camera should be at all times, ready for action. With a camera of this type, either film pack or cut film can be used. With the roll film type cameras all of the roll will have to be exposed, but with a camera equipped with film pack adapter or cut film holders, any number of pictures may be made and the exposed film taken out, leaving the unexposed film in the adapter ready for the next case.

DOUBLE EXTENSION BELLOWS

The double extension bellows will permit the making of actual size pictures by using a tripod and working at very close range. Photographs of fingerprints, signatures, tire tread impressions, foot prints, etc., can be made very successfully with the crown graphic.

GROUND GLASS

The focusing ground glass will have to be used when working at very close range. By the use of the ground glass, the cameraman can accurately center and focus the object, which is the only method that should be used when working at close range.

COUPLED RANGE FINDER

The coupled range finder can be used successfully when focusing on objects, 4 feet and beyond. This range finder is coupled with the bed of the camera and when an object is viewed through this finder and you see two images, rack the focusing bed of the camera back and forth until the two images come together, and your camera will be set at the correct distance. By use of this attachment, the cameraman can work much faster and be sure that his pictures are going to be in good focus. Very often speed means a great deal, depending, of course, on the type of pictures that are being made.

When making pictures of objects at close range, as we stated before, it is necessary to use the ground glass, not only for focusing, but to accurately center the object on your film. Most all cameras are equipped with a view finder, but due to the fact that the view finder is located an inch or two above the lens, it is impossible to accurately center the object without the aid of the ground glass. Never depend on the view finder when operating closer than 3 or 4 feet.

FLASH SYNCHRONIZER

The photoflash synchronizer is used to fire the flashlamp at the instant the shutter is opened. With the aid of a synchronizer it is possible to make pictures by artificial light as easily as in daylight. Interior pictures at a crime scene can be easily made. The camera can be held in the hand and a tripod is not necessary. The synchronizer can be used very successfully to build up in the shadows when making pictures out side in the sunlight where good detail is wanted in the heavy shadows.

NORMAL LENS

Any camera that is used for legal photography should be equipped with a normal focal length lens. To determine if a lens is a normal focal length, measure the film diagonal. When a 4 x 5 inch film is measured in this manner, you will find that the distance is $6\frac{1}{4}$ inches. Therefore, a $6\frac{1}{4}$ inch lens would be considered normal for the 4 x 5 camera.

WIDE ANGLE LENS

In making evidence pictures in cramped quarters, it is sometimes necessary to use a lens of a very short focal length for a given picture's size, or a wide angle lens, as it is called. Most speed graphic cameras can be equipped to use a wide angle lens by dropping the bed in front which is hinged. This is necessary if an extreme wide angle is used, otherwise the bed of the camera will show in the picture. Naturally, the wide angle lens will create the impression that distances between objects in the room are greater than they are in fact, but you will find that at times it is the only method by which a photograph can be obtained. Due to this fact, it is advisable to measure the distances between all objects and a diagram made of the room showing the exact location of all material objects.

FILM PACK ADAPTER

At least one film adapter should be a part of your regular equipment. A film pack adapter will hold one pack containing 12 film. After each exposure, merely pull a tab and another film is in front of the lens. Each film in a film pack is numbered, and with the aid of these numbers notes can be kept very easily.

CUT FILM HOLDERS

If desirable, sheet or cut film may be used. If you desire to use this type of film, have at least six holders, which will give you 12 film, two film in each holder. You will find that the film pack is much more convenient to use, because the new pack can be loaded in daylight, and the sheet film holders will have to be loaded in total darkness.

TRIPOD

It is very necessary to have as a part of your regular equipment a good strong tripod. A tripod is convenient when making close-up pictures of tire tracks, foot prints, signatures, etc. when using the crown graphic camera.

TILTING TRIPOD TOP

When making pictures of tire tread impressions, foot prints, etc. where it is necessary to point the camera straight down, the tilting tripod is used by mounting it on top of your tripod. It can be set and locked at any angle, permitting the cameraman to fasten his camera in almost any desired position.

EXPOSURE METER

When making pictures out-of-doors and when using photoflood lights or other artificial illumination, the exposure meter is used to determine the correct exposure. It is of no value when using a photoflash lamp, but is a valuable piece of equipment when doing exterior work, especially color. It is not advisable to use color film without the aid of an exposure meter.

TYPE OF FILM TO USE

It is almost an impossibility for a Police Photographer to cover the very large field of law enforcement photography without a variety of film to choose from. You will find that each case, if properly photographed will involve the use of several different types of film.

For ordinary work at the scene, the photographer might be able to produce good results by the use of two different types of film. One a fast Panchromatic film, and two, an Orthochromatic type. These may be purchased in both the film pack and sheet film. The Panchromatic pack could be a tri-X type or Royal Fan the trade name depending, of course, on the manufacturer. This type of film is sensitive to all visible colors. It can be used under very adverse lighting conditions due to its speed. By the use of the proper color filters over the lens, it is capable of reproducing a scene of object in black and white as it appears to the eye in color. Another type of Panchromatic film is

the Eastman Panatomic X or plus-X. This film is very fine grain and will permit the making of enlargements with less noticeable grain. This fine grain film is not as fast as the other panchromatic film mentioned however, but reasonably short exposures can be made under poor lighting conditions.

Another type of film that should be available for the police photographer's use is the Panchromatic Process film. This type of film is very slow in speed, but very high in contrast. Because it is high in contrast, it tends to produce pictures that are harsh in quality--pictures that have chalky whites, deep blacks and few intermediate tones in between. Process is a special purpose film used to bring out dim fingerprints, to photograph disputed documents, to bring out dim skid marks and other special purposes. It is not used when it is desired to reproduce a scene or object as it appears to the eye.

In recent years, one of the major film makers produced a color negative and print paper called Ekta-color film and paper. With these materials photographs can be made in full color of accident and crime scenes, assault victims, criminals and many types of evidence. This material is also invaluable for use in accident prevention displays. This film is available in roll film in sizes 120 and 35 MM; Black and White prints and color transparencies can also be made from this film.

FINGERPRINT CAMERA

The fingerprint camera is a fixed focus camera with built-in light operated from a battery inside the box. The fingerprint camera is small and can be used to photograph fingerprints found in corners, under ledges, etc. where latent prints are often found. Prints may be photographed with the speed graphic or other view cameras, but not nearly so convenient as with the fingerprint camera.

When making pictures of latent fingerprints, signatures, heel prints, etc., all that is necessary is to place the camera over the object to be photographed and open the shutter. There is no focusing to be done, as we mentioned previously, it is a fixed focus type. Usually a short time exposure will have to be made, depending on the type of film being used.

TYPE OF FILM FOR FINGERPRINT CAMERA

In selecting a suitable film for the fingerprint camera, we are confronted with the same problems as in other types of police photography; it all depends on the type of print, the background, etc. If the print is of good contrast, the verichrome or panchromatic film will reproduce the print satisfactorily, but if the fingerprint is low in contrast, the process panchromatic film will produce the best results. It might even be necessary to resort to the use of filters and other lighting methods which will be discussed later.

MURDER SCENE

One rule wisely stressed is to preserve all evidence untouched until it has been photographed. Neither bystanders nor police officer should be permitted to touch anything at the scene of a crime until the necessary photographs have been made.

At the scene of a homicide, photographs of the following subjects should be made for use as evidence:

1. General photographs of the scene showing the location and position of the body. Whenever possible, such photographs should be made before anything has been disturbed. At least two photographs should be made from camera positions at right angles to each other in order to record the exact location of the body.
2. Close-up views of the body and its immediate surroundings.
3. Photographs of weapons, if any are present.
4. Photographs showing the location of bullet holes in furniture, floor, walls or other nearby objects.
5. Photographs of entrance and exit to crime scene.
6. General photographs of the scene after the body has been removed showing blood stains under body, etc.
7. Photographs of all articles bearing fingerprints showing the location of fingerprints. Photograph all fingerprints before they are lifted with lifting tape.
8. Photographs of all rooms having a direct connection with the room in which death occurred.
9. Exterior views showing entrance and exit used by the murderer, and the surrounding territory.
10. Photographs showing any shrubbery, fences, buildings, etc. that could have been used by the murderer for concealment.
11. Photographs of streets, sidewalks or driveways, probably used in gaining access to the premises.
12. Photographs of any tool marks on doors or windows.
13. Photographs of foot prints in out of the way places, such as flower beds, etc. that could have been made by the murderer.
14. Photographs of foot prints left on a dusty floor.
15. Photographs of tire tread impressions. Even though a plaster cast is made, the track should be photographed before the cast is made.

When the murder scene is a small room, and this is often the case, it will be necessary to use a wide angle lens in order to show as much of the scene as possible in each picture. The wide angle lens will create the impression that distances between objects in the room are greater than they really are. Even though this is true, it is often advisable to use a wide angle lens because a photograph cannot be made in any other way. Due to the fact that wide angle pictures appear distorted, the distances between all objects should be measured and a diagram should be made of the room showing the exact location of all objects.

BURGLARIES

General views should always be made of both the exterior and interior of a building where a serious burglary has been committed. Then attention should be given to close-up photographs of the point of entrance and place of exit of the intruder if these locations are ascertainable. Tools and other objects occasionally left behind by a burglar should always be photographed. Of course, particular attention should be given to photographing any latent fingerprints that are found. A search should be made of the entrance and exit to the building for any minute objects, such as hairs, fibers, etc. These cannot always be easily photographed at the scene, but a photograph could be made that would show the exact location of these objects.

RAPE CASES

In rape cases the scene of the crime should be photographed to include some of the surroundings. A single close-up view may be misleading in cases of this kind, for instance, a single view may be very desolate and uncivilized with the camera turned in one direction, while a different camera position may show the location of the spot is very near dwelling houses or other occupied buildings. Of course, in addition to the general scene photographs, additional close-up pictures of any blood or other stains and marks on the ground. In order to make these marks and stains show up clearly in a picture, it is permissible to use contrast filters. Selection of the proper filter will often enable the photographer to bring out marks and stains that are practically invisible to the eye. These photographs of stains, etc. at the scene are made to show the location of such evidence. After they have been photographed, specimens should be carefully preserved for submission to the chemical laboratory.

LATENT FINGERPRINTS

The fingerprint camera can be used very successfully in making photographs of:

1. Latent fingerprints
2. Signatures
3. Heel prints.
4. Body marks and many other small objects

The fingerprint camera is a very important piece of equipment in a field investigation. All prints should be photographed before they are lifted, if at all possible.

If fingerprints are found on objects where the surface is not flat, methods other than the fingerprint camera will have to be employed. Prints found on rounded or curved surfaces may be photographed with a view camera or the speed graphic, using a tripod and the necessary lighting equipment. If the speed graphic is used, open the lens to its widest aperture, open the shutter and focus the print on the ground glass. After the print has been properly centered and focused, close the sperture gradually while looking at the print on the ground glass and close the aperture until all of the print is in focus. The curvature of the surface will govern the diaphragm or aperture. If the print is on a bottle or similar object, a diaphragm opening as small as f. 22 might have to be used. The exposure then will have to be determined from the

diaphragm opening, the smaller the aperture, the more exposure you will have to give.

Latent fingerprints on glass can often be photographed by transmitted light before the print has been powdered, provided the print is visible to the eye with transmitted light. This method has been found to be very successful where the print is old and will not take the powder.

TRAFFIC ACCIDENTS.

Traffic accident scenes, if properly photographed, require as much study and preparation as any other type of photograph the police photographer might be called upon to make.

1. The first picture should be made to include the entire scene. Locate the camera far enough back to include as much of the scene as possible, however, it is not advisable to get too far away and include irrelevant surroundings in the picture which have no bearing on the accident. Fill the negative with the actual scene.
2. Proper camera location--The camera should be located where it will produce the most accurate photograph of the scene. If the accident occurs at an intersection, locate the camera to where all corners of the intersection will be clearly shown. By doing this, it can be seen by the photograph whether or not the intersection is blind. Very often photographs of this type can be misleading, if not photographed at the proper distance.
3. Height of the camera--The camera should be at the proper height in order to reproduce a scene accurately. There is no set rule as to the height the camera should be, it depends on the type of accident and the type of vehicles involved. As a rule the camera should be about the same height as the vision of the driver of the vehicle. A camera with an eye level view finder will usually produce the desired results by holding it up to the eye. In an accident scene where trucks and buses are involved, it will be necessary to have the camera higher than eye level, in order to reproduce the scene as it appeared to the driver.
4. Focal length of lens--In order to reproduce the scene as it appears to the eye a normal focal length lens should be used. Avoid the use of wide angle and Telephoto lens unless the scene cannot be photographed in any other way. As we stated earlier, the wide angle lens will make the distances appear greater than they are and the telephoto lens will make the distance appear shorter.
5. Focusing--Focus on the principal object in the picture and use the smallest diaphragm opening that is practical under the circumstances. If a tripod is used, a small diaphragm opening can be used even with slow shutter speeds, but do not attempt to take a picture with a hand held camera with a shutter speed slower than 1/25 of a second.

COMPOSITION OF PICTURE

The composition of a picture means a lot, and a good question to ask yourself before you take a picture would be, is this the best angle from which to take this picture, and also be sure that you are in the correct position so as to show therein its true and relative size. I am sure you have all seen a picture of the Texas jack rabbit as large as a deer. Pictures like this can be made very easily with most any camera, all you have to do is put the object that you want to show large, up close to the camera and have the man stand a little ways beyond the object and that will give you an effect of this kind. A lot of others can be made very easily which will make the picture look very much out of proportion, for example, if you were taking a picture of a building with a box camera, and you had to tilt the camera upwards in order to get the top of the building in, you would get an effect something like this.

With a large camera of the 8 x 10 type, it is possible to get pictures of this type without having to get off too far because you have the advantage of swing back and tilting lens board. In making pictures with a camera of this type, you have to focus through a ground glass, because it has no distance scale or view finders; it is also not equipped with a synchronizer. It is a little slower to operate. Better pictures can be obtained with this camera, because contact prints can be made from the negatives which are 8 x 10; also straighten the lines of your picture. By this we mean that if you were taking a picture in this room with a camera that did not have a swing back, posts and walls would not be at right angles with the picture. In other words, they would be tilted to one side, but with this 8 x 10 camera, you can use the swing back and straighten your pictures. We are not recommending this camera for all types of work, for one thing, you cannot very well haul it around on a motorcycle. There are times when we use smaller cameras ourselves, because they are so much faster to operate.

Composition is a good thing to keep in mind at all times, because if you take a picture for use in court that does not show a true and correct reproduction of the subject or object photographed, it will not be admissible. A picture should tell a single story. Some things to remember when taking pictures for court; In making these pictures, you should have a note book handy and also a rule in order to take down the time of day, the distance from camera to object or subject, height of camera from the ground or floor, number the negatives to correspond with the number of the film pack tabs (note: on all film pack tabs you will have numbers which run from 1 to 12, and when the films are developed, the same number will develop out on the tab of the film as you have on your tabs which will make it very easy to keep a perfect record of pictures made.)

A few questions you might be asked in court: (1) what type of camera did you make this picture with? (2) What kind of lens does it have? Is it an f:4.5 Kodak Anastigmat, Bausch and Lomb, or a Carl Zeiss, whatever type of lens you might have, all lens have a name, except on some of the cheap box cameras or the lower priced folding cameras. (3) What kind of film did you use? (4) What shutter speed?

(5) Distance you were from object? (6) Distance from camera to ground or floor? or subject? (7) Was it cloudy, raining or was the sun shining? It is a good thing to have all this information where you can answer it hurriedly and accurately. You should be able to say: I made this picture with a Speed Graphic camera, equipped with an f:4.5 Kodak Anastigmat lens, 20 feet from some certain object in the picture, speed 1/25th of a second, diaphragm opening f:16, using Verichrome film. Another question you may be asked: Did you develop and print these pictures yourself, or if you did not, were you present when they were developed and printed, and you can truthfully say there has been no retouching or alternations of any kind? In most cases where you had the films developed by some local photographer and were not present when he developed them, it may be necessary for him to appear in court to testify that they are true and correct pictures.

NOTES.

No matter what type of case you are working on, whether it is a crime scene or a traffic accident, always keep a good set of notes on the distances, height of camera, type of film used, lens openings and all other information which may be helpful in the trial of the case. Preserve your photographs and avoid too much handling prior to the trial. By doing this, you will always have a good, clean photograph to introduce during the trial of the case. The best method is to place at least one set of pictures in an envelope and seal it until the case is brought to trial.

Be satisfied with only the best possible results that can be obtained from your negatives.

ULTRA VIOLET PHOTOGRAPHY

Among the uses of Ultra-Violet photography are the examination of questioned, altered, and faded documents, restoration in works of art, inks, fingerprints, blood stains, body marks and other such subjects that can not be examined with success by the ordinary methods of photography.

There are two distinctly different methods of using Ultra-Violet radiation for taking photographs. The first of these which can be called the "reflected Ultra-Violet method", is similar to the ordinary photographic methods whereby the photograph is made by the light which is reflected from the object. In the case of Ultra-Violet photography, however, the light falling on the subject and that reflected from it are invisible.

The second method called the fluorescent light method, depends on the effect known as fluorescence. If we stand in a dark room in which there is a source of Ultra-Violet radiation, even though it cannot be seen, certain parts of our body such as the skin, teeth, and fingernails glow with a soft light and show up very clearly. This is due to fluorescence. Many objects when irradiated with Ultra-Violet give off this new light which is longer in wave length than the Ultra-Violet. While the Ultra-Violet is completely invisible, this fluorescent light being of longer wave length is visible and is usually blue or greenish yellow. In addition to this faint visible light, there is also reflected Ultra-Violet which cannot be seen but is much stronger photographically than the other.

In the reflected Ultra-Violet method of photography, the object is illuminated with Ultra-Violet only, visible light being excluded. In this manner the Ultra-Violet alone acts upon the photographic plate. In the fluorescent light method, the object is again illuminated with Ultra-Violet radiation, but only the fluorescent light coming from the object is allowed to act upon the photographic plate. This is achieved by placing a filter over the camera lens to absorb all the Ultra-Violet, but allow the visible light to pass through. There is no general rule determining the choice between the two methods of Ultra-Violet Photography. If the detail to be shown can be seen by fluorescent light, it can be photographed by fluorescent light. If the detail cannot be seen, it may or may not be possible to photograph by Ultra-Violet light; and only experiment will tell. The method using reflected Ultra-Violet is much quicker and if convenient, should be tried first.

DETAILS OF REFLECTED ULTRA-VIOLET METHODS

In photographing objects by reflected Ultra-Violet, a suitable source of Ultra-Violet radiation must be used, and a filter which transmits only the Ultra-Violet and no visible light must be employed over the light source or over the camera lens. The operations must take place in total darkness if the filter is over the light source. A suitable source of Ultra-Violet is the mercury vapor arc lamp. These are available in many forms for a variety of purposes; such as photographic studio lamps, industrial light sources, photographic copying and printing lamps, and for scientific and medical purposes. These are available with quartz lamps or glass lamps and may be

obtained from several manufacturers such as the Hanovia Chemical Manufacturing Company of Newark, New Jersey, and the General Electric Vapor Lamp Company of Hoboken, New Jersey. If the mercury vapor lamp is of clear glass or quartz, it must be used in conjunction with an Ultra-Violet transmitting filter such as Corning "Ultra" Glass, #536, 8-10mm. thick. The lamp should be mounted in a light tight ventilated metal box with the filter mounted in one side.

The lamps are available in which the glass of the tube itself is an Ultra-Violet transmitting filter absorbing visible light. The Corning #586 filter need not be used with such a lamp.

In photographing objects according to the reflected Ultra-Violet method, the subject should be illuminated with a source such as that described above and may be photographed with an ordinary camera, even though the glass in the lens is not very transparent to Ultra-Violet radiation the transmission is sufficient so that an exposure can be made in a comparatively short time. All photographic films and plates are sensitive to the Ultra-Violet although it is preferable when making photographs by the reflected Ultra-Violet method to use a material which is non-color sensitive. The Eastman process plate or Eastman process film will prove satisfactory. Exposures will vary, therefore a certain amount of experimenting will have to be done. As a suggestion; one minute using a stop of F.16.

DETAILS OF THE FLUORESCENT METHOD

In photographing objects by Ultra-Violet, using the second, fluorescence method mentioned above, the same arrangement is employed for irradiating the subject. In this case, however, it is necessary to use over the camera lens a filter which does not transmit any Ultra-Violet rays, but which truly transmits all the fluorescent light from the object. This is very necessary, otherwise the picture would be made by the reflected Ultra-Violet method, since this reflected Ultra-Violet light is many hundreds of times stronger photographically than the dim fluorescent light.

The filter to be used over the lens for this method must have the following characteristics: it must not fluoresce when exposed to ultra-violet light, it must be stable to light, and it must be stable with time. A filter specially made to have the above described characteristics is the Wratten #2-A.

The film or plates most suitable for Ultra-Violet photography, using the fluorescence method, are the Eastman Panchromatic Process film or Eastman Panchromatic Process plates. Exposures will vary, therefore a certain amount of experimenting will have to be done when using this fluorescence method, as was explained in the details of the reflected Ultra-Violet method. It must be remembered that the fluorescence method is hundreds of times slower, photographically, than the reflected method. Therefore, a much longer exposure will have to be given. A suggestion would be, 20 minutes at F.4.5 with the lamp about twenty inches from the subject, using a Panchromatic film or plate of the type mentioned above or a similar brand.

Film or Plates exposed by the use of Ultra-Violet may be developed in the same manner in which ordinary photographs are developed.

Many different methods are employed in Ultra-Violet photography. We have found the method described below very satisfactory for fingerprints.

For the detection and photography of fingerprints, Ultra-Violet light has proved of great use. Since the impressions normally left by the fingers contain small traces of organic matter, such as oils and fats and these fluoresce in Ultra-Violet light. By the use of anthracene (or zinc sulphide), which is dusted on the print, the excess being gently brushed off, in the same manner as powdering a latent fingerprint with ordinary fingerprint powder, it will be found that the anthracene (or zinc sulphide), if used as described above, will adhere to the fingerprint and in this way records of fingerprints on multi-colored backgrounds can be photographed very successfully.

The anthracene can be used very successfully on latent fingerprints left on a dry surface over a long period of time. Where the ordinary fingerprint powder will not adhere to the surface, and where the print is on a dark object, and there is not sufficient contrast to photograph the print in its natural stages. An examination of the print can be made under the Ultra-Violet light when powdered with anthracene without the aid of a photograph. However, it is much easier to make an examination from a photograph rather than trying to identify the print under the light.

In photographing a print which has been powdered with anthracene or zinc sulphide, the method using reflected Ultra-Violet should be employed first. As a rule this method proves very satisfactory. However, if the reflected Ultra-Violet process does not prove successful, the fluorescence method should be employed.

In many instances, chemicals may be employed to bring out writing which has been eradicated, but often times the Ultra-Violet will prove more satisfactory, due to the fact that the document in question is only slightly effected, if any, by exposing it to the Ultra-Violet rays. In most cases, when making photographs of documents where writing has been eradicated, the fluorescence method will have to be employed.

Old and faded documents which have been altered, can be detected very readily under the Ultra-Violet light.

In forgeries and counterfeiting the use of the Ultra-Violet rays become invaluable, as the different inks used will show a decided difference even though they appear to be the same when examined under ordinary light. This is also observed when a fresher ink mark is made over an older ink mark. In some cases this can be observed even though the inks are of the same composition.

In some cases, pencil erasures can be seen and photographed, due to the fact that the rays reflected by the tiny particles of graphite buried in the paper fluoresce. However, it should not be understood that this can be done in all cases where pencil erasures have taken place.

Many clues, such as matches, pieces of paper, and cloth found at the scene of a crime may be compared in Ultra-Violet light with objects found on a suspected person.

It must be definitely understood that the Ultra-Violet ray is not some sort of magic to answer all questions pertaining to crime investigation and the search for evidence.

Remarkable results have been obtained in the past and it is our belief that continued study and research will open an even larger field that will prove more helpful to the detection of criminals than it is today. Continued research is being carried on in many of our universities by the manufacturers of the Ultra-Violet lamps and by the manufacturers of photographic films and plates.

The following publications may be of interest:

"Hanovia Research Apparatus", Hanovia Chemical and Manufacturing Company.

"Fluorescence Analysis in Ultra-Violet Light", by J. A. Radley and J. Grant, London, 1935.

"Ultra-Violet Photography", Eastman Kodak Company, Rochester, N. Y.

INFRA-RED PHOTOGRAPHY

The infra-red is that portion of the spectrum of radiation which lies beyond the visible red. It is invisible to the eye and merges into the long heat waves. Infra-red radiation is emitted by all the common light sources, which depend for their action on materials being raised to a high temperature. The arc-lamp, the common tungsten filament lamp, and the photo-flash lamp emit infra-red radiation. The sun also emits infra-red radiation. Any of the above mentioned light sources may be used for photographing objects by the infra-red. So-called "cold light" such as the mercury vapor tube, are not very satisfactory for the production of infra-red.

Infra-red photographs have been made since the latter part of the last century. About 1931, sensitizing materials were produced which enabled infra-red photographs to be made with the ease of ordinary photographs. With Eastman infra-red films or plates and other infra-red sensitive materials, photography by these individual rays is very simple, requiring no more experience than ordinary photography.

Eastman Kodak Company manufactures a film known as the Kodak Infra-red film, Type IR-35, for 35 mm. cameras. This material is sensitive to the violet and blue light and the extreme visible red and near infra-red. Its sensitivity extends from approximately 6700A to 8500A, with a maximum in the region of 8000A.

Any camera may be used for taking infra-red photographs and any lens may be used. Most lenses give pictures in focus in infra-red if they are focused correctly for visible light. If good focus cannot be obtained, the camera should be focused visually through a red filter. In very exceptional cases, it is desirable to focus by making trial exposures at various settings of the focusing scale.

Due to the fact that infra-red material is so sensitive to light, care should be taken in handling. In some of the older cameras the bellows may transmit infra-red and fog the film or plate. This may also occur in using some of the older hard rubber slides. However, most all film holders and slides that have been manufactured in the last few years are quite safe for infra-red.

In making photographs by infra-red, it is necessary to prevent violet and blue light from reaching the plate. A deep yellow or red filter will have to be used over the camera lens (or over the lamps). The following Wratten filters are equally satisfactory: #15-G, #25-A, #70, #89-A, and #83-A. The same exposures will be required through all of these filters. The filter most commonly used for outdoor photography with infra-red is the #25-A, tri-color red. When using filters #83-A, and the #87 filter, the exposure should be double those required with the #25 filter, and the exposure through the 89-A filter will be slightly higher than that through the #25 filter.

When a distant landscape is photographed, on an ordinary plate or film, the detail in the distance is usually blurred by the haze, and the distant objects are rendered as if seen through a finely ground glass. This is because violet and blue light, which an ordinary plate or film is sensitive, is scattered by

atmospheric haze. The longer wave lengths of visible light and, particularly, the invisible infra-red, however, are transmitted quite freely by the haze. An infra-red photograph taken with a deep yellow or red filter on the lens to absorb the blurring violet and blue can therefore render the object very sharply, even if the haze makes them invisible to the eye.

infra-red photographs made out of doors, will render the sky as almost black, clouds and snow are white, shadows are very dense and lack detail, and the grass and leaves of trees have the appearance of snow. Photographs out of doors by sunlight using infra-red sensitive material often have the appearance of being taken by moonlight. Exposure meters are of no value for determining the exposure of infra-red out of doors. The actual value depends upon atmospheric conditions. A suggestion for a trial exposure would be 1/5 second at F.11, using the #25-A, filter. Since all infra-red materials are sensitive to blue and violet light, they may be used as ordinary non-color sensitive materials by simply leaving off the filter. It may be desirable to do this when using a 36 exposure roll. In bright sunlight, without a filter, the exposure would be about 1/100 second at F.8.

Infra-red photographs can be taken indoors using ordinary Mazda lamps, Photoflood lamps or Photoflash lamps. The exposures will have to be determined by trial, but a suggestion would be: about 1/10 of a second at F.8, using two #1 Photoflood lamps placed about five feet from the subject. In portraits of infra-red, the flesh appears chalky, the red lips are light, the eyes as black dots and all lines of the face are greatly exaggerated.

infra-red photographs of old documents, fabrics, bullet holes in clothing, writing that has been altered, etc., sometimes produce astonishing results. It is sometimes possible to determine that a document has been altered with a different type ink. In some instances where a check has been raised and even though the ink used to alter the check appears to be the same color as the original, infra-red might show that they are two distinctly different kinds of ink by their reaction to infra-red. By photographing bullet holes in clothing with infra-red, it is often possible to determine whether it is an entrance hole or an exit hole. Let it be understood that infra-red will not make the impossible possible. In many instances it might be advisable to try both infra-red and ultra-violet light on some cases which might come to your attention.

Photographs can be made in total darkness if a filter which transmits no visible light but freely admits the infra-red is used over the lamp. No filter is used over the lens and care should be taken to insure that no white light leaks from the lamp housing. Special Wratten filters are made in the form of safe-lights which, when placed over the lamps allow no light to reach the subject other than the infra-red which passes through the filter. A suitable trial exposure would be about one second at F.4.5 with two Photoflood lamps arranged about six feet from the subject.

Infra-red negatives can be developed in any negative developer. For negatives of normal contrast, the Eastman D-76 developer is recommended. Developing time in this developer is about 15 minutes at 65 degrees F. If a shorter developing time is desired, the D-19 developer should be used. For a higher contrast negative, use undiluted and develop about three or four minutes at 65 degrees F.

They should be developed in total darkness or with special care using the Wratten safe-light series 3. Negatives may be fixed and washed in the same manner as ordinary negatives.

We believe that in the future infra-red photography will aid the investigating officer even more.

This book should be purchased.

Modern Photography for Police and Firemen

by SAM J. SANCONE

*Instructor and Lecturer of Police Photography
Lorain County Community College
and
Western Reserve University
Detective Sergeant, Police Photography (Retired)
Shaker Heights Police Department*

SCIENCE IN LAW ENFORCEMENT SERIES



CINCINNATI
THE W. W. ANDERSON COMPANY

FOREWORD

The public demands upon the police and fire services and the ever-increasing complexity of the tasks involved in our urbanized nation have developed needs for more skills and knowledge in the performance of the tasks.

This work clarifies the photographic processes and their uses in the police and fire services by presenting its readers simple and lucid explanations on the various elements of photography. Our modern criminal justice system requires of the investigator an objectivity which can be achieved only through training and knowledge in scientific methods of investigation. Competence in photography provides one of the elements necessary in achieving that objectivity. The time is fast approaching when nearly every police and fire report of importance will contain photographic documentation. For that reason not only the specialist but also the generalist in the police and fire services must be competent in photography.

The book will be most helpful to students of scientific investigation of crimes, both on the in-service training level and in the colleges where pre-employment education is offered. The work is well documented and is written by an experienced identification expert who has been a practitioner and an instructor in the field for many years.

GEORGE ROSBROOK

*Coordinator of Service Programs,
Lorain County Community College, Elyria, Ohio.*

June, 1970.

INTRODUCTION

Photography is over one hundred years old. It is a field that has numerous applications in police and fire investigation work. The camera has become an essential tool, both in the small community and the large city, where more extensive laboratories have been established. Photography on a less elaborate scale is just as necessary in the small police or fire department as it is in the large metropolitan city.

In spite of the fact that photography plays such an important role in current law enforcement it is a subject that has been neglected in the training of the average patrolman or fireman. One reason for this lack of instruction is the belief that photography has to be an extremely complex subject beyond the understanding of any but an experienced photographer. Another reason is the idea that in order to use photography as an aid in law enforcement, a department must have expensive equipment and an elaborate set-up.

The purpose of this book is to prove that photography can be made simple enough for any patrolman to learn how to operate a camera and produce a satisfactory picture without becoming an accomplished photographer. It is intended to instruct policemen in the basic mechanics of darkroom techniques and demonstrate that it is possible to have a functioning photographic laboratory, no matter how small the department or how limited the funds.

This book is based on the assumption that the student knows nothing at all about photography. It is divided into two parts. The first part is designed to teach the fundamentals of photography; how to handle a camera with ease, expose and process film correctly and produce satisfactory prints by contact or enlargement. It will also provide information on planning a darkroom.

The second section pertains to the application of photography in law enforcement today, including information on what to photograph and why. It will deal with the more complicated aspects of photography used in recording specific types of evidence and solving crimes. Having explained the basic skills, in part one, this book can then aid the photographer in improving his techniques, by explaining the many ways in which photographs assist the investigation.

The usefulness of photography in any police or fire agency will depend, not on the size of the organization, but on the imagination and enthusiasm of its personnel.

SAM J. SANSONE

*Shaker Heights, Ohio
November, 1970*



PHOTOGRAPHY'S PLACE IN ASSISTING OUR COURTS*

by Harris B. Tuttle, Sr., Consultant on Law Enforcement Photography, Eastman Kodak Co.,
and Edwin C. Conrad, City Attorney, Madison, Wis.

THE PHOTOGRAPHIC process has the unique distinction of being able to record and store information more accurately and for a much longer period of time than can the human mind. This alone makes photography the most useful tool we have in our courts today in their search for truth and understanding.

How can the average man, who forgets the date of his wedding anniversary, his wife's birthday, or to post the letters his wife gave him to mail, possibly be expected to remember the exact color of an automobile or the exact position and distance between two automobiles several months after an accident has occurred? These are the factors defense attorneys thrive

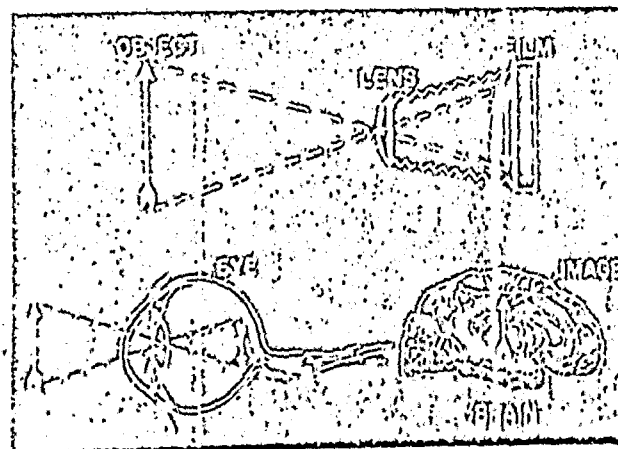
on when they defend their clients... our inability to remember accurately certain details which at the time may not have seemed to be important. Yet photographs remember every little detail visible to the camera-eye that can be recorded on the camera-brain, the photographic film.

When a camera takes a black-and-white or color photograph, it is a physical process. But when we see objects in black and white or color, we have a psychological experience. Our eyes receive an impression but do not see. It is our brain that "sees" or interprets the eye-lens image. When the camera-brain, the film, records the color or shape of objects its eye-lens has been focused upon, it is performing in most

cases as good as, if not better than, its human counterpart. It is performing better in the sense that the color image recorded is not affected by our other senses as is the case in our personal psychological experience.

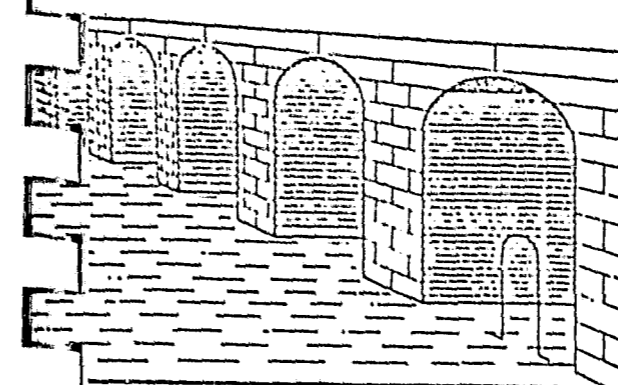
When we look at a colorful scene, our personal health and past experiences may, and usually do to some degree, affect our interpretation of what we see. If we have viewed a beautiful scene many times before, we are usually affected less than when we experienced it for the first time. In addition, there are many other factors at work in affecting our personal evaluation of the subject under consideration.

Our other senses, will surely affect our appraisal of what we see, our sense of smell, for example. If, when we view this beautiful, colorful scene, there is an aroma of flower blossoms in the air, it would amplify the beauty of the scene; and we might feast our eyes on the scene for some time. On the other hand, if there were an odor of a skunk or decayed organic material in the air, we would have an entirely



The eye is similar to the camera lens, in that it forms an image on sensitive color receptors rather than on a sensitive photographic film. The eye, therefore, does not see. It is the brain that sees or interprets the image formed by the eye-lens.

* Presented at the PP of A 72nd International Exposition of Professional Photography, Dallas, Texas, July 1963.

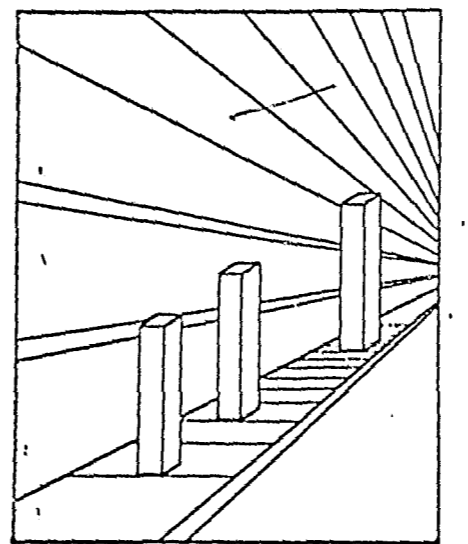


Experience has taught that objects appear to diminish in size as distance from the observer increases. We, therefore, expect the arch furthest away to appear smaller than the nearest arch, knowing they are the same size.

different appraisal of the scene and would want to leave the area immediately.

If there was a gentle, warm breeze blowing, the fragrance of the flower blossoms, our sense of touch, of feeling the breeze — all would enhance our mental image of the scene.

Our sense of hearing is also important. If, when we view the beautiful scene, with the scent of flower perfume on the gentle breeze, we were to also hear a bird singing or the soft strains of distant church bells or music, the whole scene will be still further enhanced. On the other hand, the sound of a power hammer tearing up the pavements, plus the odor of a skunk, will so jar our sense of hearing



We have trained our brain so well to see objects diminish in size as the distance from the observer increases that if we place objects the same sizes at what appears to be different distances from the observer, the objects actually appear to increase in size. While all three of these figures are the same size, the nearest appears to be the smallest, the second slightly taller, and the third farthest away appears to be the tallest.

and smell that our sense of sight loses all interest in searching for beauty.

Now we can see that if a person viewing the beautiful scene is in the best of health and has no worries, when the aroma of flowers and sound of music are in the air the viewer will enjoy the ultimate in viewing and evaluating the scene. But if this same person is in pain and conscious of every pang, and is worried over financial or family matters, he again is unlikely to appreciate or see any beauty in the scene whatever.

So, from this series of examples, I'm sure you will agree that every individual may place an entirely different and very personal interpretation on the things he sees about him.

COMPENSATE FOR LIGHT COLOR

Another important factor is our ability to subjectively adjust or compensate for the color of light falling on the objects we view.

From long experience in viewing a white shirt or handkerchief out in daylight, we have a brain-stored impression that the object is white. Now, if we go indoors into a room devoid of daylight and turn on regular tungsten lamps for illumination, we accommodate very quickly; and if I were to ask you to describe the color of your shirt, you would say white because you remember that it was white in daylight.

Actually, the tungsten light is very yellow in color compared to the outdoor daylight. It might be as much as 3000° Kelvin more yellow than daylight. Yet we make tremendous adjustments, due in part to a property of our eye-brain mechanism called "color adaptation," and due in part to our willingness to see things as we want to see them rather than as they actually are.

There is another factor which has some importance in our seeing process. That is our inability to see the shades of color that may be present in the apparent color of any given object, as well as the effect that the color of the viewing light may have upon such colors.

Very few persons have trained their eye-brain mechanism to sort out the shades of colors of objects we see. All of us who have normal vision will be able to say a color is red or it is green or blue or yellow or orange. We sometimes describe an object as being pea-green or the color of a goldfish or brick-red.

Most of us have only a few, perhaps eight or nine, pigeonholes in our brain

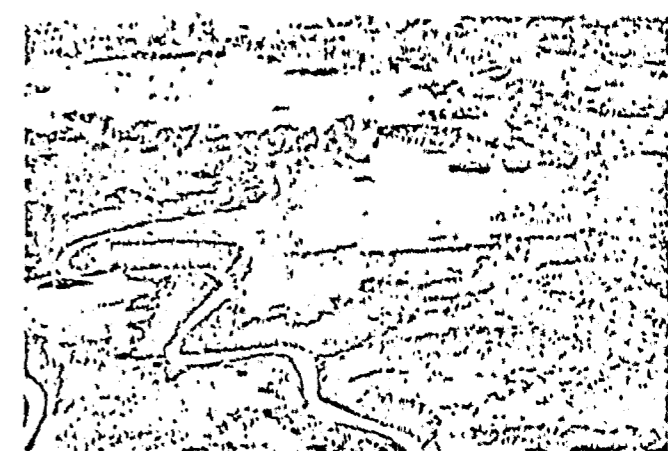
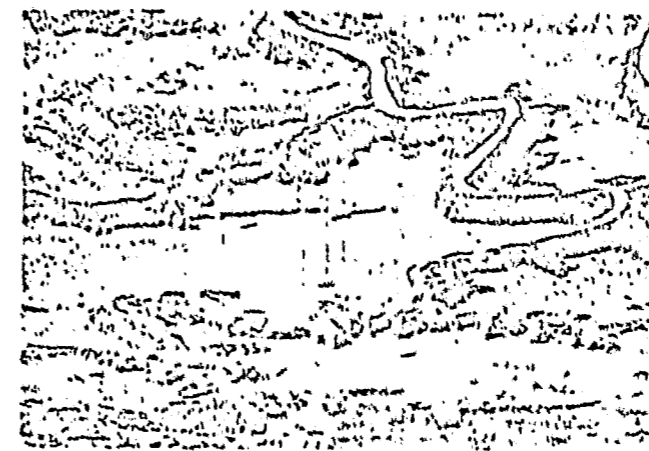
filing system in which we sort and store colors. For example, if I ask each of you, "What is the color of a ripe tomato?" you would say, "Red." "What is the color of beets?" You'd say, "Red." "What is the color of blood?" You would say, "Red." I could go on and name a dozen or more objects which we all describe as "red," yet each has its own individual shade of red because other colors are mixed with the basic red. Tomatoes have some yellow added. Beets have some blue added.

Let's consider greens. If I ask you, "What is the color of normal grass?" you would say, "Green." "What is the color of lettuce?" you would say, "Green." "What is the color of onion tops?" you would say, "Green." Yes, I could name dozens of other well-known objects, and you would answer "green" because nearly all of us classify everything that isn't red, blue, yellow, orange, violet, gray, black or white as "green." They all go into the green pigeonhole in our brain filing system. Yet every one of these items has a different shade or hue of green. Spinach has more blue added to the green making a bluish green. A lime has some yellow added, making a yellowish green; lettuce has white added, producing a light shade of green, and so on.

CAREFUL OBSERVATIONS

I've said that most of us sort colors into basic pigeonholes — red, green, blue, etc. There are, of course, many persons — artists and scientists — who have made careful observations of the shades of colors and have practiced mixing pigments and observing the results. They have trained their eye-brain to evaluate and interpret the mixtures of light or pigments that produce certain color sensations and remember them, so that they can mix pigments or light and reproduce nearly the exact colors they see. They have developed a hundred or more pigeonholes to file all these mixtures in, as compared to the eight or nine pigeonholes we may normally use.

I have mentioned all of these things — all of these factors that can and usually do affect our appraisal or evaluation of a subject — for a very good reason. The reason is to compare the image we received and evaluate in our eye-brain storage bin with the image recorded in either black-and-white or color on photographic film.



Left: We have trained our brain so well that when we view a photograph of an object upside down, a river in a deep gorge appears to be a macadam roadway built along the top of a

winding hill. Right: Now when we turn the photograph around and view it right side up, it completely satisfies our visual experience and we see the winding river running in a deep gorge.

The camera eye-lens focuses an image of what we want to record onto the film. By adjusting the duration of exposure to conform with the speed of the film and the intensity of light reflected from the subject, we make a color photograph of the scene or object to be recorded.

Today's color films have considerable latitude in exposure with subjects of average or normal contrast; one stop more or less will still produce an acceptable exposure. Modern films also permit some leeway in the color quality of light sources used for illumination. This is especially true with the negative-positive color process, as compared to the reversal color processes.

When light of the recommended color quality is used with a color film and the recommended exposure and processing are followed, a photograph of surprising likeness and color fidelity to the original scene results.

Suppose we consider photographing the beautiful, colorful scene I mentioned earlier. Let's assume exposure

and processing are perfect. One must remember that the camera and film are not human. The film does not make any psychological adjustment for illumination of the wrong color quality. It does not record the psychological factors which affect a human observer's other senses of smell, touch and hearing. The color film is rather color-blinded in that it sorts out all of the shades of color present in the original subject into its three separate color sensitive layers of emulsion. Further, it stores this information in the film for future reference, to be called upon any time it is needed. This is a very important role in the forensic field where a picture record can be used later to refresh the memory of a witness in a court action.

However, the most important role of a photograph made in either black-and-white or color is that it is a means of communication. A good photograph conveys information; it tells something about something in the visual language we have all learned to understand.

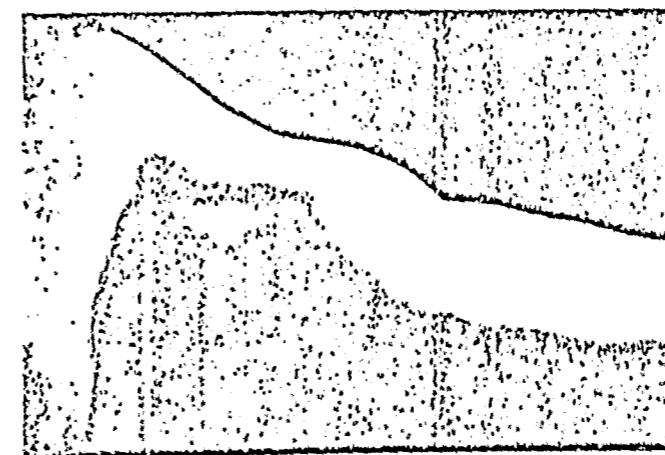
Photography is a universal language. If you were to travel abroad to a foreign country and go out into small communities where no one speaks English and we must, of course, assume that you do not speak their language, it's then that a picture is worth 10,000 words.

This fact, of course, applies right here at home in our courts. Many of our citizens were born in foreign countries and may have little knowledge of, or experience in the use of our language. Often the medical terminology used by doctors and lawyers in our courts to describe a simple bruise sounds like a foreign language to most of our younger citizens as well as these older ones.

Here is an example of what I mean: *A doctor is on the witness stand and the attorney for the plaintiff has asked the doctor to describe the condition of his client to the jury. The doctor testifies:*

Doctor: The area in question is an evenly rounded or mild swelling of the anterior aspect of the distal portion of the ventral of the right upper extremity of an adult male. The mass is about 10 centimeters wide and 14 centimeters in length, and runs obliquely along the arm. No bruit is heard. The distal end of the tumor is directed medially. The angle between its long axis and longitudinal axis of the arm is about 45 degrees. The mass appears to displace and perhaps involve the biceps as it is fixed partially to subcutaneous tissue. The firm swelling is well circumscribed. It does not inhibit flexion of the elbow joint. There is no surrounding erythema. The superficial tissues are not abnormally vascular, and the skin is smooth and lightly stretched. There is no abnormal pigmentation, scaldiness, ulceration, nor discoloration.

How many even above average per-



A ten-second glance at a muscular defect will convey more information to average observer than an oral description described in medical terms.

sons do you think would understand exactly what the doctor is describing? How many of you experienced in photographing medical subjects could sketch a picture or tell us in plain English what the condition really is? Our illustration shows the condition described by the doctor.

With only the oral testimony of the doctor to go by, one can't help but wonder just how much any one of the jurors really understood about the plaintiff's condition. If each juror had a photograph to view, and could follow the descriptive testimony of the doctor as he pointed out each condition on a projected slide or a greatly enlarged photograph, I am sure you will agree they would have a much clearer understanding of the condition than otherwise. I also feel that the average juror would know more about the condition by viewing the photograph for ten seconds -- without hearing any oral or descriptive testimony -- than he would have had by hearing only oral testimony and no photograph. So you see, it is awfully easy for both prosecuting as well as defense attorneys to confuse issues and the jurors by use of their seemingly innocent yet foreign medical-legal language. As a result, many jurors may have no clear understanding of what the case is all about.

Whenever photographs of evidential material are introduced and accepted in court and properly attested to and explained, they clarify the evidence so that jurors of all nationalities and all ages with wide variations in education will understand the language communicated by the photographs. They can then make their own evaluations of the relevant details shown in evidence photographs and thus make a fairer evaluation of the guilt or innocence of the accused.

Steady Increase

Today there is a decided increase in the use of color photographs in our courts. I feel sure this will increase steadily in the years to come. However, I feel equally sure that there will always be certain techniques that will require the use of black-and-white materials. The use of infrared and ultraviolet radiation and of both hard and soft x-rays are examples of these techniques.

Many defense attorneys have made an effort to keep black and white photographs out of evidence. With the introduction of practical color processes, these defense attorneys have stepped up their efforts to keep color photographs out of evidence on the grounds that the colors were inflammatory and prejudicial to their clients. However, the supreme courts have ruled on appeals that no photograph is as horrible as the crime itself, and therefore, if relevant and helpful to the jurors to a better understanding of the issues, they are admissible and have upheld the lower courts.

I have often said, "... had color photography been invented first instead of black-and-white, and had color photography been accepted by our courts for the past 100 years, it would be much more difficult to get a black-and-white photograph accepted by our courts today than it is to get color photographs admitted."

All of us who have normal vision see the things about us in color. Therefore, when we view a photograph of an object or scene, we expect it to be in color because this is our natural experience or in-

terpretation of what we see. We have to stretch our imagination a great deal more to view photographs of objects and scenes photographed in black-and-white, which we know from experience have color, than we do to view a color photograph for which we unconsciously make some minor mental adjustments.

We must remember, however, that photography is a tool by which we can make a record of information concerning the things we see about us at any given time in any given place. We are, therefore, free to choose the tool best suited to record or reveal the required information.

In many cases it would be impossible to testify that a photograph offered in evidence fairly and accurately represented what the photographer saw when he made the photograph. This would apply to cases where special techniques are employed to reveal information which is not visible to the naked eye. For example, a check which has been cleverly altered would appear to both the photographer and to the bank teller to be a perfectly good check; but when it is photographed on infrared film or photographed by ultraviolet light, evidence of the alteration may be clearly visible in the resulting photographs. The same observation can be made as to x-rays. So, one cannot always testify that the photograph is an accurate representation of what one saw at the time the picture was made.

For purposes of introduction in court, some explanation from the witness must be brought out by the attorney on direct examination. In the case of an altered check, perhaps the check itself can be introduced, as well as a regular photograph of it either in color or black-and-white, to show how both appeared to the eye of the observer. Then the questioned check and regular photograph might be mounted on a cardboard mount. Mounted beneath these would be the photograph of the same check made by infrared or ultraviolet radiation. The physical character of the alteration of the check, which caused the alteration to be invisible to the naked eye but visible to the film, can then be properly explained to the jury.

There is one other fact concerning the use of color pictures in the courts on which no general agreement has been reached, and very little has been accomplished to establish a recommended practice -- that is, how color pictures should be shown in court. Since black-and-white pictures were accepted first in the form of paper prints which were passed around and viewed by the jurors, somewhat of a precedent was established in the courts.

When 16mm motion pictures were first offered in evidence, it was more or less expected that the room lights would be turned off or the window shades be drawn to darken the room in order to show movies. This was considered standard practice in viewing movies. However, many conservative minded judges objected to these changes in the courtroom lighting; so, in many cases, black-and-white movies were projected without darkening the room. If one had a high-wattage projection lamp in the projector and showed a picture smaller than recommended, on a headed screen, it would be possible for a black-and-white picture to look acceptable when some day-

light or artificial light was present in the room.

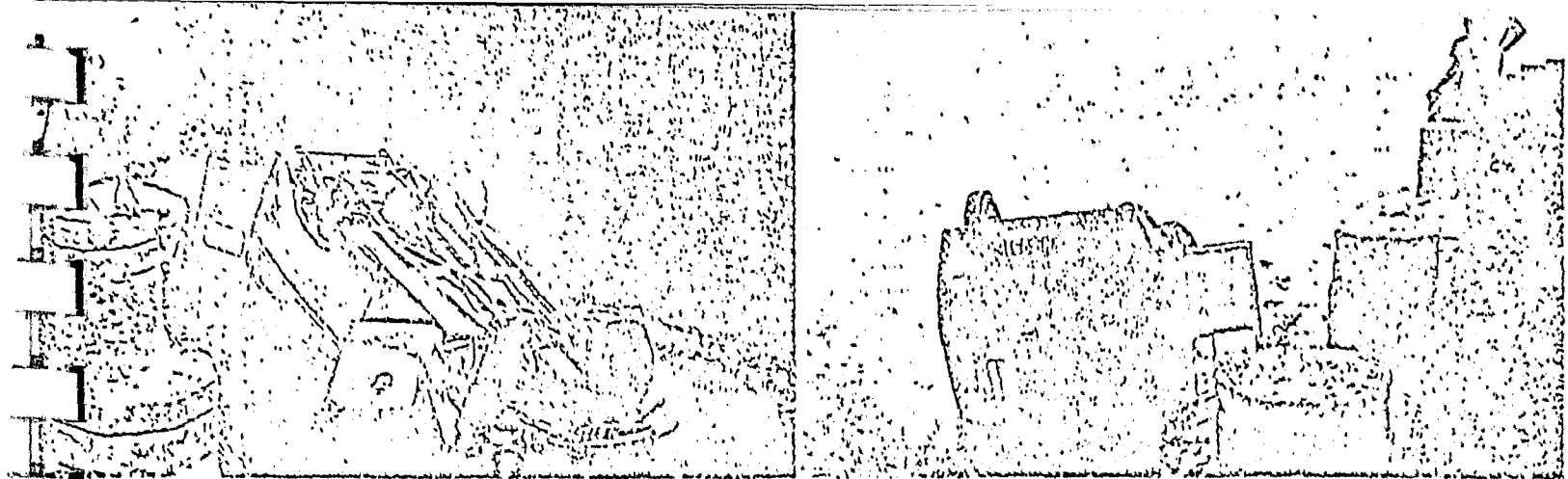
However, this is *not* true with projected color pictures. Any room lighting or daylight falling on the screen during the projection of color pictures would dilute and degrade the color quality and flatten or lower the contrast of the screen image. This caused several inventive photographers to rig up rear-projection devices so that the picture was projected into a shadow box from the rear onto a rear-projection screen. This provides a reasonably bright color image without the necessity of darkening the room. This is not a perfect solution for some colors might appear diluted. The rear-projection device can be placed on rubber casters and easily turned to give the judge and jury the best angle of view, but it is unlikely that each juror would see the projected picture from the proper viewing distance for the particular degree of enlargement. However, further difficulty was encountered when the jury wanted to see the pictures again in the jury room during their deliberations, and none of the members of the jury knew how to operate the projection equipment.

There is one very good aspect to the projection of pictures to the jury, however, and that is that they all see the picture at the same time and at a time when the elements of the picture are being testified to by the witness.

When still photographs are introduced and accepted, each is marked as an exhibit and given a number. After the witness is through testifying, the photograph is then given to juror number one. He may study it for 2 or 3 minutes or more while he tries to listen to the next witness, who might also testify to elements in still another picture. Juror number one now passes the picture on to juror number two, and perhaps 30 or 40 minutes to an hour may elapse before juror number 12 gets to see picture number one. If juror number 12 has heard testimony concerning three or four other pictures, he has to try to recall, while he's still listening to new testimony, which testimony is related to which picture. This is a definite weakness in the present practices in our courts.

Of course, this whole situation could be corrected if 15 or 16 prints or enlargements of each photograph, all exactly alike, were prepared of each picture to be offered in evidence. One would be handed to each juror and one to the witness, one each to the judge, prosecutor, and defense attorney. Now they all can be looking at the same picture at the same time and under proper viewing conditions, and observe the various elements in the picture while the witness is testifying. Result -- no confusion, no misunderstanding of the issues because each juror is able to study his copy of the photo as the witness testifies. This method should be used for all evidence pictures, either in color or black and white, if our courts are to make the most effective use of photographs in their search for the truth.

It has often been suggested that, in addition to each juror having his own photograph to study, the same picture be projected on a screen or have a 30x40 enlargement on an easel, and have the witness testifying, point out relevant details on the screen or enlargement so that each juror could



Angle of lighting affects our interpretation of what we see. Left: Here is a flat front lighting of wrecked car. Right: Same scene photographed from opposite direction with back lighting. It is very difficult for many people to believe that this is the same car and accident scene.

see what was referred to and study this detail in the hand-held print.

Since such photographs play a very important part in communicating information to our courts, it imposes very serious responsibilities upon the shoulders of all photographers responsible for making such pictures. It means that every photograph made in recording evidence for possible future use in the courts of our country must be as accurate as possible. They must honestly portray every element that appears in the photograph. This means further that the men and women making such photographs must themselves be of the highest moral integrity.

Truthful Photographs

The responsibility of all photographers, who make pictures that may be involved in court actions or introduced and sworn to, is the same as any other sworn testimony, because the chief function of our courts is to search for, and find the truth. Therefore, any photographer who purposely alters or changes the truth of a situation in making a photograph for use in our courts may be charged with perjury and subjected to the full penalties of punishment for his crime, the same as anyone else who testifies to falsified evidence while under oath.

It doesn't matter whether photographs are made by police department photographers, sheriffs' offices, state police, arson photographers, coroners' photographers, or professional or commercial photographers. It doesn't matter whether the photographs are for use in connection with civil actions or criminal actions, felonies or misdemeanors. The very fact that they are to be used in the courts of this nation as an aid in the search for truth, automatically dictates that the pictures must be honest and faithfully portray the facts in the case. If the photographer who made the photographs, and who may have to testify on the witness stand as to their truthfulness, has a long record of honesty and moral integrity, the courts and the jurors will have greater respect for his testimony.

A photographer doing forensic photography must have qualities similar to a doctor who takes the Hippocratic Oath. His honesty and integrity should be above any question of doubt.

Perhaps it would not be a bad idea to have a similar oath, to be taken when one is certified as a forensic photographer.

It might be well to point out at this time something I am sure you all know, and that is, that photographs, by themselves, are not - all reveal, are not - substantive

evidence. A photograph must be attested to by someone who is familiar with the circumstances of the case and who can state on the witness stand under oath that the photograph fairly represents what the witness remembers seeing at the time the accident occurred or was investigated by the witness.

Now, if the photograph is relevant to the issues in the case and the judge feels that the photograph contains information which will help the jurors to have a better understanding of the issues and of the testimony of other witnesses, then he may admit the photograph in evidence. If there are a series of photographs, each made from a different point of view, then each photograph must be attested to by one or more witnesses, and each picture is admitted on the same basis — Is it relevant to the issues? Will it help the jurors to reach a better understanding of situations that are difficult for witnesses to describe clearly without the use of photographs?

There has been a feeling on the part of many judges that it has been a waste of valuable court time to have the photographers who make evidence pictures appear in court each time photographs made by the photographer are introduced. Many judges now require stipulations as to photographs in pre-trial conferences.

Attest to Making Pictures

When the photographer is put on the stand, the lawyer who is using his services will usually qualify him as an expert witness, by establishing that he is a professional photographer with "X" number of years experience, that he may have written articles on some phase of photography, that he may have lectured on or taught photography, and that one of his photographs may have won a Merit certificate at a P.P. of A. exhibition.

Now the opposing counsel goes to work. He has probably viewed the pictures and knows that they will do a lot of harm to the cause of his client if they are admitted in evidence and viewed by the jurors. So the defense attorney may spend an hour or more of court time trying to discredit and belittle the ability of the photographer and force him to make admissions in front of the jury that will not only be embarrassing to the photographer, but which will certainly raise doubts in the minds of the jurors as to the weight of the photographs.

An important point the lawyer and photographer should keep in mind is that the photographer can only attest to the fact that he made the pictures and that they

fairly represent what he saw at the time he made the photograph.

It is quite possible, of course, that the photographer did not see the subject to be photographed until an hour, perhaps even 8, 12, or even 24 hours after the accident occurred. He cannot honestly attest that the subjects in the scene he photographed are exactly in the same position as they were at the time of the accident. Some other witness who viewed the scene either at the time of the accident or immediately afterwards is the only one who can actually attest to this.

In fact, if the pictures were made after an interval of several hours after the accident, the photographer should explain any changes that he is aware of. He should not testify if the changes are substantial since, if some other witness testifies that certain objects have been moved or changed between the time of the accident and the time the photos were made, the judge would probably rule the pictures inadmissible.

In any event, judges are well aware that such maneuvers waste a great deal of court time. They feel that a sticker on the back of each photographic print can indicate the location, the date, the time of day or night the picture was made, the type and size of film used, the type of paper, the type and focal length of the lens used, the lens aperture, exposure time, developing time, the camera location and lens height above the ground, the distance at which the enlargement should be viewed, and the direction — north, south, east or west — which the camera was pointing. This information can be referred to if and when necessary.

It is much more important to the lawyer for the plaintiff to have a witness who was first on the scene attest that the photograph does fairly represent the scene at the time of the accident. If any technical questions concerning the photographs, as to how they were made, should arise, then the photographer can be called to testify if needed.

If the pictures are important to the plaintiff, he has saved an hour or more of the court's time; and more important, opposing counsel will have no opportunity to discredit the photographer who made the pictures and tear him limb from limb.

Expert Witnesses

There will probably be many occasions when the photographer will be called upon to testify concerning the photographs; and this is where I would like to inject a word of warning to all photographers, regardless of their experience and years of practice. This is in connection with the integrity of the photographer when testifying in court.

There is a great need for self-appraisal or self-inspection before one testifies. There seems to be a compulsion on the part of some who testify, to want to be qualified or looked upon as an expert. Quite often an overzealous attorney will go to great pains to try to qualify every one of his witnesses as experts if he can, to impress the jury.

In many areas there are men and women who might well be qualified to be considered as experts. Mr. Green or Mr. Jacoby would probably be qualified as *contract bridge experts*, but they might not qualify as *card game experts*, which would include all card games of both the past and present.

If either of the above gentlemen were to testify in court and permit the prosecutor or defense attorney to qualify them as *card game experts* when their sole purpose in testifying was on a matter involving a *contract bridge hand*, then the opposing attorney would have every right to question them on playing the game of poker, the game of pinochle, or games of which they may have no knowledge. They would either have to tell the truth and admit they didn't know and hadn't heard of a particular game or try to bluff their way through. If their expertness was in the game of contract bridge only, and they as card game experts were queried extensively on plays in poker or pinochle or games on which they were not expert, the members of the jury who might be good poker or pinochle players would soon know just how expert the experts really were.

The side that introduced these men as card game experts would probably object to the line of questioning, but the opposing attorney would point out that these men had been qualified as *card game experts*, not just experts in the game of bridge; and therefore he had a right to explore and test their degree of expertness. The judge would have to overrule the objection and permit the cross-examination to proceed. When a point was reached by the attorney where the cross-examination had revealed to the jury that these men were *not* card game experts but perhaps had some knowledge of one particular game, he would terminate his cross-examination.

Incidentally, just because a person is qualified to testify as an expert on one occasion does not mean that he shall forever be considered an expert. The members of the judiciary I am sure are aware that expertness is not cumulative; it does not follow that the more times an expert testifies that the more expert he becomes. It should be remembered that every time a person qualifies as an expert or in fact every time he appears to testify, it is for the purpose of a specific case alone and while he may qualify as an expert in one case, he may not qualify as an expert in another.

Challenge to Lawyer

The word expert is probably one of the most abused words in the dictionary, especially when used in our courts. The word expert has a number of explanations in the dictionary; these incorporate knowledge, experience, and know-how of a special nature in a special field, etc. As I am sure many of you have already found out, the opposing attorney will leave no stone unturned to find every possible interpretation of the

word expert, to try to discredit you or keep your photographs from being admitted in evidence.

The more important the testimony to be given by the "qualified expert," the harder the opposing counsel will try to discredit his expertness in the eyes of the jury. To some attorneys, the mere mention of the word expert is like waving a red flag at a bull. Regardless of the importance of the case, the word is a challenge to a lawyer, a game to be played with the "smart aleck" witness who calls himself or permits anyone to refer to him as an "expert."

Extensive Field

So, who are the experts? Surely in photography we can't possibly have very many. Why can't we? Because photography is a very large and extensive field which encompasses skills, knowledge and experience in many areas — physics, chemistry and art. Like being an expert in one card game, such as contract bridge, or being an expert in card games, being an expert in photography might well cover more separate areas than there are card games. There is the field of graphic arts, medical photography, news photography, photomicrography, color photography, law enforcement or forensic photography, and x-ray photography, for example. If we went through Walls' Dictionary of Photography, we would find a great many more types and techniques of photography from A to Z.

The science, art and practice of photography requires knowledge of lenses and allied optics. It requires knowledge of chemistry of emulsions, developers, fixers, hardeners, bleaches and color couplers. It also requires a certain amount of knowledge of mathematics and of the laws of physics.

When a photographer permits an attorney to qualify him as an expert on photography, he is permitting the door to be opened to the opposing counsel. Once that door is opened, the only way it can be closed is for the "expert" to be able to answer every single question that might be asked by the opposing counsel and to be able to answer it truthfully and exactly. Remember, that opposing counsel can open a book like "Scott's Photographic Evidence" and ask his questions out of the book, but you must know — you can't look in the book for the answers. When the opposing counsel sees that you do know your stuff and that you are truly a qualified expert, my continued cross-examination will prove your expertness, and your testimony for the other side will be given more careful consideration by the jury than it might have otherwise.

As soon as the cross-examiner finds this out, he will stop the questions "and will slam the door so hard and so fast he may wake up the jury." (No pun intended.)

Let us assume you have permitted yourself to be qualified as an expert in photography. The attorney brought out in qualifying you that you served your apprenticeship with a portrait or commercial photographer. He pointed out that you had one of your pictures used in *Life* magazine and that you once had an article published which you had written on photography. He stresses that you now own your own portrait or commercial studio and have been running it for ten years. He did not bring out on direct examination that, due to financial cir-

cumstances, you may have left high school after the first year and worked at several odd jobs before you found a job with a photographer. Also, he did not bring out the fact that your apprenticeship included opening boxes of supplies, checking stocks, running errands, sweeping, washing windows, and carrying the tripod and camera case on outside jobs.

No, the attorney that qualified you didn't bring out any of your actual experience or the kind of training or knowledge you had, but don't worry, the opposing counsel will. He will delve deeply into every corner of just how much you know about photography. He'll bring out things that may be embarrassing. *He will certainly belittle your image of your expertness, not only to you but to the jury.* You may wish you were dead about then and wonder how you ever got into photography in the first place.

However, this is an important trial. There is a great deal at stake. Your pictures and your testimony are important, so important to the other side that they will stop at nothing to belittle your skill and expertness as a photographer.

Rating Experiences and Craftsmanship

The situation I have just related was part of an actual case that a portrait photographer related to me a few years ago. He happened to tell me after he had asked me a very logical question. The question was in reference to how a photographer should or could rate his photographic experience and craftsmanship when he testified in court. He said that he had made certain photographs for a police department in a small city which did not make its own photographs, and had to occasionally go into court and testify, and it seemed he was always in trouble as an "expert" photographer.

The advice I gave him is still good advice. I think it will help any photographer — amateur, professional, or commercial, or a police photographer — to examine himself and determine the degree of expertness.

I said, "Mr. Blank, I have been making pictures and have been engaged in the practice of photography for over 50 years. I've studied under and worked with many photographic scientists during nine years in the Kodak Research Laboratory; I have had excellent guidance by men of great photographic knowledge and experience and skill. I have actually worked in many areas of photography but have had no experience in x-ray photography and very little in the graphic arts. The actual experience I had in color processing is now passed. New processes requiring new training and experience are sometimes difficult for me to understand without actual experience.

"Therefore, knowing my limitations and lack of specific knowledge in these above-mentioned areas, I know just where I stand. I know I am not a photographic expert.

"As a result of this personal appraisal of myself, I would never — yet, never — under any circumstances permit any prosecutor or defense attorney to ever qualify me as an expert on photography.

"You will note that I have used the word 'experience' or 'experienced photographer' on several occasions. I firmly believe 'experience' is the all-important word. I would permit the prosecutor or a defense attorney

to qualify me as an experienced photographer in certain areas, such as taking pictures of objects, persons and scenes, but not experienced in every field of photography.

"Always remember that the fact that you may be referred to as a professional photographer does not automatically make you an expert.

"We have two classes of golfers -- those who get paid for teaching or acting as a 'pro' for a country club, and who play in tournaments for cash prizes. These golfers are called professionals.

"Then we have the group called amateurs who cannot compete for cash awards. If they did and accepted the cash, they would automatically lose their rating as an amateur and would become or have to 'turn professional' if they wanted to accept money. Yet their knowledge and skill and experience in playing golf is exactly the same the day after they turned professional as it was the day before.

"So we can see that the fundamental difference between an amateur and a professional is not one of knowledge, ability or experience. The amateur works or plays for the fun of it, and the professional does the same work or play for money.

"Many professional photographers look upon amateur photographers as button-pushers or snapshotters, with little or no knowledge of the science and art of photography. But don't ever let yourself be misled. There are a very large number of amateur photographers today who are extremely knowledgeable in the science and art and practice of photography. I am sure you are aware of this without my mentioning any names.

"So I would suggest, Mr. Blank, that you forget your classification of professional and weigh your ability solely on your knowledge and experience in your particular area of photography. Then you will be in a fair position to advise the attorney

just how he should qualify you. If you make sure he qualifies you as an experienced photographer in your particular field, you'll be relatively safe from any embarrassment. Moreover, testify only in respect to the area in which you claim sufficient knowledge to form an expert opinion and disclaim any other experiences, knowledge, or expertise.

"Now I don't mean to say that there are no experts in some areas among professional or commercial photographers. One might be an expert in retouching negatives. If you are truly an artist at retouching negatives and spotting prints, and all other professional photographers admit you are tops with the retouching pencil, then you must still be cautious about permitting yourself to be qualified as an expert retoucher purely on your skill with a pencil. Make sure you are equally experienced and knowledgeable in all methods of chemical retouching and the use of abrasives and filters, in masking techniques, and in making corrections in color negatives. If you are not knowledgeable and experienced in all techniques of retouching, then you should be qualified as an expert in pencil retouching only. No one could then contradict your rightful claim to expertise due to your superior knowledge and skill in the one area in which you truly excel in knowledge, experience, and craftsmanship.

Teamwork

"There are many professional portrait photographers who have great skill in posing and lighting their subjects. They squeeze the bulb at the right moment and capture a wonderful likeness of their subject. They become so good as cameramen that they are kept busy in the cameraroom nearly all the time. They never did like darkroom work or print-making and never really became very skillful at either. So a good negative man and a good print man are

hired to develop negatives and make prints.

"By having an experienced craftsman in both the negative and print rooms, the fine work done by the photographer in lighting and posing is enhanced, preserved, and shines out in his finished photographs. This photographer's studio brings him renown. Everyone says he's the best in town or the best in the state -- in fact, in the world. No one realizes he really has a team that coordinates and plays well together. The owner may be a Casey Stengel, but he has a Mickey Mantle in the negative room, a Roger Maris in the print room, and others on the studio team that hit in a pinch to make every picture score.

"Now if you are fortunate enough to be this type of photographer, don't let your team's effort go to your head if you have to go into court and testify. Remember, you are expert only in posing, lighting and managing the team. Even a good manager like Casey Stengel can't always win. A team like the Mets, without Mantles and Marises, can look pretty hopeless at times."

Be Prepared

I am well aware that there are many among you who are fine craftsmen, extremely knowledgeable, and experienced in photography. I am also well aware that some of you have been qualified as experts in the past and that you have not had any embarrassing moments -- so far. Perhaps the opposing counsel were not on their toes or were trying their first case, so I still say, "Watch Out!" The law of averages may catch up with you. Some day you will make some very important pictures in a case where perhaps a million dollars or more is involved. The opposing counsel may be a wise old bird who has many books on photography, lenses, and photographic chemistry. He has the pages and questions all marked. He has cross-examined "experts" before!

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PROFESSIONAL PHOTOGRAPHERS OF AMERICA, INC.

11/12/72 Tyler
Search, Compare Police Operations Is Automated

By Frederick M. Winship
United Press International
years ago it often took
hours—even days—to

retrieve fingerprint information from paper print cards that might be of aid in identifying a criminal suspect.

Recently, a police technician in Birmingham, Ala., matched a fingerprint found at the scene of a burglary to one on file in only eight seconds. A new crime fighting tool—automated microfilm information retrieval—made the difference.

Until 1968 the search and compare operation involving fingerprints, mug shots, and other identifying information was strictly manual. Then the Atlanta police department installed an electronic microfilm information retrieval system that opened a new era in crime detection. Fingerprints now can be scanned in the flash of an electronic eye.

New System Grows

"When we searched manually, I spent as much as seven and a half hours on a single print," said Lloyd Hansen, senior fingerprint technician on the Birmingham force. "Not long ago we identified suspects in two burglary cases before the detective bureau had assigned men to begin investigations."

Today, nearly 80 law enforcement agencies from Florida to Alaska have the technical means of scanning up to 900 sets of fingerprints a minute. Several systems have been tested but the field is dominated by Miracode, developed by Eastman Kodak which has been in the microfilming business for nearly a quarter of a century.

Characteristics of fingerprints, such as pattern type and ridge count, are coded and fed into a Miracode machine by a technician using keyboard buttons similar to those on a adding machine. The machine scans microfilm file prints until

it finds a print that matches the coded instructions. The print is flashed on a television like screen where it is inspected visually by a police expert to confirm the identification.

"We have made 50 fingerprint identifications this year using the microfilm scanning system," reported J. W. Moore, senior supervisor of identification in the Atlanta police department. "That's the best we've ever done in the five years we have used the system."

"For one thing, we had only 1,100 filmed prints in our file in 1968 and now we have 34,000. For another, we can search prints back to 1967 now and clear up cases that might never have been cleared up. Within 18 months of installation the system helped clear up 200 unsolved felony cases through apprehension of 40 persons."

"We had a robbery-murder case the other day and one of those involved tore open an envelope to get the money. We got fingerprints from the envelope and within an hour and a half we knew who one of the perpetrators was. It's a terrific aid."

One-Print Accuracy

Moore pointed out that the quick scanning system makes it possible to make an identification with only one fingerprint and no knowledge of which finger it is—something that would have been too time consuming as a manual operation.

If the specific finger is known it makes identification faster because that information is coded on the microfilm. Coded information about the suspect's race, sex and criminal specialty can reduce the search to seconds.

One of the factors behind the switch to automation by city and state police is the availability of matching federal funds for the purchase of microfilm information retrieval equipment under the 1968 Omnibus Crime Control Act. Some \$700 million was available this year.

The new systems have multiple uses which make them even more attractive to police agencies and can reduce file space required for records by 90 per cent.

For instance, Ft. Lauderdale, Fla., police have fast access to microfilm information on 36,000 local auto licenses—who owns the car, whether it is stolen and whether the owner has an arrest record. In Baton Rouge, La., police use the system for record handling, resulting in the release of five patrolmen from paper work.

The 'Sophisticated' Department Palm Beach County, Fla., is the most sophisticated user of Miracode equipment, keeping microfilm files on fingerprints, mug shots, organized crime, vice and narcotics offenses, unsolved burglaries, confidential information, lost and stolen

articles, jail records, routine offense reports and unattended deaths. The sheriff's office also is planning files on unsolved robberies and sex crimes.

New York, with its vast police files, uses a computerized system that supplies about 10 possible suspects for each fingerprint or mug shot and the final determination is made through a visual search of print

cards and photographs. The FBI, which has the largest fingerprint file in the world (196 million), currently is trying out a \$1.25 million prototype system designed and built by Cornell Aeronautical Laboratories, Buffalo, N.Y. Fingerprint photos are not microfilmed but scanned for identifying data which is fed into a computer.

The bureau expects to eliminate 2,000 of the 3,300 technicians and clerks now used for processing 30,000 fingerprint cards a day and save \$14 million annually when its identification system is fully automated and computerized.

The French eat 600 million or more snails annually, says National Geographic.

TEXAS DEPARTMENT OF PUBLIC SAFETY LABORATORIES

ANALYSES TO BE MADE BY REGIONAL LABS

1. Blood and urine alcohol determinations.
2. Marihuana identification. (Other narcotics and barbiturates preliminary).
3. Identification of blood stains.
4. Origin of blood stains.
5. Type of blood stains.
6. Identification of seminal stains.
7. Dermal nitrate tests, if required (paraffin casts).
8. Hair, fiber, cloth and rope comparisons.
9. Poison analyses limited to qualitative arsenic and strychnine determinations.
10. Assist in collection of data for identification of dead bodies, skeletal remains. (i.e. removal of distal digit for forwarding to headquarters lab).
11. Dirt and soil.
12. Lubricating oil for foreign materials (sugar, abrasives, etc).

ANALYSES TO BE MADE BY HEADQUARTERS LAB

1. Paint comparisons.
2. Opiates, synthetic drugs and barbituric acid derivatives identification.
3. Examination of narcotic paraphernalia.
4. General toxicology.
5. Alphanaphthylamine patterns (gunshot distance determination).
6. Evidence in arson cases.
7. Identification of unknowns.
8. Cement and safe plaster comparisons.
9. Skeletal remains.
10. Blood and urine for narcotics and barbiturates (driving while under influence of drugs and narcotic addiction).
11. Bullets.
12. Laundry marks, obliterated data, restoration of writing, etc.

APPENDIX C

CONTINUED

1 OF 4

A CRIMEMOBILE FOR TYLER POLICE DEPARTMENT

The City of Tyler Police Department made application to the Texas Criminal Justice Council on February 15, 1970. The total Criminal Justice Council support sought under this project was \$10,359.00. The City of Tyler furnished a cash contribution of \$4,000.00 and in-kind or equipment contribution of \$4,308.00 to make the total cost of this mobile crime scene unit \$18,677.00.

The crimemobile was designed by the Identification Division of the Tyler Police Department. Lt. Glenn R. Walker who is in charge of the Identification Division went to Moorestown, New Jersey, to the plant of Sirchie Fingerprint Laboratories to assist in the completion of this unit. While here he completed one week of intensive training in the use of the various kits and equipment in the Mobile Crime Unit. After completion of the course, Lt. Walker drove the mobile unit to its home base in Tyler.

The Mobile Unit has provided a strong crime scene search capability in the Tyler-Smith County area. This unit provides a field investigation unit that is available to the East Texas Region when called upon. Through the use to this unit the Tyler Police Department has been able to obtain evidence in the field and properly seal, identify and mail to the Regional D.P.S. Laboratory in Dallas, The State Department of Public Safety Laboratory in Austin, The United States Federal Bureau of Investigation Laboratory in Washington, D. C., and The United States Bureau of Narcotics Laboratory Regional Laboratory in Dallas. The personnel of the Tyler Police Department Identification Division have been trained in the methods of modern crime detection and prevention techniques and the use of the equipment in this unit.

The Tyler Police Department has accomplished the following goals in carrying out the equipping, training and use of the Mobile Crime Laboratory function:

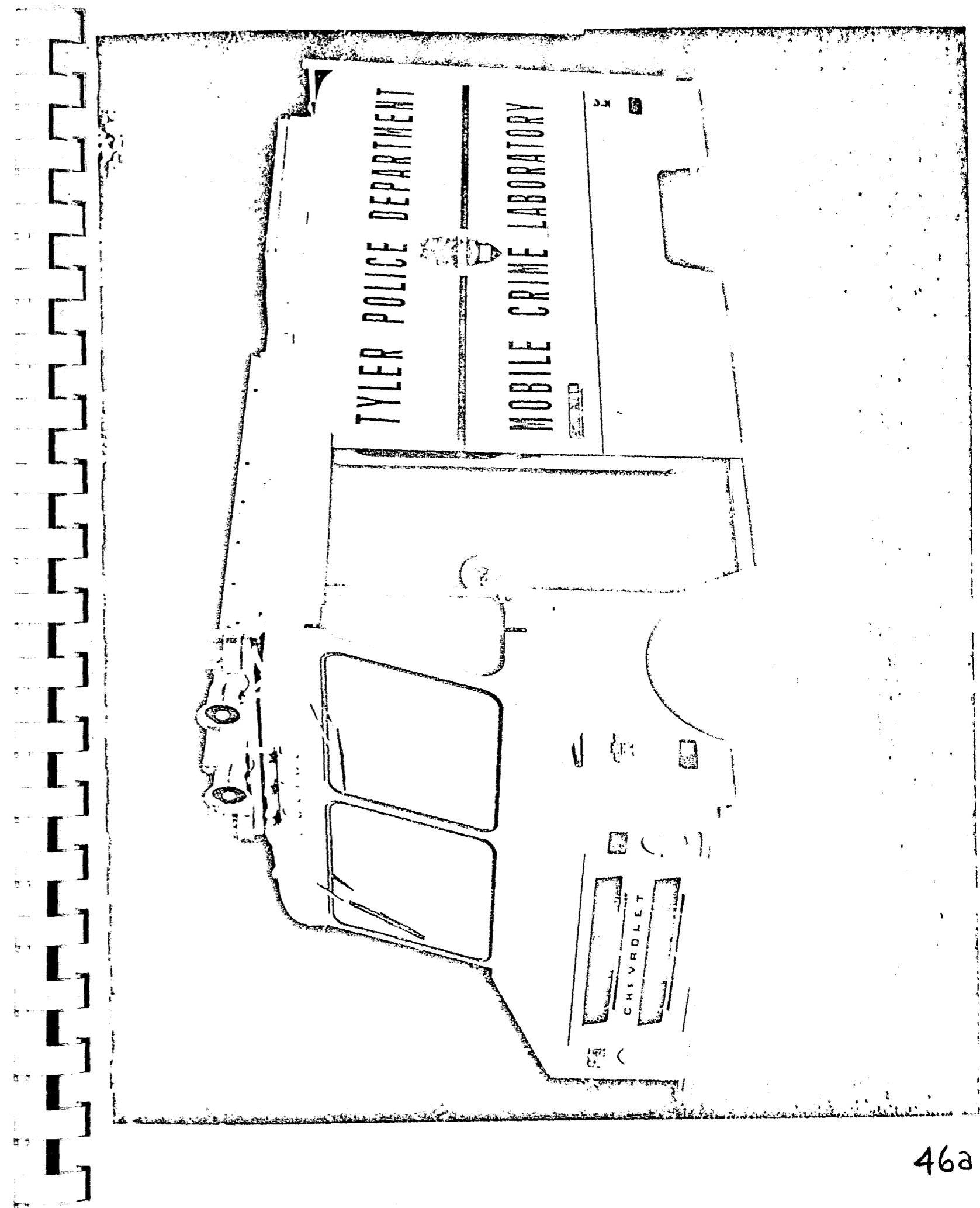
Technical processes and knowledge in the areas of scientific crime detection have been developed through training in the use of the various investigation kits contained in this unit.

The use of this equipment and the training connected with it has engendered an understanding and appreciation for the need for more scientific knowledge in the investigation of all crimes brought to their attention.

This mobile unit has been equipped with the best equipment known in the detection and prevention of crime.

Significance:

For many years the technical aspects of law enforcement through the use of technically advanced equipment and methods has been extremely limited or nonexistent in this area. We can no longer go to the scene of a major crime, ask a few questions and place a man in jail. Under this program we



TYLER POLICE DEPARTMENT

MOBILE CRIME LABORATORY

CHEVROLET

no longer send a man to the scene of a crime with no equipment or technical knowledge in crime detection. We now send well trained and qualified personnel to the scene of a crime with the technical equipment to do a thorough crime scene search and to properly gather, identify and preserve evidence. We, through this important program, have improved our equipment and training of the individuals who are charged with using this equipment. The training program has been a minor one but it has been an important beginning that will be improved and increased.

Several major cases have been investigated with this unit with productive results. We feel that this program has greatly enhanced the crime scene search capabilities for this area. We are continuing to upgrade equipment and train personnel in the use of this equipment. This is an important beginning of a program that will be improved and capabilities increased. In the overall function of the Tyler Police Department, we are working to develop and introduce new knowledge, techniques, and approaches to crime prevention and better law enforcement. The City of Tyler is devoting its resources to developing law enforcement of first quality.

L. B. Odom
Chief of Police
Tyler, Texas Police Department

EQUIPMENT AND USES

General Equipment:

The equipment in this unit is of a practical and "result-getting" nature to aid the police function. Most of the equipment in the unit was manufactured and designed by Sirchie Fingerprint Laboratories in Moorestown, New Jersey. They have worked in close cooperation with thousands of Police Departments, and are continually engaged in researches in the crime field so that better devices can be invented and employed which will aid the law enforcement personnel to conduct investigations and to hasten crime solutions. They have agreed to keep this project posted as to the latest and best methods and equipment for crime detection, identification and apprehension. This project was undertaken with the thought in mind of the tremendous obstacles we are faced with attempting to overcome. We cannot hope to cope with the smart criminal unless we have capabilities, such as this program stresses, with the proper scientific equipment and methods that are employed.

While it is hardly possible to solve crime, not knowing where and when the next one is going to be committed, we are now better prepared to solve the crime more quickly after it is committed, so that the perpetrator can be brought to justice. Since it is hardly possible to prevent all crime, then we must strive to be prepared to solve it and apprehend the criminal or perpetrator who should not be permitted to mingle in a decent society.

To be prepared we must be adequately equipped scientifically, so that whatever evidence is found, analysis can quickly be made and the crime solved as soon as possible. This is one reason for the needed establishment of a regional laboratory in this region.

Below is a list of equipment and the probable uses of the equipment.

1. Truck, 1970 Chevrolet chassis - Step Van Body - fully airconditioned, power steering, automatic transmission, heavy duty alternator and heavy duty radiator. This unit is tall enough on the inside that a 6' man can stand up and work within. The floor is carpeted with carpet tile of a commercial quality. The unit is equipped with two chrome electronic sirens. There is a PA system connected to the siren horns to enable the crime scene search technician to talk through this unit. It also has the capability of making it possible to hear the radio on the outside of the unit so that the operator will not be out of touch.

The radio monitors the State (D.P.S.) frequency and receives and transmits on 37.260 mhg. Since the D.P.S. radio base station monitors 37.260, we have the capabilities of communicating with them.

The top of the unit is equipped with a plywood platform so that it is possible to stand on top of the unit in order to take photographs of the scene. The rear of the unit is equipped with a ladder so that it is possible to get on top of the Mobile Unit.

2. Cabinets are of plywood construction with sliding doors and formica tops. Each kit has a specific place in the cabinets which were especially designed for them.
3. The unit is equipped with two swivel stools in the back for the technicians to use during field investigations.

4. The unit is equipped with a 110 volt air conditioner that runs off the gasoline generator that is contained in the unit.

5. Obliterated Number Restoration Kit - electric.

Purpose: The professional criminal today makes a practice of removing all identifying markings or serial numbers from machine guns, pistols, and other weapons used in the execution of crimes in order to keep their origin from being traced. This practice is also performed on identification marks of autos, office equipment, tools, etc., for the same reason. The usual practice is to file or grind the identifying marks from the surface of an article. In most cases the identifying marks may be brought out again, even if the obliteration effects have penetrated deeply. When the original identifying marks were punched or forged into the metal, its molecular structure underwent changes which were not confined to the immediate vicinity of the numbers but in most cases extended also to that portion underneath the markings. By surface treatment of the obliterated area, these identifying marks may be restored.

6. Field Narcotics Identification Kit.

Purpose: This kit contains chemical reagents for field testing of Opium, Morphine, Heroin, Codeine, Cocaine, Marijuana, Hasish, Amphetamines, and LSD. If all the test are negative, a reasonable assumption is that the substances analyzed are not narcotics or dangerous drugs. If, on the other hand, even one of the tests is positive (color reaction), the confiscated or purchased substance is most likely to be a narcotic or dangerous drug. In those situations where further confirmation is required, retention of the samples for submission to the laboratory is essential.

7. Thin Layer Chromatography of Marijuana.

Purpose: This is a sensitive and specific test for Marijuana. With this test no false positives are encountered, although they are prevalent with the Duquenois Reagent in the Narcotics field testing kit and the other spot testing methods used today. Thin layer analysis will not give positives for tea, oregano, thyme, catnip, Turkish tobacco, etc.

An extract of the questioned material is spotted on a thin layer sheet and placed in a developing jar. The unique mobile phase permits full resolution in approximately seven minutes, full separation of the major constituents of Marijuana or Hasish namely: Cannabidiol (C B D), Cannibinol (C B N) and Tetrahydrocannabinol (T H C) is accomplished. All the apparatus required for a complete test is disposable, completely eliminating contamination probability. The questioned material is not destroyed and the evidence remains intact for court presentation. Because this method is specific, and has a sensitivity one hundred and twenty (120) times that of the Duquenois test, special consideration may be given the samples previously thought of as being insufficient for analysis.

8. Combination Dermal and Contact Nitrate Test Kit.

Purpose: To determine contact or proximity with fired weapons. The dermal nitrate test is accomplished by using parafin to make a cast of the area of hand, arm, etc. suspected of having been in contact or near a weapon when it was fired. The contact nitrate test is a simple test to determine if clothing, cloth, etc. was near a weapon when it was fired. Although this test is not specific, the findings of a positive reaction may be used as corroborative evidence that a defendant had recently fired a weapon.

9. Blood Test Outfit.

Purpose: Of the many problems confronted by the modern and alert police investigator in field police chemistry, the blood stain test is one of the most important. By using this kit the angle of investigation is simple to perform, and yet absolutely positive.

In many cases where a person has been murdered or beaten with a blunt instrument, article or weapon, much importance can be attached to the finding of blood stains. Since blood easily discolors, an analysis is necessary to determine whether or not certain stains are of blood.

In the majority of these cases a spot test can be made right at the scene without the aid of a qualified analytical chemist. This kit has been skillfully and carefully prepared so that the identification technician, as well as the chemist, can satisfactorily perform the analysis chemically by following simple instructions.

10. Combination Seminal Fluid Test Kit.

Purpose: A complete kit for testing of seminal fluid stains in clothing, bedding, etc., utilizing two separate and distinct testing reagents.

In sex crime, examination of stains, particularly on the female's clothing, for evidence of seminal fluid is necessary. By using the ultraviolet light supplied with this unit articles can be inspected and the stains of seminal fluids located because of their fluorescent qualities. The chief value of the ultraviolet examination is to limit the area that is fluorescent. Two different reagents are supplied with this kit which will cause (Equilateral Parallelogram) crystals to become visible under low magnification when semen is present.

11. Thief Detection Kit - which has several components.

Invisible fluorescent detection powders. The invisible detection powders are made for planting any kind of article or surface. They can also be placed on floors, knobs, carpets, door and drawer handles, and many other articles. The green, yellow, and white powders can be used on papers, currency, documents, light paper walls and practically all light colored surfaces. The darker colored powders are used on dark colored surfaces.

These powders will respond to the ultra-violet light that is supplied with this kit. When a suspect steals a small article on which the powder is planted, specks and smears that are invisible to the naked eye will be found to be visible to fluorescent.

Ultra-violet light (AC or DC)

Purpose: To use in crime scene search and in connection with other components of this kit to observe evidence that may have fluorescent qualities.

Gas Theft Detection Agent Base

Purpose: A highly fluorescent tracing fluid for all grades of gasoline or petrol to be planted in cases of suspected theft of gasoline.

Fluorescent Invisible Ink.

Purpose: This fluorescent preparation is colorless and is used for placing invisible markings and writings on paper, cloth, currency, etc. The invisible markings and writing is easy to remove and can only be deciphered when under the rays of ultraviolet light radiation. This writing fluid has numerous applications in criminal investigations.

Fluorescent Invisible Detection Paste.

Purpose: This compound is in paste form, so that a small quantity can be placed anywhere outdoors, without being blown away or disturbed by moving air. They can be used indoors also. This paste will also adhere to metal surfaces, where powders will not adhere.

Being characteristically of a non-drying nature, they can remain "planted" outdoors for several weeks without drying or hardening and without losing fluorescent qualities. A thin film of this paste is not visible to the eye. Upon being touched with the hands or fingers, the compound will leave a slightly visible stain on the skin. After the hands are washed, the invisible stain on the skin will continue to fluoresce. Even after a thorough washing of the hands or other parts of the body that have come in contact with this compound it will still glow brilliantly under the ultra-violet light.

Metal or Coin Markings Ink.

Purpose: After marking a coin or any metal with this ink it will not wear off. This has many applications in criminal investigation.

12. Master Evidence Collection, Identifying and Sealing Kit.

Purpose: A complete evidence collection kit. With this kit our technicians can conduct thorough and complete sweeping operations, ultra-violet examinations, collection and identification of any and all evidence at a crime scene. This kit is a compilation of requirements specified by field investigation personnel. The kit contains two parts: One kit contains a complete evidence vacuum sweeper with two special filter attachments. We feel that this is one of the most important items in this mobile unit. It consist of extension hose, upholster tool, wall and floor tool, extension tubes, crevice device, carrying strap, 100 filter papers, plastic evidence bags and bulk filtering bags.

The other kit contains the necessary materials for finding, sorting, identifying and sealing evidence at the scene of a crime. Some of its contents are an ultra-violet light (AC or DC); 5X illuminated battery operated magnifyer, specimen test tubes with corks, 5 3/4" spatula, straight hook and needle, and plastic evidence bottles, roll of pressure sensitive evidence tape, a carbide tip scribe - numerous size plastic evidence bags, an evidence bag heat sealer, 4 1/2" magnifying glass, 20-60X vari-power microscope, specimen forceps, 5 1/2" knife, 5" scissors, evidence collection boxes, evidence labels, evidence marking crayons, evidence marking chalk, evidence sealing wax, and a pair of evidence handling gloves. It also contains capillary tubes and pipetts for gathering liquid evidence.

13. Tire and Footprint Plaster Casting Kit.

Purpose: This is a complete outfit for making exact reproductions of footprints, tireprints, etc. Casting material (Calcium Sulfate) is finely ground for fast setting and exact detail reproductions. With this kit castings can be made in snow, mud, sand, dirt, etc.

14. Silicon Rubber Casting Kit:

Purpose: This is a complete kit that includes all the necessary materials for making accurate reproductions in the field at the scene of a crime with liquid silicon rubber. It is useful in making 1:1 ratio castings of footprints, tireprints, tool marks, etc.

15. Post Mortem Fingerprint Kit.

Purpose: This is a complete portable kit for fingerprinting human cadavers. Contains the necessary forms, ink and equipment for field use. Special hooks permit easy print taking without rolling the fingers.

16. Latent Powder and Fingerprint Kit.

Purpose: This is a very useful kit for the crime scene search technician. It contains standard search equipment and supplies for taking fingerprints (Porelon Pad and Cards). It contains powders and chemical fuming preparations for developing latent fingerprints. It contains lifting tape and pressure sensitive latent print lifters. It also has magnifying glass, evidence marking tape for examining latent prints and properly marking them before they are lifted. This kit also contains an elimination finger print outfit.

17. Porelon Pad and Cardholder Combination.

Purpose: This combination is mounted on the counter inside the mobile unit for taking fingerprints of suspects in the field and for mass fingerprinting of persons involved in riot situations or mass disturbances. Cards are also provided in a holder above this fingerprinting outfit.

18. Magnetic Latent Print Kit:

Purpose: This is a new concept in dusting for latent prints. This method permits the operator to re-use the same powder over and over again. In addition, the brush does not touch the print, since the powder itself forms a brush. Therefore, only the powder touches the print. The magnetic powders may be used on any surface which does not have magnet properties (non-ferrous). It is excellent for use on paper, cardboard, glass, etc.

19. All Purpose Fuming Cabinet:

Purpose: Used for developing latent prints with Ninhydrin Spray, Iodine fumer, ammonium sulfide and thiocyanic acid. It incorporates an electric heater that is controlled by a thermostatic time control, control panel, pilot light, etc. It has applications in forgeries, erasures, fingerprints and other investigations. It has a Pyrex sublimation dish, Iodine crystals capsules, Iodine print fixative, and remover, aerosol ninhydrin spray, ninhydrin remover and fixative. It operates on 117VAC which is furnished by the gasoline generator that is mounted in the unit.

20. Iodine Fuming Gun.

Purpose: To develop latent fingerprints a few weeks or several months old. The human finger secretes salt which remains on surfaces for a longer period of time than does moisture (which fingerprint powders develop). The Iodine fuming gun turns these prints brown.

Photographic Equipment:

1. Crown Graphic Camera with case. This camera has a wide angle lens, strobobar IV flash and a battery pack flash.
Purpose: This camera, due to its wide angle lens is very useful in photographing a crime scene. It can be used for an infinite number of applications in the field.
2. Crown Graphic Camera with a 52 MM lens, electronic flash and fotofocuser attachment.
Purpose: Very useful in taking normal evidence photographs. The fotofocuser attachment is useful in taking 1:1 ratio photographs of tool marks, footprints, fingerprint, etc. It has many general applications in crime investigations.
3. Bolex Movie Camera 16 mm with zoom lens and such attachments as filter, sun-gun, tripod and trigger apparatus.
Purpose: This camera is useful in any crime scene search situations as may require moving photographs. It would be useful in riot or mass disturbance situations. It is also useful in making training films for use in training police personnel.
4. A 35 mm Nikon F₁₁ Camera with wide angle and Nikormat close-up lens.
Purpose: This camera will be useful in taking mass mugg shots in riot situations, etc. It is also very useful for taking normal crime scene photographs. It has capabilities of taking 1:1 and 1:2 ratio photographs.
5. A model 250 Polaroid Camera with a flash and close/up attachment is contained in this unit.
Purpose: This camera is useful when you need a color photo of some evidence at the crime scene or when you need photographs in a hurry and do not have time to process regular black and white pictures.
6. Polaroid Film Holder:
Purpose: This adapter instantly adapts to the 4x5 Graflok back of the fingerprint camera, the Crown Graphic with the wide angle and the Crown Graphic with the normal lens. With this attachment either prints or prints with negatives can be made in 15 seconds. It is very useful in making quick photographs of evidence where a photograph is needed immediately and also for copying other mugg shots and photographs.
7. 10 (4x5) Cut Film Holders.
Purpose: To provide film for the two crown graphic cameras and the 4x5 fingerprint and evidence camera.
8. Fingerprint and Evidence Camera:
Purpose: For photographing fingerprints, handwriting, evidence objects, copying photographs. It is useful whether you require a finished photograph in 15 seconds or a film negative and will do the job rapidly and reliably. A finished print may be had in 15 seconds in the field without a darkroom by using the polaroid back adapter with this camera. Any 4x5 film or film pack may be used with this camera. The camera operates on standard "D" cell batteries or 117 V. AC.

One of the 4 x 5 cameras, the flash unit, and the fingerprint and evidence camera fit in a kit that is portable and also contains another complete latent print outfit for the field investigator. This permits the investigator to operate at the crime scene if he can not get close enough with

the mobile unit without carrying several kits.

A tripod is also included in this unit for use with the above listed cameras to hold them stationary for evidence photographs.

Lighting Equipment:

Stationary gasoline generator which is mounted under an insulated cover at the rear portion of the unit.

Purpose: This generator furnishes the power for the interior lighting and all electrical equipment that is contained in the unit. It also supplies power for the emergency lighting equipment. Interior lighting is of fluorescent tube type. This gives sufficient lighting for analytical procedures while on a field investigation.

1. Flood Lights:

Purpose: Two portable 750 watt sealed beam flood lights for lighting the scene of a crime for proper crime scene search at nighttime.

2. Mitra-Lux High Intensity Projection Light.

Purpose: This light has a very high candle power output. It projects a square beam and from the top of the unit is capable of lighting an entire city block. This light is useful for nighttime photography, crime scene search, riot situations and mass disturbances.

3. Extension Cord Reel with 300' of Heavy Duty Extension Cord.

This extension cord is useful with all electrical equipment. With it we have the capabilities of going 300' on either side of the mobile unit. This is used with the flood lights, the mitra-lux high intensity light, the electric drill and the evidence bag sealer. It will have multiple uses at the scene of a crime or an emergency situation.

4. Portable Spotlight With 7½ Volt Battery:

Purpose: It is used in crime scene search for locating of evidence. It is also used for lighting when the 117 V. electrical lights can not be used. It has the same uses as a flash light would.

5. Twin Spotlights Mounted on Each Side of this Unit.

Purpose: These lights are useful for spotting evidence or other things that might be necessary in a crime scene investigation. It is also useful during emergency situations and has numerous uses.

Miscellaneous Equipment:

1. Metal Detection Sweeper:

Purpose: This instrument is a must when searching for lost or buried metal objects, such as knives, revolvers. With this equipment it is possible to detect an individual coin such as a silver dollar at a depth of approximately 9 to 10 inches. The theoretical maximum depth range under favorable conditions is 4 feet. This unit is completely transistorized and battery operated.

2. Permanent Magnet Recovery Device with Nylon Rope:

Purpose: This magnet is useful in recovering metal objects, knives, guns, or other weapons from water. It can also be used to recover metal objects that are lost or hidden in grass, etc.

3. Portable Tape Recorder: Battery or AC.
Purpose: This device is useful at the crime scene to take statements, to dictate reports, to dictate pertinent information pertaining to the crime scene search; ie - distances, fixed objects, points where photographs are taken, etc.
4. 20' Extension Metal Ladder:
Purpose: This ladder is mounted on a rack on the top of this unit. It is very useful in getting on top of buildings to search for roof entries, hidden merchandise, etc. It can be very useful during riots or other emergency situations.
5. 8' Metal Step Ladder:
Purpose: Can be useful in photographing the crime scene, getting on top of walls, houses, etc. This ladder is mounted on top of this unit.
6. 35 Gallon Tank to Haul Water Supply.
This tank has electric pump. Unit is equipped with a stainless steel sink, water lines from tank to sink and drain.
Purpose: This running water supply is useful when running routine field test and for cleaning objects that might become evidence. This is very useful in remote areas where water is not available.
7. Tool Box - Numerous Tools including:
 - Sissors - to be used to cut paper, cloth or other items that may be used in evidence.
 - 1 Inch Scrapper - to scrape paint from metal for number restorator, to gather evidence, etc.
 - Linoleum Knife - to cut sample of linoleum, etc. that may be needed in evidence.
 - Tweezers - to pick up small samples of evidence without contaminating them by touching with hands. To pick up small pieces of evidence that are too small to handle.

 - Ball Peen Hammer
 - Claw Hammer
 - Bricklayer Hammer
Purpose: to be used in gathering evidence, securing area, chipping sample of brick and rock for comparison purposes, etc.
 - Hacksaw -
Purpose: To be used in cutting metal objects, gathering evidence, cutting hasp or locks, etc.
 - Coping Saw
Purpose: To cut pieces of evidence out of wood surroundings, cutting stakes for securing area, etc.
 - 4" and 8" Screwdrivers:
Purpose: To be used to dismantle, pry or gather other evidence. They will also be useful in removing doors, windows, door jams, siding, etc. that may be useful as evidence in a criminal matter.
 - Phillips Screw Driver
Purpose: Used to dismantle and remove articles of evidence that are held together with Phillips head screws.
 - 2" Wood Chisel
Purpose: To chisel out sections of wood that may be needed as evidence.
 - Regular Pliers
Purpose: Many uses in working on equipment as well as obtaining evidence.
 - Wire Cutting Pliers.

Purpose: To cut wire in order to get mobile unit to the scene of a crime, to cut metal wire that may be used as evidence, etc.

Wrecking Bar:

Purpose: To remove door and window facings that may be needed for evidence. To break in doors or windows in case of emergency.

1/2" Electric Drill and Bits

Purpose: Numerous uses in emergency situations and in drilling holes in order to properly secure guns, etc. to a wooden backing.

Bolt Cutter

Purpose: To cut chain, bolts and locks to obtain entrance to a building or property in criminal matters and emergency situations.

Inspection Mirror

Purpose: To use in locating evidence or serial numbers in out of the way places that you have a hard time getting to.

Tin Shears

Purpose: Many uses in obtaining evidence in connection with metal buildings and automobiles.

6' Rule and 50' metal tape

Purpose: To properly measure the crime scene and establish distances in developing a diagram of the crime scene.

Open End Wrench - Adjustable

Purpose: Many uses in dismantling equipment, motors, etc. when these items may be needed as evidence.

100' Nylon Rope

Useful in roping off a crime scene to secure it from on lookers. Also used with the retrieval magnet in attempts to recover metal objects.

Fire Extinguisher

Purpose: Needed in cases of emergency, car wrecks, building fires, etc. Also useful as a precautionary measure in operation of equipment within the mobile crime unit.

First Aid Kit

Purpose: To administer first aid to victims of assault, injured parties at wreck and possible injuries to technicians that are within this unit.

Kit containing extra Plastic Evidence Tape, etc.

Purpose: To replenish supplies in kits, etc.

Two 10 Inch Covered Clipboards with Graph Paper.

Purpose: To draw sketches and diagrams of a crime scene.

One Pair of Heavy Duty Rubber Gloves

Purpose: Many uses in connection with emergency situations. Also useful in handling large items of physical evidence.

2 Plastic, Cushioned Stools with Backs

Purpose: To be used by technicians in making reports, checking and analyzing evidence, etc.

Identification Kit System

Purpose: This is a complete kit of foil overlays that are used in making composite photographs of wanted suspects in connection with a crime. These composites are coded so that the code can be transmitted via teletype to the proper locale for possible identification.

Binocular - Monocular

Microscope with self contained lighted stage.

Purpose: This is a superior microscope for use in many field situations that technicians may encounter. Eyepieces are individually focused to compensate for differences in the operator's eyes. It has a monocular scope for photographing of evidence through the microscope. An attachment is provided that enables the 35 mm camera to be used with this microscope.

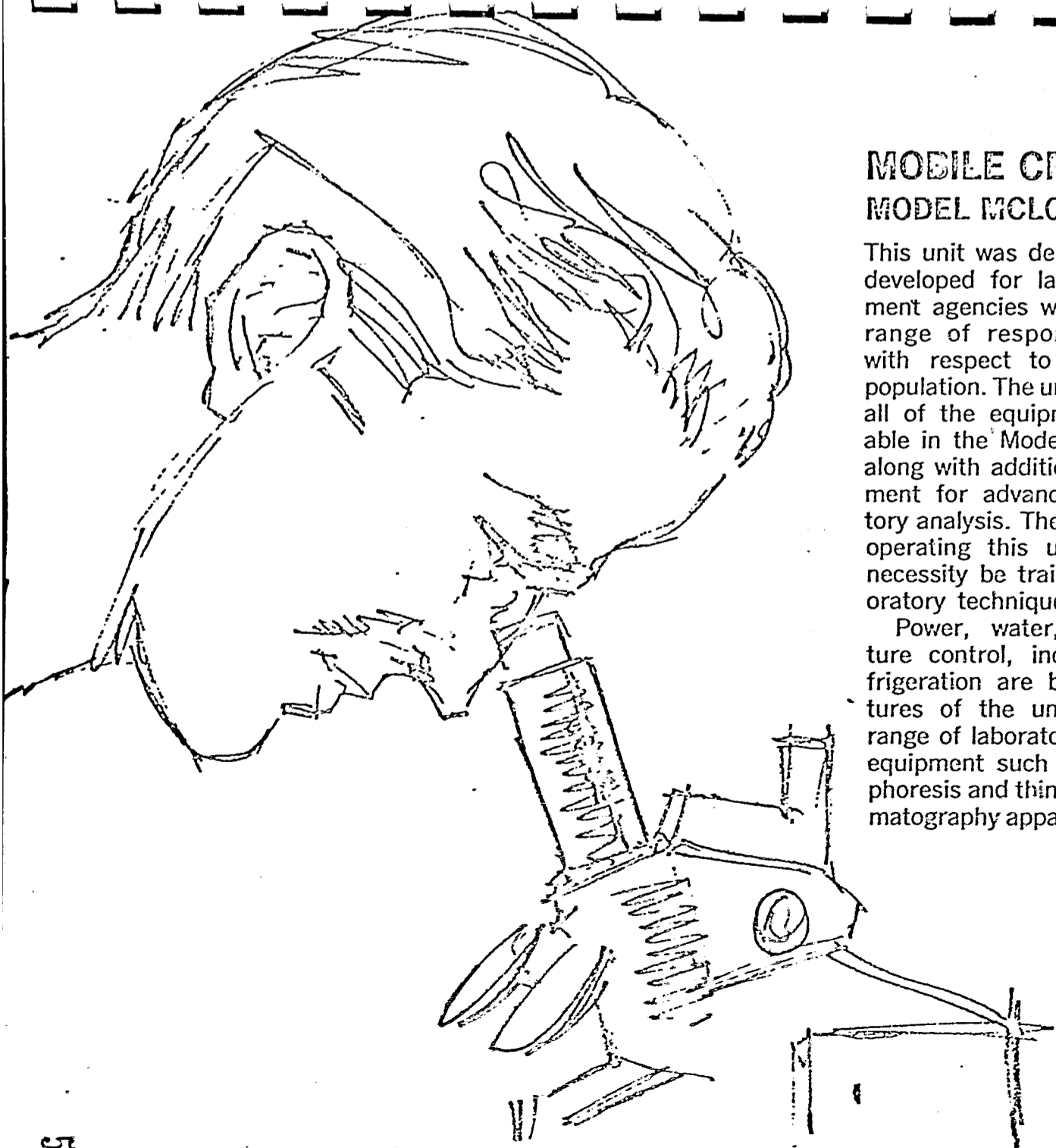
M - Pact - Police Bar

Purpose: This is a heavy duty impact tool with reciprocal motion of weighted handle to permit maximum impact of cutting edge. 7/8"

diameter shaft permits it to be used as a torque bar for prying and forcing on other emergencies. Retractable shaft permits easy storage underneath cabinets of unit.

Measuring Wheel

Purpose: This wheel has an accordian type handle that folds and is contained in a leather case. It is useful in measuring the scene of a crime and in field measurement at the scene of major car accidents.



MOBILE CRIME LABORATORY MODEL MCL003

This unit was designed and developed for law enforcement agencies with a large range of responsibilities, with respect to area and population. The unit includes all of the equipment available in the Model MCL001, along with additional equipment for advanced laboratory analysis. The personnel operating this unit will of necessity be trained in laboratory techniques.

Power, water, temperature control, including refrigeration are built-in features of the unit. A wide range of laboratory analysis equipment such as electrophoresis and thin layer chromatography apparatus along

with microscopy equipment are included.

Every crime scene has its own unique equipment requirements. Sirchie Finger Print Laboratories has endeavored to provide each unit with equipment to fulfill these various needs. Bullet holes high in walls may require ladders and tools for cutting sections out of walls, etc. In many instances the initial crime scene search must be made at night, which requires portable power source, high intensity lights, flood lights, etc. The necessary equipment for these functions is an integral part of each unit.

MODEL MCL003 MOBILE CRIME LABORATORY

The Model MCL003 contains all the most advanced equipment available for the collection and identification of physical evidence. The importance of the equipment and the skill of the crime scene investigator are indivisible.

Thorough analysis of the crime scene frequently gives more information than any laboratory operation that follows. This fact must not be overlooked if the units are to provide satisfactory service.

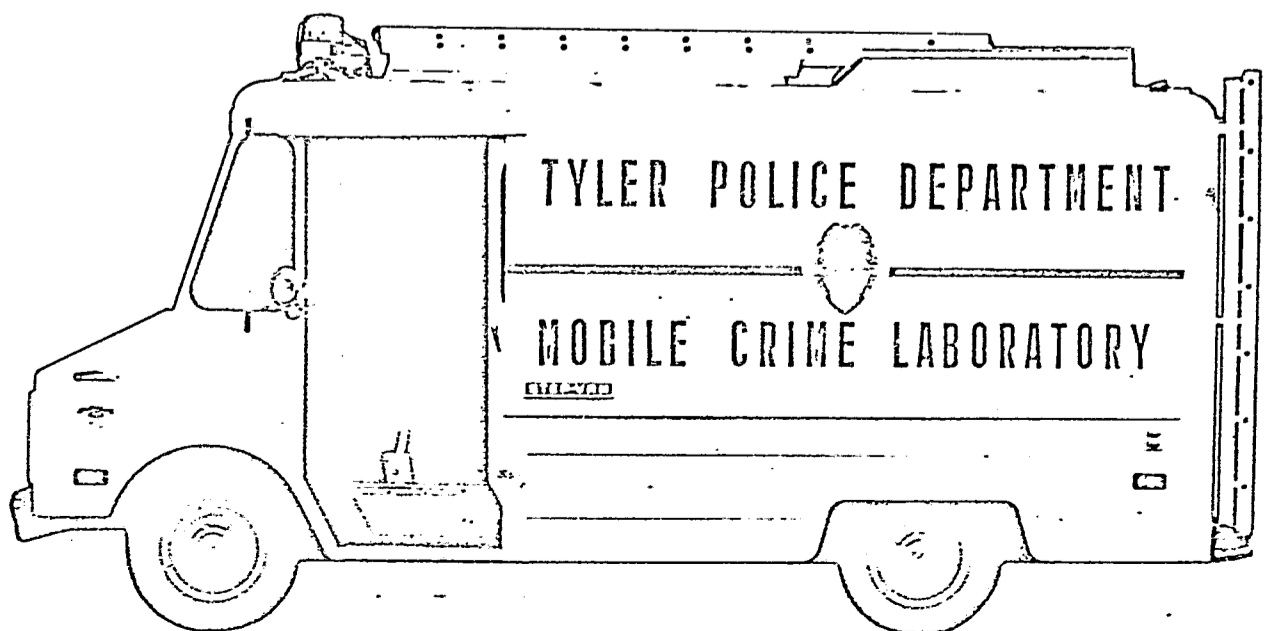
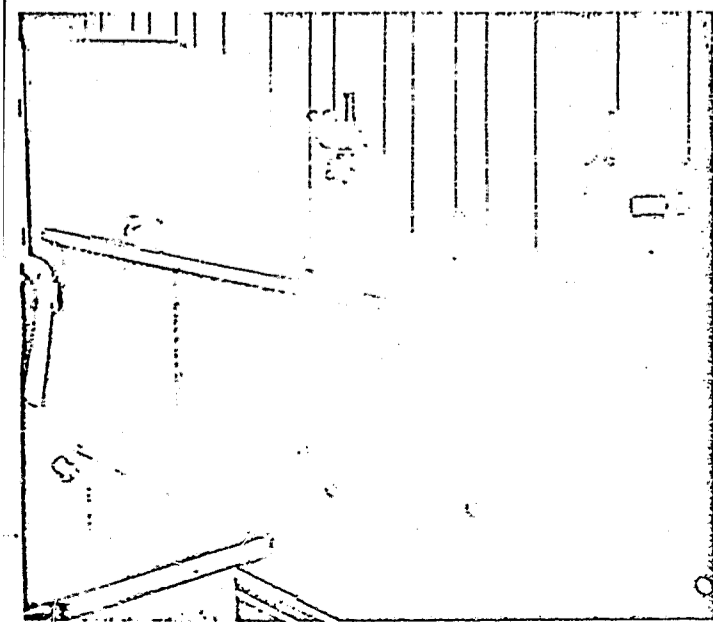
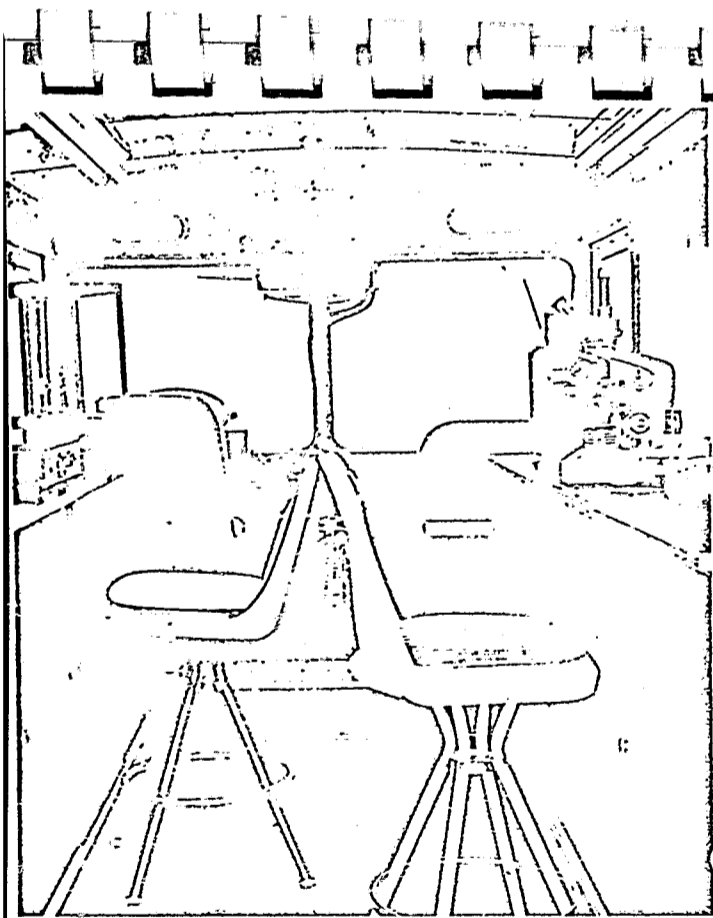
Most of a crime laboratory's function is based upon a comparison of crime scene clues with similar evidence whose origin is known. The advantages of being capable of collecting and analyzing evidence at the crime scene are self evident. The Model MCL003 is equally suited for both situations. Tools, ladders and lighting equipment are furnished with the unit. A wide range of alternate laboratory equipment is available if desired and deletions or additions can be made at the buying agency's discretion.

Complete specifications for truck body, cabinets and equipment available on request.

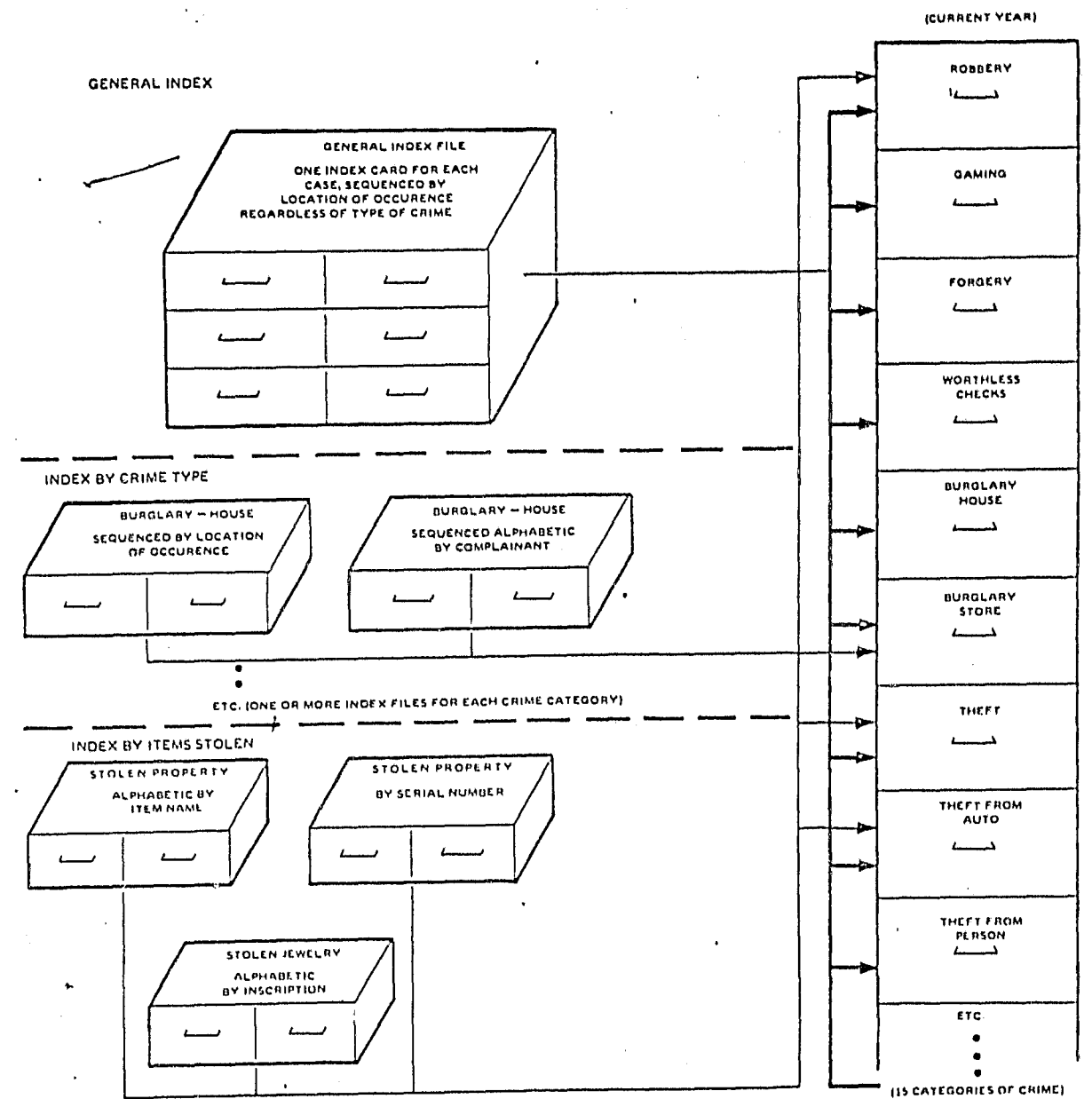
Model MCL003 Mobile Crime Laboratory

Price \$19,500.00

Depending on equipment with training



APPENDIX D



Case indexing scheme

D

RECORDS DIVISION CLERK

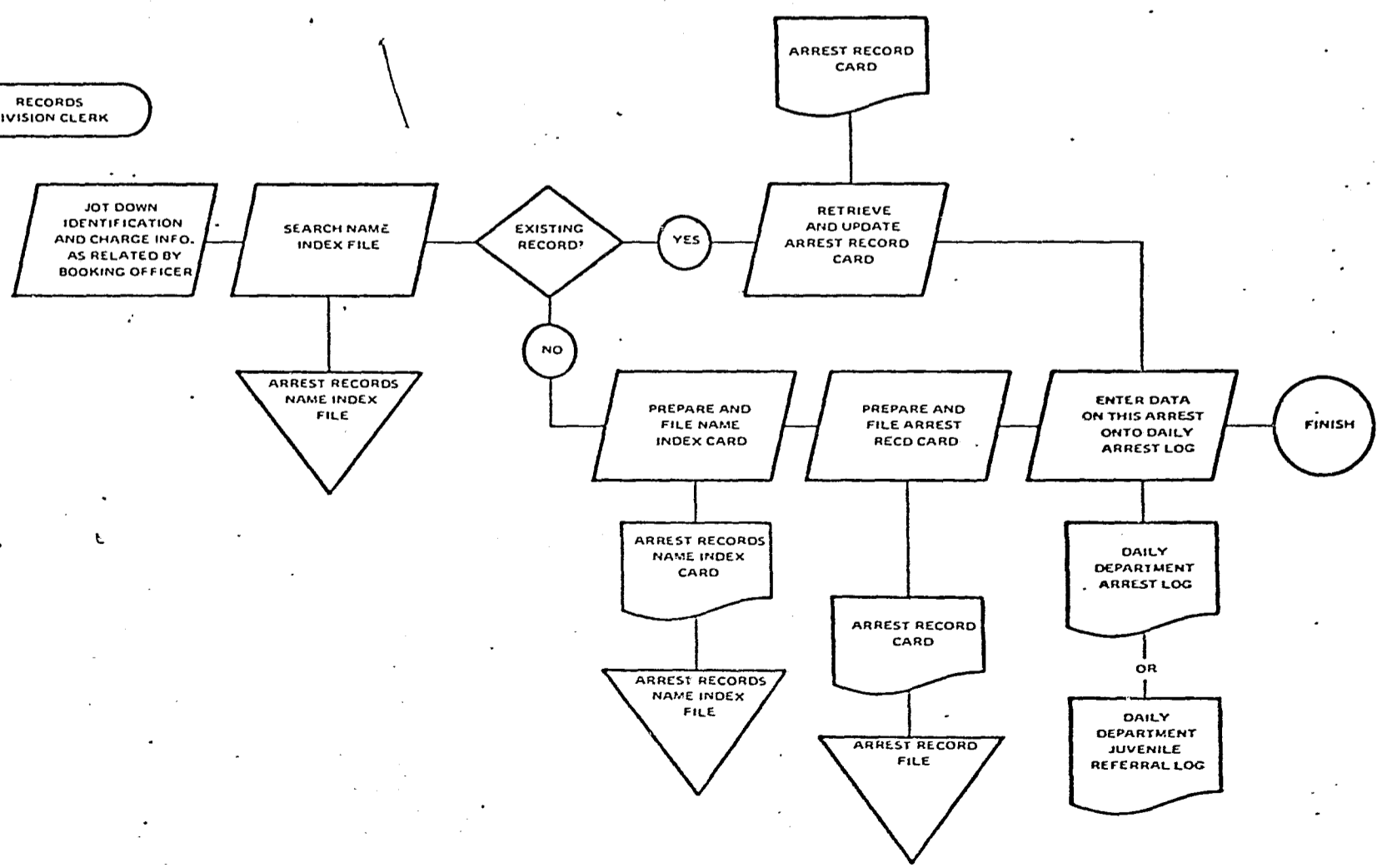
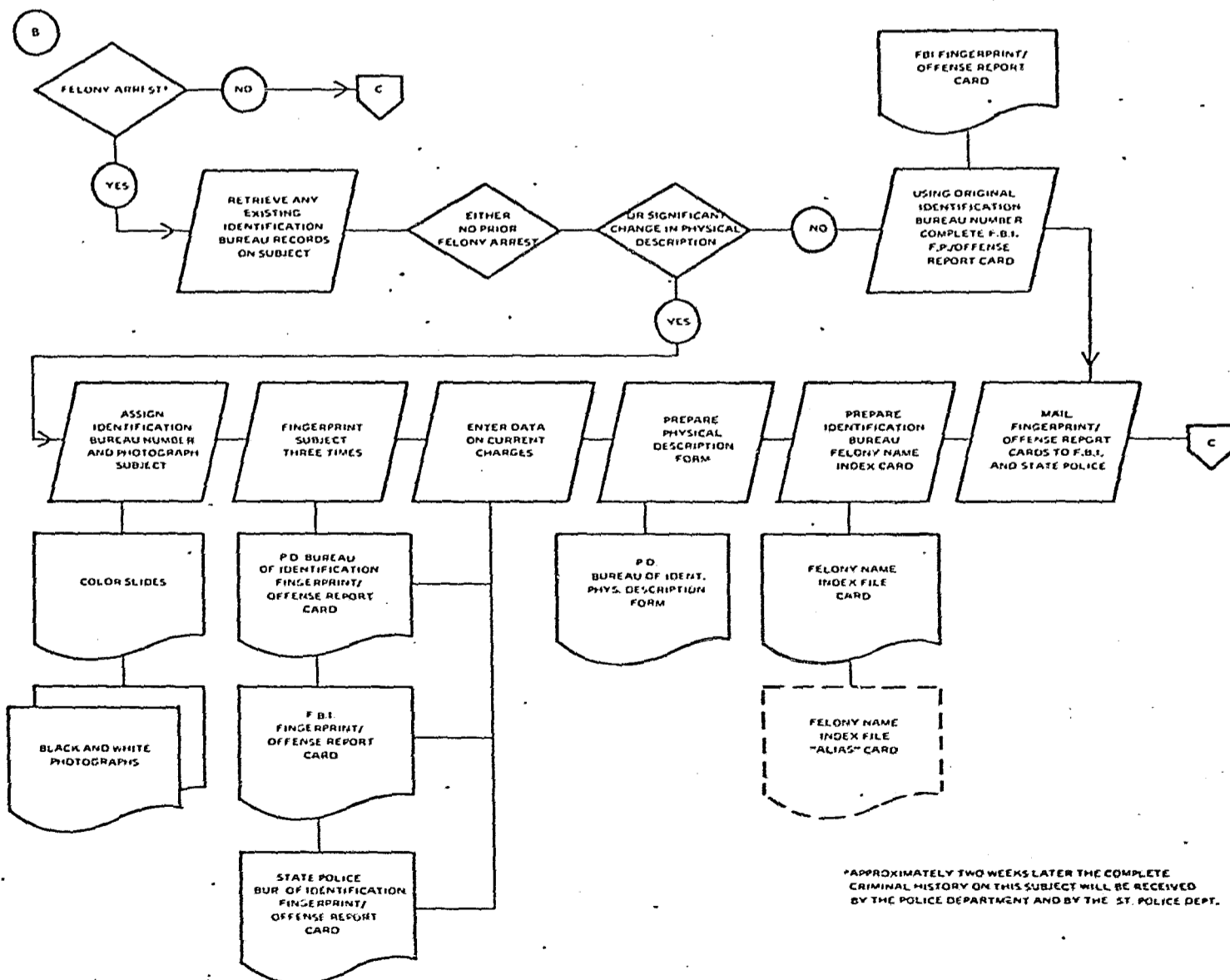


Chart 1. Operations performed for each arrest as it occurs (Sheet 1 of 4)



*APPROXIMATELY TWO WEEKS LATER THE COMPLETE CRIMINAL HISTORY ON THIS SUBJECT WILL BE RECEIVED BY THE POLICE DEPARTMENT AND BY THE ST. POLICE DEPT.

Chart 1. Operations performed for each arrest as it occurs
(Sheet 2 of 4)

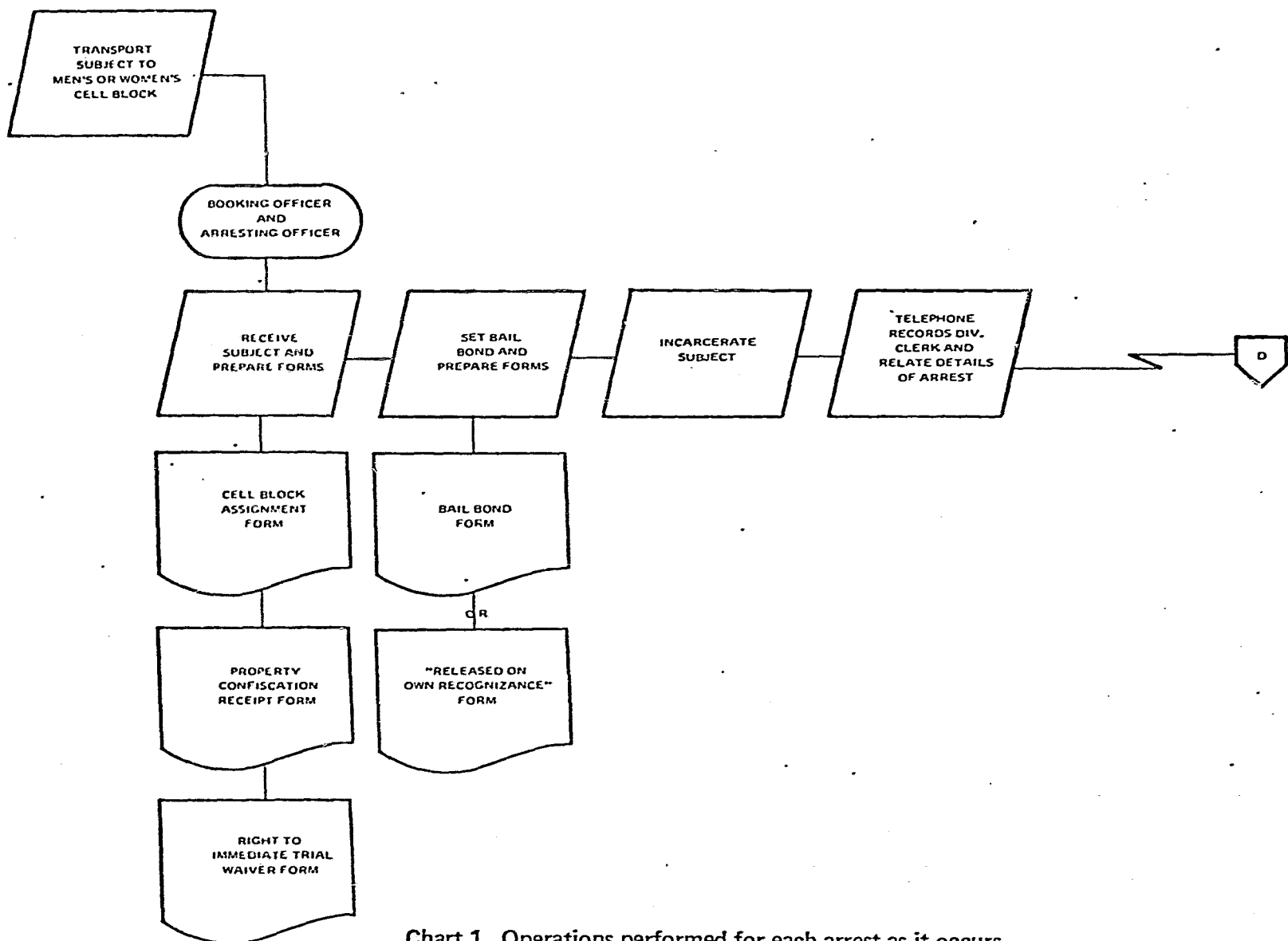


Chart 1. Operations performed for each arrest as it occurs
(Sheet 3 of 4)

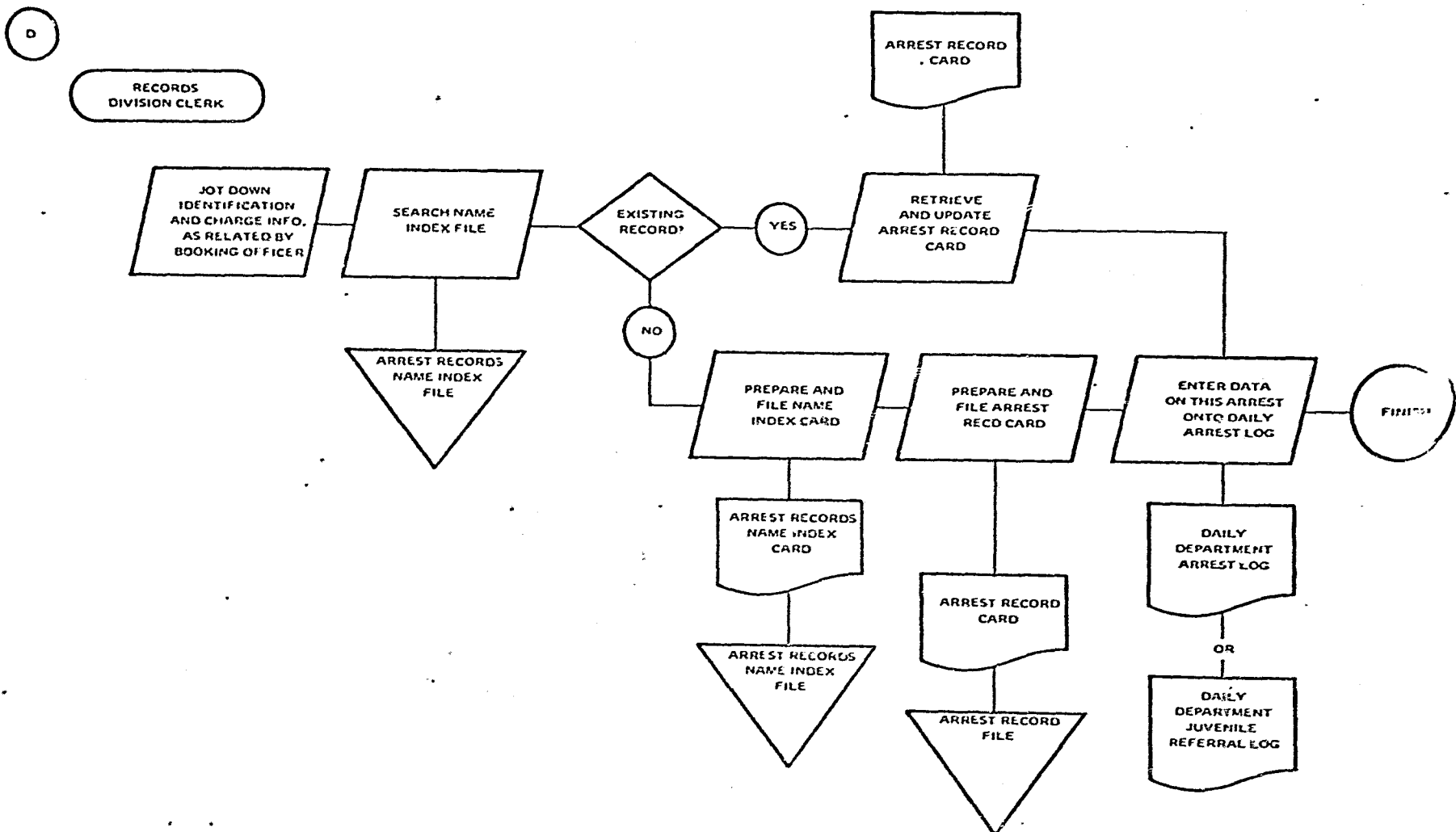
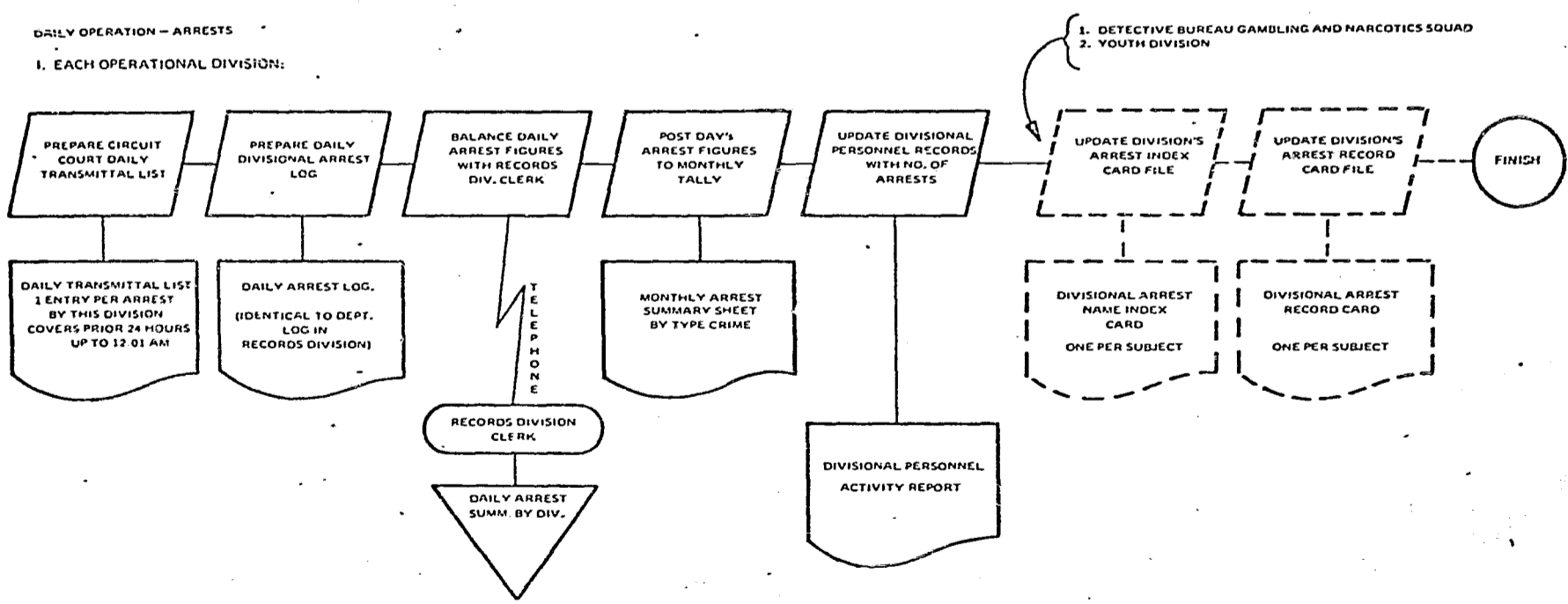


Chart 1. Operations performed for each arrest as it occurs
(Sheet 4 of 4)

DAILY OPERATION - ARRESTS

I. EACH OPERATIONAL DIVISION:



50

II. RECORDS DIVISION:

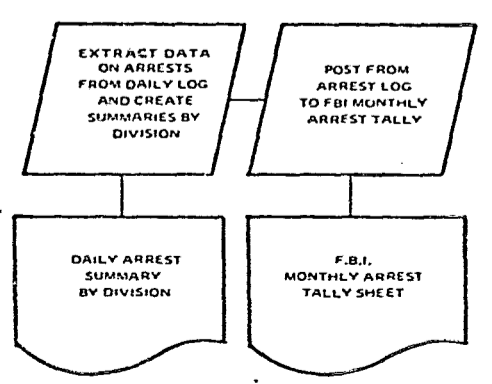
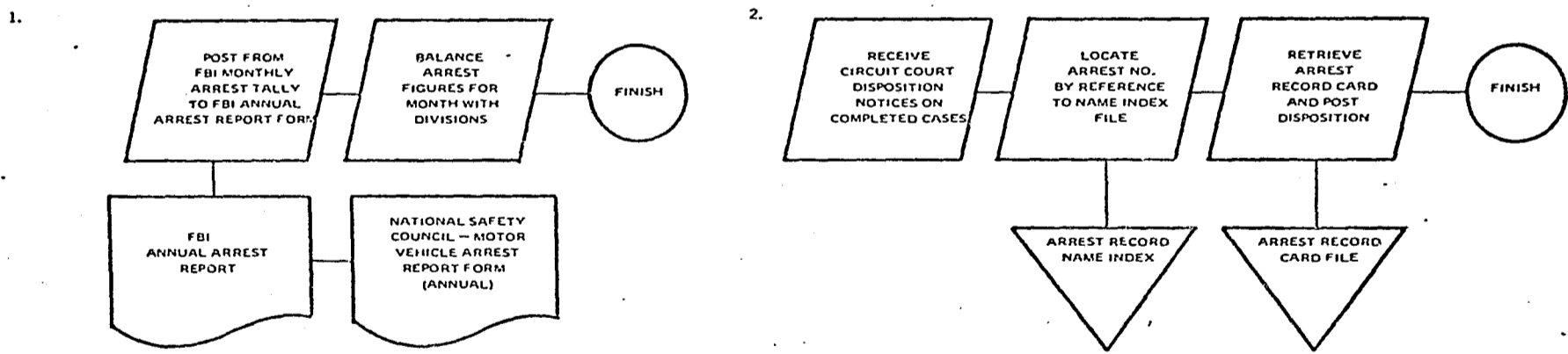


Chart 2. Daily arrest summarization and reporting

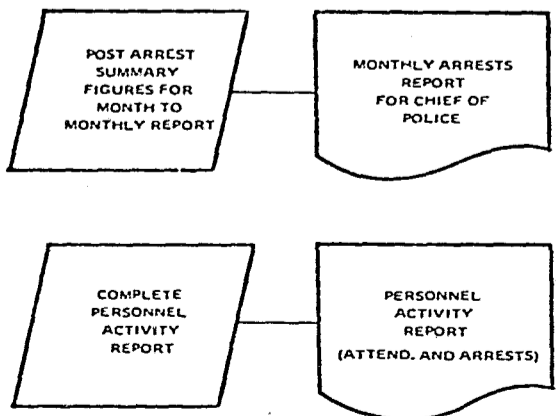
ARREST PROCEDURES

MONTHLY OPERATION: RECORDS DIVISION - ARRESTS



51

MONTHLY OPERATION: EACH OPERATIONAL DIVISION - ARRESTS



BUREAU OF IDENTIFICATION:

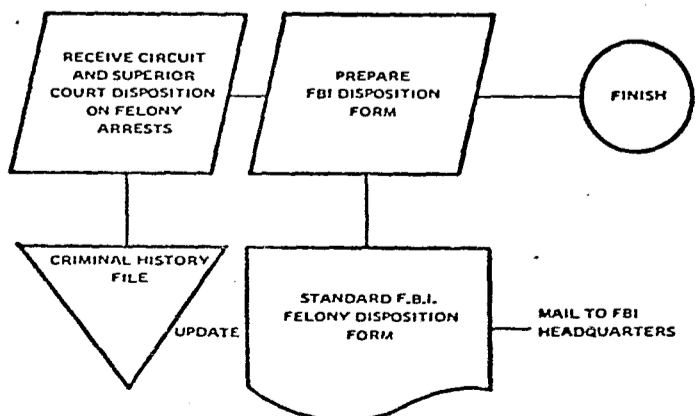
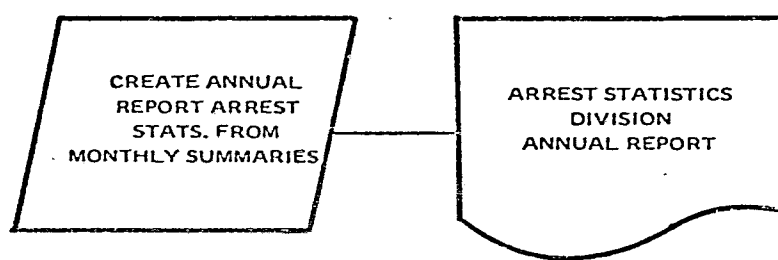


Chart 3. Monthly arrest summarization and reporting

ANNUAL OPERATION — EACH OPERATIONAL DIVISION



ANNUAL OPERATION — RECORDS DIVISION

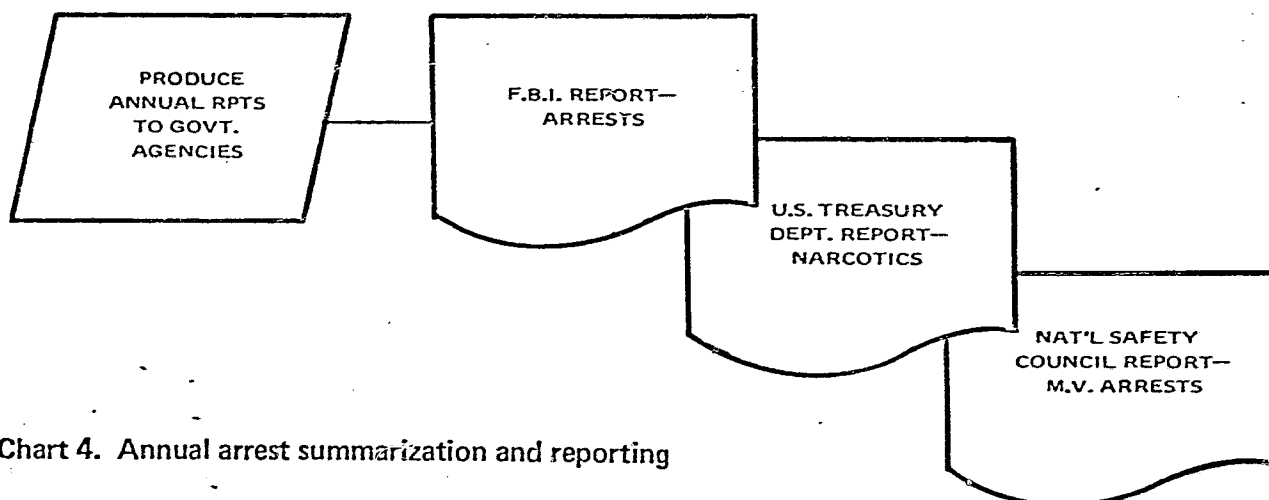


Chart 4. Annual arrest summarization and reporting

APPENDIX E

GOALS

The Tyler Police Department's program for slowing the rise in criminal activity has not been effective.

The need exists for a long range Crime Prevention Program. The goal is to develop and implement a Crime Prevention Program for each area of criminal activity.

Initial emphasis will be placed on reducing burglary by hardening the target. (Exposure and time delay). A minimum reduction of 20% of overall burglary offences for a two year period over the previous two years will be the goal. It is reasonable to expect better results than this. A minimum of 60% reduction in test groups over a two year period will be the goal.

Careful analysis of the past two years crime statistics will be made along with records of effectiveness of implementation of security measures by individuals.

An early goal will be to obtain maximum community support through all civic groups and news media.

After initial exposure, the goal will be to get community support for individual programs through groups of people that are directly concerned with a particular area of crime. (Example: Safety for Women program will be presented to any women's group for endorsement.

Help will be given to civic groups with the aim being to get a specific group to sponsor a specific program of Crime Prevention. One goal will be to obtain cooperation from major newspaper advertisers in placing a slogan pertaining to Crime Prevention somewhere on large size ads.

A final goal will be to get the people of the community to accept their individual responsibility for crime prevention, by using preventative measures and reporting what they see and know.

The total goal will be:

- 1. Reduce the incidence.
- 2. Reduce the take.
- 3. Increase the apprehension rate.

METHODS

The Tyler Police Department will develop a Crime Prevention Bureau. Crime Prevention Programs will be developed for every area of crime.

A Burglary Prevention Program will be developed with the aim being to "harden the target" on individual business places. This will be accomplished by making individual surveys of business places and recommending initiation of security measures by the individual. This will consist of better doors, locks, grillwork for windows and skylights, burglary alarms, and proper lighting after closing time. The entire premises will be surveyed and security recommendations made.

Exposure to the program will be made by designation by proclamation of the first month as Crime Prevention Month. An overview of the program will be presented to all of the civic clubs, the Chamber of Commerce, Bankers Association and Bar Association.

Endorsement for the program will be asked for. Key members of all groups will be asked to serve on a Crime Prevention Committee. Subcommittees for specific functions will be formed. There will be a six-man committee of policemen; four patrolmen and two from staff on the Crime Prevention Committee.

The Crime Prevention Committee will function as an advisory group for furthering specific programs and as an aid in keeping long range community interest.

A prevention program will be developed for every area of crime. Guidelines will be the same for each program, with emphasis placed on active support from key people who are most concerned with a particular area of crime. An example is that for a program for safety of women; committees will be made up from Business and Professional Womens' groups and Parent-Teacher Association.

For protection of homes; a home burglary and theft prevention committee will be formed and subcommittees from individual neighborhoods will be formed.

The news media will have an active part in the overall program. Exposure to the general public will be through newspapers, television, and radio stations. Publicity and advertising committees will be formed in addition to using publicity chairmen from individual groups. Support for this has been discussed with the various media and all are enthusiastic about the program. Constructive help from these groups is anticipated.

Initial discussions with key members of individual groups has resulted in several proposals for active support from groups. This will be encouraged. An example would be for the Bar Association to have Crime Prevention brochures printed that would relate to the overall program or to a specific area of crime prevention. Possibilities are only as limited as the imagination and the willingness of any one group.

Small engravers will be loaned to homeowners for the purpose of marking their personal property with their driver's license, social security number or whatever mark they wish to place on it so that it may be identified in event of theft. This mark along with the name of the property owner will be on file at the police department. Use of this file will be helpful in event marked property is located that has not been reported stolen. This will have a deterrent effect on purchasers of stolen goods. Recommendations will be made that driver's license or social security numbers be used so that the number may be traced to the owner if stolen merchandise is hocked or sold in another city.

This same tool will be offered to business and commercial establishments to enable them to mark office machines for easy identification. Stickers will be made available to homeowners and business places to be placed at points of entry stating that property has been marked for identification.

Statistics for the past two years will be analyzed. These will be broken down to the area of occurrence of violations, the type of business attacked, the goal of the violator and the frequency of attack of an individual place of business. In the early phase of the program the owners of buildings who have suffered frequent attacks will be contacted and requested to permit an officer to make a survey and make recommendation for hardening the target. Comparison groups will be set up to evaluate results after security measures are initiated for a like amount of time before initiation.

Comparison groups will be set up for all types of businesses as the program progresses.

At regular intervals reports will be given at regular meetings of all of the civic groups who had initial exposure to the program.

To supplement the program, efforts will be made to use some sort of Crime Prevention Symbol. (An example would be a type of symbol such as "Smoky the Bear" is for forest fire prevention.) This, along with a slogan such as "Prevent Crime-Reduce Criminal Opportunity" can be used by major newspaper advertisers somewhere on a full or part page ad. Effort to accomplish this will be made.

Help from the Police Department will be given to any civic group who wishes to sponsor any part of a crime prevention program. An example of this is a "Community Radio Watch" program being coordinated by the Chamber of Commerce. Companies who have mobile units equipped with telephones or radios will report to their office anything they think should be called to the attention of the police. Their office will report the call to the police department. Several companies in the city would have a total of many dozens of these units.

We will not push any person or group to get involved in a program that would be time consuming or cause a financial burden on them. However, the door will be kept open for anyone who proposes this of their own initiative.

In addition to the Project Director, two officers will be assigned full time to this function.

RESULTS

The results will be on awareness by the individual of his responsibility in Crime Presentation.

Much of the Police Community Relations and Public Relations needs will be served because of the constant contact with the people. All contacts will be good because the approach is positive. (Do "this" to help yourself.)

Pilot presentations of an overview of the Crime Prevention Program show that the effort will lead to development and implementation of specific program development by certain groups.

Active support from key citizens in the community will lead to more and better support from a greater portion of the city.

One result will be a program that will be applicable to any citizen of the City, and effort will be exerted to expose the program to him.

One result will be an overall reduction in major crimes. Burglary prevention will be the initial program. A minimum overall decrease of 20% in burglary is expected. In test groups of a type of building or business the results expected are a minimum 60% decrease.

As the program progresses and we are able to show reductions, it will result in increased participation by those who have not initiated preventive measures.

The final result is expected to be the most complete and effective Crime Prevention Program in the State.

APPENDIX F

REVISED TABLE OF CLASSIFICATION OF TEXAS TRAFFIC LAW VIOLATIONS

The following definitions were used to classify traffic law violations into two groups:

1. HAZARDOUS TRAFFIC LAW VIOLATIONS. Violations of any law, ordinance or regulation affecting the use or protection of streets or highways enacted primarily to regulate safe movement of vehicles and pedestrians. These generally fall into two groups.
 - a. UNSAFE BEHAVIOR- an action or omission in traffic which is hazardous even though vehicles, streets, and highways are in legal condition.
 - b. UNSAFE CONDITION- causing or permitting an illegal and possible hazardous condition of:
 - (1) a driver or pedestrian in traffic
 - (2) streets or highways used by traffic
 - (3) vehicle used in traffic
2. ALL OTHER TRAFFIC LAW VIOLATIONS. Violations of any law, ordinance or regulation affecting the use or protection of streets or highways but not enacted primarily to regulate safe movement of vehicles and pedestrians.

(NOTE - The expression "regulate safe movement of vehicles..." is intended to refer to maneuvering of vehicles.)

The Legal Reference column in the following table refers to the appropriate section or paragraph of Texas statutes except where shown as a city ordinance. Where "Section" is shown it refers to Article 6701d, VATS, the Uniform Act.

Words within the parentheses in an arrest title are optional words necessary to describe variations of a particular offense, for example: "approaching (or within) an intersection" and only one should be used as circumstances dictate. When the parenthetical statement is followed by an asterisk (*) it is intended only as an explanation and should not be used in the arrest title itself.

VIOLATIONS BY JUVENILES. Article 802e, PC, authorizes the arrest of juveniles for the offense of DWI for driving a motor vehicle in a manner so as to violate any of the following specifically enumerated statutes:

Article 827a PC (except Sec. 9a)
Article 6701d VATS

Article 827f PC
Article 801 PC

In order to provide distinctive arrest titles for violations possible under the authority of Article 802e, PC, the word "Juvenile" will be inserted before the appropriate arrest title for the offense committed. For reporting purposes the violation will be handled as though it had been committed by an adult. As an illustration, a citation issued to a juvenile for speeding--zoned would identify the violation as "Juvenile - Speeding -- Zones," and handled on the report as any other speeding --zoned violation.

CLASSIFICATION OF TRAFFIC LAW VIOLATIONS

1. HAZARDOUS VIOLATIONS

A. UNSAFE BEHAVIOR- Drivers

<u>General Group</u>	<u>Legal Reference</u>	<u>Arrest Titles</u>
Speeding	Sec. 166(a)	Speeding (exceeded prima facie limit at time and place for that type vehicle)*
	Sec. 166(b) & (c)	Unsafe Speed (too fast for conditions)*
	Sec. 166(b)	Fail to Control Speed
	Sec. 167-8-9	Speeding--Zoned
	Sec. 167(a)	Speeding--Zoned (inclement weather, signs posted)*
	Sec. 169A(a)	Speeding (over 35)* Motor-Driven Cycle (inadequate head lamps)*
	Sec. 169A(b)	Speeding--10 MPH Maximum for Solid Tire
	Sec. 170(a)	Impeding Traffic
	Sec. 170(b)	Speed Under Minimum
	Sec. 185	Racing--Drag Racing--Acceleration Contest, etc.
	PC 827f-1	Speeding on Beach
	RCS 6889-2-4	Speeding--in Military Zone
	R.O.W. for Vehicles	Sec. 71(a) & Sec. 73(b)
Sec. 71(a)		Failed to yield at Yield Intersection
Sec. 71(b),(c) & (d)		Failed to Yield ROW--at Open intersection (specify type)*
Sec. 72		Failed to Yield ROW--Turning Left (at intersection--alley--private road or driveway)

1. HAZARDOUS VIOLATIONS (cont'd)

A. UNSAFE BEHAVIOR- Drivers (cont'd)

<u>General Group</u>	<u>Legal Reference</u>	<u>Arrest Titles</u>
R.O.W. for Vehicles (con'd)	Sec. 74 & Sec. 92	Failed to Yield ROW (private drive --alley--building)
	Sec. 75(a)-1 & 2	Failed to Yield ROW to emergency vehicle
	Sec. 33(a) - 1	Failed to Yield ROW--on Green Signal
	Sec. 33(a)-2	Failed to Yield ROW--on Green Signal (alone or with another indication)*
Traffic Signs, Signals, & Road Markings	Sec. 32	Disregarded Official Traffic Control Device
	Sec. 71(a) & Sec. 73(b)	Ran Stop Sign
	Sec. 91A(b)	Failed to Stop at Designated Point (at stop sign)*
	Sec. 91A(c)	Failed to Stop at Designated Point (at Yield sign)*
	Sec. 33(c)-1	Ran Red Light (in traffic light)*
	Sec. 33(a)2	Lack of Caution on Green Arrow Signal (alone or with another indication)*
	Sec. 33(c)-1	Failed to Stop at Proper Place (at traffic light)*
	Sec. 33(d)	Failed to Stop at Proper Place (not at intersection)*
	RCS 6674U-2	Disregarded Warning Sign at Construction
	Sec. 85	Drove Through Safety Zone
Sec. 35(a)-1	Disregarded Flashing Red Signal (at stop sign, etc.)*	
Sec. 35(a)-1	Failed to Stop at Proper Place (flashing red signal)*	

I. HAZARDOUS VIOLATIONS (cont'd)

A. UNSAFE BEHAVIOR - Drivers (cont'd)

<u>General Group</u>	<u>Legal Reference</u>	<u>Arrest Titles</u>
Traffic Signs, Signals, & Road Markings(cont'd)	Sec. 35(a)-2	Disregarded Flashing Yellow Signal
	Sec. 35A	Disregarded Lane Control Signal
	Sec. 58 (b)	Disregarded No Passing Zone
	Sec. 60 (a)	Changed Lane When Unsafe
	Sec. 60(a)	Failed to Drive in Single Lane
	Sec. 60(d)	Disregarded No Lane Change Sign
	Sec. 86(a)	Disregarded Signal at RR Crossing
	Sec. 86 (b)	Disregarded RR Crossing Gate (or flagman)
	Sec. 87	Failed to Stop at Marked RR Crossing
	Sec. 90(d)	Heavy Equipment Disregarded Signal of approaching Train (automatic signal, crossing gates, or flagman)*
Turning Movements	Sec. 62	Turned Across Dividing Section
	Sec. 65(a)	Turned Right Too Wide
	Sec. 65(a)	Turned Right from Wrong Lane
	Sec. 65(b)	Cut Corner Left Turn
	Sec. 65(b)	Turned left from Wrong Lane
	Sec. 65(c)	Disregarded Turn Marks at Intersection (where to turn, etc)*
	Sec. 66	Make U-Turn on Curve--or Hill
	Sec. 68(a)	Turned When Unsafe
	Sec. 188	Cut across Driveway (sidewalk, Parking lot, business or residential entrance, specify which) to Make Turn

I. HAZARDOUS VIOLATIONS (cont'd)

A. UNSAFE BEHAVIOR - Drivers (cont'd)

<u>General Group</u>	<u>Legal Reference</u>	<u>Arrest Titles</u>
Wrong Side or Wrong Way	Sec. 52(a)	Wrong Side Road--Not Passing
	Sec. 52(a)-2	Failed to Yield ROW on Left at Obstruction
	Sec. 52(b)	Slower Vehicle Failed to Keep to Right
	Sec. 52(c)	Wrong Side, 4 or More Lane, Two-Way Roadway
	Sec. 53	Failed to Give One-Half of Roadway (meeting oncoming vehicle)*
	Sec. 53	Failed to Pass Met Vehicle to Right
	Sec. 59(b)	Drove Wrong Way on One-Way Roadway
	Sec. 59(c)	Drove to Left of Rotary Traffic Island
	Sec. 62	Drove on Wrong Side--Divided Highway
	Sec. 60(b)	Drove in Center Lane (not passing or not making left turn)
	Sec. 60 (c)	Drove Wrong Way in Designated Lane
	Sec. 57(a)-1 & Sec. 58(b)	Drove on Wrong Side Road--No Passing Zone
	Sec. 57(a)-2	Drove on Wrong Side Road Approaching (or traversing) Intersection
	Sec. 57(a)-2	Drove on Wrong Side Road Approaching (or traversing) RR Grade Crossing
Sec. 57(a)-3	Drove on Wrong Side Road Approaching Bridge (viaduct or tunnel)	
Sec. 57(a)-4	Drove on Wrong Side Road Awaiting Access to Ferry (ferry operated and signs posted by State Highway Commission)*	

I. HAZARDOUS VIOLATIONS (cont'd)

A. UNSAFE BEHAVIOR - Drivers (cont'd)

<u>General Group</u>	<u>Legal Reference</u>	<u>Arrest Titles</u>
Following	Sec. 61(a)	Following too closely
	Sec. 61(b)	Following too closely--Truck (or combination)
	Sec. 61(c)	Following Too Closely--Caravan
Overtaking	Sec. 54(a)	Fail to pass to Left Safely
	Sec. 54(a)	Cut in after Passing
	Sec. 55(b)	Fail to Pass to Right Safely
	Sec. 55(b)	Illegal Pass on Right
	Sec. 56	Passed--Insufficient Clearance
	Sec. 77(b)	Passed Vehicle Stopped for Pedestrian
	Sec. 82(a)	Passed Streetcar on Left (in motion or stopped)*
	Sec. 82(b)	Passed Streetcar on left without Reducing Speed--or without caution
	Sec. 83	Failed to Stop for Streetcar--or Stop at Wrong Location
	Sec. 104(a)	Failed to Stop (or remain stopped specify) for School Bus
	Signal Intention	Sec. 68(a)
Sec. 68(b)		Failed to Signal--required Distance (before turning)*
Sec. 68(c)		Failed to Signal--for Stop
Sec. 68(d)		Improper use of Turn Indicator
Sec. 69(b)		Failed to signal with Turn Indicator
Sec. 70		Improper turn (or stop) Signal
Sec. 98		Failed to sound Horn--Mountain Road

A. Unsafe Behavior - Drivers (cont'd)

<u>General Group</u>	<u>Legal Reference</u>	<u>Arrest Titles</u>
Pulling away	Sec. 67	Unsafe Start from Parked (stopped or standing) Position
Violations against Pedestrians	Sec. 33(a)-1	Failed to Yield ROW to Pedestrian (turning right--or left at intersection having green signal)*
	Sec. 33(a)-2	Failed to Yield ROW to Pedestrian (green arrow signal--alone or with another indication)*
	Sec. 34(a)	Failed to Yield ROW to Pedestrian at Signal Intersection
	Sec. 76(d)	Failed to Yield ROW to Pedestrian on Sidewalk (vehicle emerging from or entering alley,etc.)*
	Sec. 77(a)	Failed to Yield ROW to Pedestrian in Crosswalk--No Signals
	Sec. 77(b)	Failed to Yield ROW to Pedestrian in Crosswalk--Other vehicle stopped
	Sec. 79	Failed to Use Due Care for Pedestrian
	RCS 6701e-2	Failed to Yield for Blind (or incapacitated) Person
Motorcycle Violations	Sec. 174	Too many riders--Motorcycle
	VCS 6701c-3 Sec. 2	Operate Motorcycle Without approved Headgear
	VCS 6701c-3 Sec. 2	Carry Motorcycle Passenger Without Approved Headgear
	VCS 6701c-3 Sec. 2	Motorcycle Passenger without Approved Headgear
Miscellaneous	Section 23	Disregarded Police Officer
	Sec. 186	Fleeing from Police Officer
	Sec. 51	Reckless Driving

1. HAZARDOUS VIOLATIONS (cont'd)

A. Unsafe Behavior - Drivers (cont'd)

<u>General Group</u>	<u>Legal Reference</u>	<u>Arrest Titles</u>
Miscellaneous (cont'd)	Sec. 54(b)	Failed to Give Way When Overtaken
	Sec. 54(b)	Increased Speed While Being Overtaken
	Sec. 60(c)	Did Not Use Designated Lane (slow or direction)
	Sec. 63	Drove Onto (or from) Controlled Access Highway Where Prohibited
	Sec. 64	Prohibited Motor Vehicle on Controlled-Access Highway
	Sec. 84(a)(b)	Drove on (or Across) Streetcar Tracks (where prohibited)*
	Sec. 84(a)	Failed to Give Way When Overtaken by Streetcar
	Sec. 84(c)	Turn so as to Impede (or interfere) with Streetcar
	Sec. 86(c)	Failed to Stop for Approaching Train--Whistled
	Sec. 86(d)	Failed to Stop for Approaching Train--Hazardous Proximity
	Sec. 88(a)	Bus Failed to Stop at RR Crossing
	Sec. 88(a)	Bus Shifting Gears While Crossing RR Track(s)
	Sec. 89(a)	Vehicle Hauling Explosives (or flammable materials) Failed to Reduce Speed at RR Crossing
	Sec. 89(b)	Vehicle Hauling Explosives (or Flammable materials) Failed to stop at RR Crossing (inside incorporated city or town)*
Sec. 90(b)	Crossed RR with Heavy Equipment without notice	
Sec. 90(c)	Crossed RR with Heavy Equipment Without Stop (or safety)	
Sec. 92	Failed to Stop--Emerging from Alley(driveway or building, s.eci	

1. HAZARDOUS VIOLATIONS (cont'd)

A. Unsafe Behavior-Drivers (cont'd)

<u>General Group</u>	<u>Legal Reference</u>	<u>Arrest Titles</u>
Miscellaneous (cont'd)	Sec. 98	Failed to Keep to Right on Mountain Road
	Sec. 99(a)	Coasting (any vehicle, in neutral)*
	Sec. 99(b)	Coasting (truck, truck tractor or bus, specify)with Clutch Disengaged
	Sec. 106(b)	Drawbar Over 15 Feet
	Sec. 106(c)	No White Flag on Tow Chain (or cable)
	Sec. 109(a)	Drove without Lights-When required
	Sec. 121(c)	Parked Without Lights
	Sec. 121(d)	Parked with Head Lamps not dimmed
	Sec. 123(a)	Improper use of Spot Lamp(s)
	Sec. 123(a)	Too Many Spot Lamps
	Sec. 123(b)	Improper Use of Fog Lamps
	Sec. 123(b)	Too Many Fog Lamps
	Sec. 123(c)	Improper Use of Auxiliary Driving Lamps
	Sec. 123(c)	Too Many Auxiliary Passing Lamps
	Sec. 123 (d)	Improper Use of Auxiliary Driving Lamps
	Sec. 123(d)	Too Many Auxiliary Driving Lamps
Sec. 127(a)	Failed to Use Proper Headlight Beam	
Sec. 127(b)	Failed to Dim Headlights-Meeting	
Sec. 127(c)	Failed to Dim Headlights-Following	
Sec. 130(b)	More than 4 Driving Lamps lighted	
Sec. 133(b)	Unauthorized Use of Siren (whistle or bell)	

1. HAZARDOUS VIOLATIONS (cont'd)

A. Unsafe Behavior-Driver (cont'd)

<u>General Group</u>	<u>Legal Reference</u>	<u>Arrest Title</u>
Miscellaneous (cont'd)	Sec. 138	Warning Devices Not Displayed (flags, fuses, flares, reflectors)*
	Sec. 173(a)	Backed so as to Interfere(or with- out safety)
	Sec. 173(b)	Backed Upon Shoulder (or roadway) of Controlled Access Highway
	Sec. 175(a)	Passengers (exceeding 3)*(or Load) Obstructed Driver's View (or driver's control)
	Sec. 176	Driver Opened Door (or leave door open) in moving Lane of Traffic
	Sec. 187	Drove on Sidewalk
	Sec. 50(a)	D.U.I.D. (drove under influence of drugs)*
	Sec. 50 A	Homicide by Vehicle
	PC 1149	A.A.H.V. (aggravated assault with motor vehicle)*
	PC 1237-38	Negligent Homicide--1st or 2nd Degree
	PC 802c	il.W./O.M. -D.W.I. (murder with- out malice -D.W.I.)*
	PC 802	D.W.I.--M (misdemeanor grade)*
	PC 802b	D.W.I.--F (for felony grade)*
	PC 802e	D.W.I.--Juvenile
PC 827f-1	D.W.I.--on Beach	
VCS 6687b-12(h)	Violate D.L. Restriction (specify)*	

B. UNSAFE BEHAVIOR _ PEDESTRIANS

Right of Way	Sec. 23	Disobeyed Police Officer
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1. HAZARDOUS VIOLATIONS (cont'd)

B. Unsafe Behavior-Pedestrians (cont'd)

<u>General Group</u>	<u>Legal Reference</u>	<u>Arrest Titles</u>
Right of Way (cont'd)	Sec. 78(a)	Pedestrian Failed to Yield ROW to Vehicle Not at Crosswalk
	Sec. 78(b)	Pedestrian failed to Yield ROW to Vehicle (when overhead crossing or tunnel provided)8
	Sec. 77(a)	Pedestrian Entering Path of Vehicle
	Sec. 33(b)-2	Pedestrian Disregarded Yellow Signal (regular traffic light)*
Traffic Signals	Sec. 33(c)-2	Pedestrian Disregarded Red Signal (regular traffic light)*
	Sec. 33(a)-3	Pedestrian Disregarded Green Turn Signal Arrow (sole signal)*
	Sec. 34(b)	Disregarded Pedestrian Control Signal
	Sec. 64	Non-Motorized Vehicle (specify) on Prohibited Roadway
Miscellaneous	Sec. 64	Pedestrian on Prohibited Roadway
	Sec. 78(c)	Crossed Between Intersections where Prohibited.
	Sec. 78(d)	Jaywalking (crossed roadway intersection diagonally)*
	Sec. 81(a)	Walked on Roadway Where Sidewalks Provided
	Sec. 81(b)	Walked on Highway with Traffic (no sidewalks)*
	Sec. 81(c)	Stood in Roadway to Solicit Ride (contributions, employment, or business, specify which)
	Sec. 81(d)	Stood on (or near) Street (or Highway) to Solicit Guarding Vehicle
	PC 477	Drunk Pedestrian

1. HAZARDOUS VIOLATIONS (cont'd)

C. Unsafe Behavior-People other than Drivers and Pedestrians

<u>General Group</u>	<u>Legal Reference</u>	<u>Arrest Titles</u>
Miscellaneous Violations	Sec. 146	Owner (parent or guardian) Permit Violation (hazardous)*
	Sec. 175(b)	Passenger Interfered with Driver's View (or control)
	Sec. 176	Person (other than driver) opened Door (or leave door open) in moving lane of traffic
	Sec. 177	Riding in House Trailer
	Sec. 179	Bicycle Rider Commit Any Applicable Hazardous Traffic Violation (specify applicable violation)*
	Sec. 180(a)	Rode Improperly on Bicycle
	Sec. 180(b)	Rode Improperly on Bicycle--too Many
	Sec. 181	Clung to Vehicle on Bicycle (coaster, roller skate, sled or toy vehicle, specify)
	Sec. 182(a)	Failed to Keep Bicycle on Right Side of Roadway
	Sec. 182(a)	Bicycle Rider Failed to Exercise Due Care (when Passing)*
	Sec. 182(b)	Rode more than Two Bicycles Abreast
	Sec. 183	Carried Articles so as to Interfere with Handling of Bicycle
	Sec. 184(a)	No White Light (or defective light) on Front of Bicycle (nighttime)*
Sec. 184(a)	No Red Reflector (or red light) or Defective Reflector (or red light) on Rear of Bicycle (night-time)*	

1. HAZARDOUS VIOLATIONS (cont'd)

C. Unsafe Behavior-People Other Than Drivers and Pedestrians (cont'd)

<u>General Group</u>	<u>Legal Reference</u>	<u>Arrest Titles</u>
Miscellaneous Violations (cont'd)	Sec. 184(b)	No Brake (or defective brake)* on Bicycle

D. Unsafe Conditions

Driver	Sec. 95(b)	Unauthorized Driver Parking Unlawfully	
Highway	Sec. 36(a)	Place or Maintain Unauthorized Sign (signal or device)	
	Sec. 36(a) & Sec. 37	Obscuring or Interfering with Official Traffic Control Device (or RR sign)	
	Sec. 36(c)	Flashing Light (or sign) within 1,000 Feet of Intersection	
	Sec. 102	Deposited Glass (nails, tacks, wire, cans, specify) on Highway	
	RCS 6674U-2	Tampering with Barricade	
	Vehicle--Lights, Signal Lamps and Reflectors	Sec. 110(a)	No Head Lamp(s) (when Not equipped)*
		Sec. 110(a) & Sec. 130(a)	Defective Head Lamp(s)
		Sec. 126(b)	Head Lamp(s) Glaring, Not adjusted
		Sec. 126(a)(b)	No Multiple-Beam Roadlighting Equipment
		Sec. 131(a)	Improperly Directed Lamp(s) (over 300 candle power)8
Sec. 139F(a)-1		No Head Lamp(s) on Motorcycle (or motor-driven cycle) (when not equipped)*	
Sec. 139F(a)-1		Defective Head Lamp(s) on Motorcycle (or motor-driven cycle)	
Sec. 139F(a)-2		Head Lamp(s) Improperly Located on Motorcycle (or motor-driven cycle) (too high, too low, specify)	

11. HAZARDOUS VIOLATIONS (cont'd)

D. Unsafe Conditions (cont'd)

<u>General Group</u>	<u>Legal Reference</u>	<u>Arrest Titles</u>
Vehicle		
Lights, Signal Lamps and Reflectors (cont'd)	Sec. 139F(f)1-2	No Multiple-Beam Road-Lighting Equipment (or defective) on Motorcycle
	Sec. 139F(g)	Improper Head Lamp(s) on Motor-Driven Cycle
	Sec. 111(a)	No Tail Lamp(s) (when not equipped)*
	Sec. 111(a)	Defective Tail Lamp(s)
	Sec. 111 (b)	Tail Lamp Improperly Located (too high, too low)*
	Sec. 139F(b)-1	No Tail Lamp on Motorcycle (or motor-driven cycle)
	Sec. 139F(b)-1	Tail Lamp Improperly Located on Motorcycle (or motor-driven cycle)
	Sec. 122(b)-1-2-3, (c)-1-2-3, (d)	No Lamp(s)--or Reflector(s) -on Farm--or Other Equipment (head lamps, tail lamps, etc.)*
	Sec. 122(b)-1-2-3, (c)-1-2-3, (d)	Defective Lamp(s)--Reflector(s) on Farm or Other Equipment
	Sec. 122(e)	No Light(s) (front, rear) on Animal-Drawn Vehicle (or other vehicles when applicable)
	Sec. 118	No Stop Lamp(s)
	Sec. 118 & Sec. 124(e)	Defective Stop Lamp(s)
	Sec. 139F(d)-1	No Stop Lamp on Motorcycle (or motor-driven cycle)
	Sec. 69(b)	No Turn Signal Lamps--when Required (vehicle not equipped)*

1. HAZARDOUS VIOLATIONS (cont'd)

D. Unsafe Conditions (cont'd)

<u>General Group</u>	<u>Legal Reference</u>	<u>Arrest Titles</u>
Vehicle		
Lights, Signal Lamps and Reflectors (cont's)	Sec. 118 (b)	No Electric Turn Signal Lamps
	Sec. 124(f)	Defective Turn Signal Lamps
	Sec. 121(a)	No Parking Lamp(s)
	Sec. 121(a)	Defective Parking Lamp(S)
	Sec. 122(a)	No vehicular Hazard Warning Lights on Farm Tractor (or self-propelled farm equipment or implement of husbandry)
	Sec. 125(c)	Improper Use of Back-Up Lamp
	Sec. 112(a)	No Reflectors on Rear
	Sec. 139F(c)-1	No Reflector on Rear of Motorcycle (or motor-driven cycle)
	Sec. 114(a)-4, (b)-4, (d), (e)-2	No Reflector(s) on Side(s)-- (specify type of vehicle)--at or Near Front, Rear, Centrally (specify)
	Sec. 114(a)-1-2-3, (b)-1-2-3, (c), (d) (e)-13	No Clearance (identification or side marker)Lamp(s) on (specify type of vehicle and location on vehicle)
	Sec. 112(b)	Reflectors Improperly Mounted-- Rear (too high, too low, etc.)*
	Sec. 116(a)	Reflectors Improperly Mounted-- Side (too high, too low, etc.)*
	Sec. 116(b)	Clearance (or side marker) Lamps improperly mounted
	Sec. 115(a), (b) & (c)	Wrong Color Clearance Lamps Wrong Color Side Marker Lamps Wrong Color Identification Lamps Wrong Color Side Reflectors
	Sec. 115(c)	Wrong Color stoplight Wrong color license plate light Wrong Color back-up lamp Wrong color signal device

1. HAZARDOUS VIOLATIONS (cont'd)

D. Unsafe Conditions (cont'd)

<u>General Group</u>	<u>Legal Reference</u>	<u>Arrest Titles</u>
Vehicle		
Lights, Signal Lamps and Reflectors (cont'd)	Sec. 117(a),(b) & (c)	Reflectors Not Visible Sufficient Distance Clearance Lights Not Visible Sufficient Distance Identification Lamps not Visible Sufficient Distance Side Marker Lamps Not Visible Sufficient Distance (front, side or rear)*
Brakes	Sec. 132	Defective Brakes (or no brakes) on Motor Vehicle (trailer, semitrailer, pole trailer or combination of vehicles, specify)
	Sec. 132(b)	No Parking Brakes (or defective parking brakes)
	Sec. 132(c)	Brakes Not on All Wheels (when required)*
	Sec. 132(d)	No Automatic Brake Application on Breakaway (trailers, semitrailers & pole trailers)*
	Sec. 132(d)	Defective Automatic Brake Application on Breakaway (trailers, semi-trailers & pole trailers)*
	Sec. 132(e)	Tractor Brakes Not Protected (in case of breakaway)*
	Sec. 132(f)	Defective Air Brake Reservoir
	Sec. 132(g)-1-2	No Two Means of Emergency Brake Operation (air brakes or vacuum brakes)*
	Sec.132(h)	No Single Control to Operate All Brakes
	Sec. 132(i)-1	Inadequate Air Brake Reservoir
	Sec. 132(i)-2	Inadequate Vacuum Brake Reservoir
	Sec. 132(i)-3	Inadequate Reservoir Safeguard (air or vacuum brakes, specify)

1. HAZARDOUS VIOLATIONS (cont'd)

D. Unsafe Conditions (cont'd)

<u>General Group</u>	<u>Legal Reference</u>	<u>Arrest Titles</u>	
Vehicle Brakes (cont'd)	Sec. 132(j)-1	No Warning Signal (other than pressure gauge)* or Defective warning Signal for Air Brakes	
	Sec. 132(j)-2	No Warning Signal (other than vacuum gauge)* or Defective Warning Signal for Vacuum Brakes	
	Sec. 132(j)-3	No Warning Devices on Brakes (other than gauges when vehicle(s) equipped with both air and vacuum brakes)*	
	Sec. 132(l)	Brakes improperly Adjusted	
	Sec. 132(l)	Brakes Not Maintained in good working order	
	Sec. 139F9h)-2	Brakes Not on all Wheels--Motor-cycle	
	Sec. 139F(i)-1-2-3	Defective Brakes--Motorcycle (or motor-driven cycle)	
	Miscellaneous	PC 827a, 3A(c)	Inadequate Bed (sideboards, front or rear panel, specify)
		PC 827a, 3A(d)	Improper Loading (within 6 inches of top of enclosure contacted or above any point of enclosure, specify)
		PC 827a, 3A(e)	Loose Material Not Removed (from non-load carrying parts of loaded vehicle)*
PC 827a, 3A(f)		Improperly Secured Tailgate	
PC 827a, 3A(g)		Inadequate (or defective) Bed (escaping loose material)*	
	PC 827a, 3A(h)	Loose Material Not Removed (from non-load carrying parts of un-loaded vehicle)*	
	Sec. 120	No Lamps (or reflectors) on Projecting Load (to rear)* at night	

1. HAZARDOUS VIOLATIONS (cont'd)

D. Unsafe Conditions (cont'd)

<u>General Group</u>	<u>Legal Reference</u>	<u>Arrest Titles</u>
Vehicle Miscellaneous (cont'd)	Sec. 120	No Lamp(s) on Projecting Load (to side)* at Night
	Sec. 120	No Flag(s) on Projecting Load (to rear or side, specify) Daytime
	Sec. 133(a)	Horn Violation (no horn or defective, specify)
	Sec. 133(b)	Equipped with Unauthorized Siren --Whistle--or Bell
	Sec. 134(a)	Muffler Violation (none, defective loud, cut out or bypass, specify)
	Sec. 134(c)	No Exhaust Emission System (originally equipped but removed)*
	Sec. 134(c)	Defective Exhaust Emission System (equipped but not in good working order)*
	Sec. 134A	Mirror Violation (none or im- properly located, specify)
	Sec. 134B(a)	Obstructed View Through Wind- shield (side or rear windows)
	Sec. 134B(b)	No Windshield Wiper
	Sec. 134B(c)	Defective Windshield Wiper
	Sec. 136 (a)(c)	Defective Safety Glazing Material
	Sec. 137	Warning Devices Not Installed-- or Defective (flares, fuses, electric lanterns, flags, etc.)*
	Sec. 139b-3	No Slow-Moving Vehicle Emblem (of approved type)*
Sec. 139b-3	Emblem Improperly Mounted (too high, too low, etc.)	
Sec. 139b-3	Emblem Not in Clean (or reflec- tive)Condition	
Sec. 139b-4	Improper Use of Emblem	

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1. HAZARDOUS VIOLATIONS (cont'd)

D. Unsafe Conditions (cont'd)

<u>General Group</u>	<u>Legal Reference</u>	<u>Arrest Titles</u>
Vehicle Miscellaneous (cont'd)	Sec. 139(a),(b), (c)	Placard--or Other Marking Re- Quired (or violation of regula- tion, specify)
	Sec. 139A	No Mud Flaps
	Sec. 139A	Improper Mud Flaps (too short, etc.)*
	Sec. 139C	Unsafe Air Conditioning Equipment
	Sec. 139D	Television Receiver Improperly Located (visible to driver)*
	Sec. 139E	No Front Seat Belts (when re- quired)*
	Sec. 141(e)	Vehicle Without Required Equip- ment (or in unsafe condition)
Parking Violations		
Stopping, Standing or Parking	Sec. 93(a)	(Stop, Stand, or Park) on Main Traveled Way (outside of business or residence district)*
	Sec. 95(a)1	(Stop, Stand or Park, specify)*
	Sec. 95(a)1a	Parked Double
	Sec. 95(a)1b	On a Sidewalk
	Sec. 95(a)1c	Within an Intersection
	Sec. 95(a)1d	On a Crosswalk
	Sec. 95(a)1e	Between Safety Zone and Curb
Sec. 95(a)1f	Alongside (or opposite) Street Excavation (or Obstruction)	
Sec. 95(a)1g	Upon a Bridge (or in tunnel)	

1. HAZARDOUS VIOLATIONS (cont'd)

D. Unsafe Conditions (cont'd)

<u>General Group</u>	<u>Legal Reference</u>	<u>Arrest Titles</u>
Parking Violations Stopping, Standing or Parking Prohibited (cont'd)	Sec. 95(a)1h	On Railroad Track
	Sec. 95(a)1i	In Prohibited Area (stopping)*
	Sec. 95(a)2	(Stand or Park a Vehicle, specify)*
	Sec. 95(a)2a	In Front of Public (or Private Driveway
	Sec. 95(a)2b	Within 15 Feet of Fire Hydrant
	Sec. 95(a)2c	Within 20 Feet of Crosswalk (at Intersection)*
	Sec. 95(a)2d	Within 30 feet of Traffic Control Device
	Sec. 95(a)2e	Within 20 Feet of Driveway (or opposite entrance) to Fire Station
	Sec. 95(a)2f	In Prohibited Area (standing)*
	95(a)3	(Park)*
	Sec. 95(a)3a	Within 50 Feet of Railroad Cross- ing
	Sec. 95(a) 3b	In Prohibited Area (parking)*
	Sec. 96(a) & (b)	Parked with Wheels (left or right) over 18 inches from curb-- or edge of roadway
	Sec. 96(b)	Parked Facing Traffic
Sec. 96(c)	Parked at Angle (where not per- mitted)*	
Sec. 96(d)	Parked (stand or stop) in Pro- hibited Area (signs by Highway Department)*	
Sec. 97	Parked on Grade--Failed to turn Wheels	
Sec. 97	Parked and failed to set brakes	
Sec. 97	Parked without stopping engine	

II. ALL OTHER TRAFFIC LAW VIOLATIONS
(Non-Hazardous)

<u>General Group</u>	<u>Legal Reference</u>	<u>Arrest Titles</u>
D.L. Violations	RCS 6687b-2(a)	No Driver's License (when un-licensed)*
	RCS 6687b-2(a)	No Commercial Operator's License (not licensed as such when required)*
	RCS 6687b-2(a)	Expired Operator's License
	RCS 6687b-2(a)	Expired Commercial Operator's License
	RCS 6687-b-2(a)	Expired Chauffeur's License (when applicable)*
	RCS 6687b-5(a)	No Chauffeur's License--School bus
	RCS 6687b-5(b)	No Chauffeur's License-(public or common carrier, etc.)*
	RCS 6687b_5B(b)	No Motorcycle Operator's License
	RCS 6687b-23A(c)	Violate D.L. Restriction on: Occupational License
	RCS 6687b-13	Fail to Display DL
	RCS 6687b-20	Fail to Report Change of Address (or name)
	RCS 6687b-32-1	Display Fictitious Operator's License
	RCS 6687b-32-1	Display Fictitious Commercial Operator's License
	RCS 6687b-32-1	Display Fictitious Chauffeur's License
	RCS 6687b-32-1	Fictitious Operator's License in Possession
	RCS 6687b-32-1	Fictitious Commercial Operator's License in Possession
RCS 6687b-32-1	Fictitious Chauffeur's License in possession	
RCS 6687b-32-1	Display Suspended, etc. (specify)*	
RCS 6687b-32-1	Display Altered, etc. (specify)*	

II. ALL OTHER TRAFFIC LAW VIOLATIONS (cont'd)
(Non-Hazardous)

<u>General Group</u>	<u>Legal Reference</u>	<u>Arrest Titles</u>
D.L. Violations (cont'd)		
	RCS 6687b-32-2	Permit Unlawful Use of DL (lend to another, etc.)*
	RCS 6687b-32-3	Present D L Issued to another Person
	RCS 6687b-32-4	Refuse to Surrender D L--Suspended (or revoked, etc)*
	RCS 6687b-32-5	More than one valid D L in Possession
	RCS 6687b-32-6	False Statement on D L Application
	RCS 6687b-33	False Affidavit-Felony (in DL LA!)*
	RCS 6687b-34	D W LS (drive while license suspended under provisions of D L Laws)*
	RCS 6701h-32c	D W Ls--S/R (D W LS under S/R Laws)*
Miscellaneous Traffic Violations		
	Sec. 38	F.S.R.A.--Felony
	Sec. 39	F.S.R.A.--Misdemeanor
	Sec. 41	Fail to Comply with Requirements on Striking Unattended Vehicle
	Sec. 42	Fail to Comply with Requirements on Striking Fixtures on Highway
	Sec. 43	Fail to Report Injury Accident at once (to proper authorities, etc.)*
	Sec. 44(a)-(b)-(c)	Fail to Make Written Report of Accident to DPS
	Sec. 100	Parked in Block where Fire Engine Stopped
	Sec. 100	Drive into Block Where Fire Engine Stopped
	Sec. 100	Following Fire Apparatus

II. ALL OTHER TRAFFIC LAW VIOLATIONS (cont'd)
(Non-Hazardous)

<u>General Groups</u>	<u>Legal Reference</u>	<u>Arrest Titles</u>
Miscellaneous Traffic Violations	Sec. 101	Crossing Fire Hose without Permission
	Sec. 105(b)	Use School bus signal for wrong Purpose
	Sec. 133(a)	Unnecessary Use of Horn
	RCS 6701h-4	Fail to Report Accident--S/R (under A/R Laws, as required)*
	RCS 6701h-32(d)	Fail to Surrender License Plates (and/or D L)--S/R (under S/R Laws, when required)*
	Sec. 149	Violate Promise to Appear
	VCS 6701d-1	Overcrowded School Bus
Regulatory Pedestrian Violations	VCS 6696a	Modified (or weighted) Motor Vehicle
	Sec. 80	Pedestrian Use Left Half Crosswalk
Others, except Drivers and Pedestrians	PC 1370a	Permit Livestock to Roam
	Sec. 30(b)	Permit Display of Unauthorized Traffic Control Device (local Authorities)*
	Sec. 36(b)	Display Traffic Sign or Signal Bearing Advertising
	RCS 6687b-35	Permit Unlicensed Minor to Drive (parent or guardian)*
	RCS 6687b-36	Permit Unlicensed Operator to Drive (all except parent or guardian)*
	RCS 6687b-37	Employed Unlicensed Commercial Operator (or chauffeur)
	RCS 6687b-38	Rent Motor Vehicle to Unlicensed Person
	Sec. 46	Coroner Fail to Report to DPS

II. ALL OTHER TRAFFIC LAW VIOLATIONS (cont'd)
(Non-Hazardous)

<u>General Group</u>	<u>Legal Reference</u>	<u>Arrest Titles</u>	
Others, except Drivers and Pedestrians	VPC 696a, Sec. 2	Leave Refuse on Highway (garbage, rubbish, junk, etc., specify)*	
	Sec. 103(a)	Fail to Remove Injurious Material from highway	
	Sec. 103(b)	Wrecker Driver Fail to Remove Glass (etc.) from Highway	
	Sec. 152	Judge (or clerk) fail to report Convictions	
	PC 1724	False (or misleading) Statements to Government Agency	
	PC 787	Train Obstruction Crossing	
	Sec. 146	Owner Permit Violation (not hazardous)	
	Registration and Title Violations	PC 804	Operate Unregistered Motor vehicle
		PC 805	Operate with License for other Class Vehicle
		PC 807b (5 & 6)	Operate Motor Vehicle Without license Plates (or with one Plate)
PC 807b-7		Display Expired License Plates	
PC 808		Obtain Unauthorized License Plate	
PC 809		Sell Imitation License Plate	
PC 811		Operate Motor Vehicle with Fictitious License Plates	
PC 812		Display Fictitious License Plates	
PC 812		Display Unclean License Plates	
PC 827a-5a		Fail to Display License Receipt (commercial motor vehicles)*	
PC 1433	Apply for registration without motor number		
PC 1433	Fail to present Receipt for new Motor Number to Tax Collector		
PC 1433	Tax Collector Register Motor Vehicle Without motor number		

II. ALL OTHER TRAFFIC LAW VIOLATIONS (cont'd)
(non-hazardous)

<u>GENERAL GROUP</u>	<u>LEGAL REFERENCE</u>	<u>ARREST TITLES</u>
Registration and Title Violations (cont')	PC 1434	Sell Unregistered Secondhand Vehicle
	PC 1435	Alter (change or mutilate) Transfer Papers
	PC 1435	Transfer Motor Vehicle with Papers Blank (or partially blank)
	PC 1435	Buyer Accepts Papers Wholly (or partially) blank
	PC 1436	Repair Shop Fail to Keep Records of Vehicles Repaired (bought or sold)
	PC 1436-1 Sec. 37(a)	Fail to Surrender Certificate of Title When Vehicle Junked
	PC 1436-1 Sec. 49(a)	Alter (or forge) Certificate of Title
	PC 1436-1 Sec. 49(b)	Place Unauthorized Motor Number on Motor Vehicle
	PC 1436-1 Sec. 49(b)	Alter (change, erase, mutilate) Vehicle Identification Number (or serial number) of Vehicle (or part)
	PC 1436-1 Sec. 49(c) (i)	Possess (sell or offer for sale) Motor Vehicle (or part) with Vehicle Identification Number (or serial Number) Removed (changed or Oblite- rated)
	PC 1436-1 Sec. 51	Fail to Deliver Certificate of Title at time of Sale
	RCS 6675a-6a	Farm License Violation
	RCS 6686b	No In-Transit License
	RCS 6686f	Dealer's License Violation
Lights	Sec. 111 (c)	No License Plate Light
Lights	Sec. 130F(b)-2	No License Plate Lamp on Motorcycle --or Motor Driven Cycle

II. ALL OTHER TRAFFIC LAW VIOLATIONS (cont'd)
(Non-Hazardous)

<u>GENERAL GROUP</u>	<u>LEGAL REFERENCE</u>	<u>ARREST TITLES</u>
Lights (cont'd)	Sec. 126(c)	No Beam Indicator
	Sec. 131 (b)	Red Light on Front
	Sec. 131 (c)	Improper Flashing Lights
Miscellaneous Equip- ment violations	Sec. 108A	Use Equipment not Approved (head lamp, signal lamp, reflector, safety glass, glass coating material etc., specify)
	Sec. 140(f)	No Valid Inspection Certificate
	Sec. 141(e)	Display Fictitious Inspection Certificate
	Sec. 141(e)	Display Inspection Certificate Issued for Another Vehicle
	Sec. 141(e)	Display Inspection Certificate Issued Without Inspection
	Sec. 141(e)	(Cause or) Permit Display any of Above
	Sec. 107	No Fire Extinguisher--School Bus
	Sec. 107	No Fire Extinguisher--Bus
	Sec. 107	No Fire Extinguisher--Taxicab
	Sec. 139(d)	Fire Extinguisher Violation--Hazardous Materials (none or Improper class, specify)
	Sec. 135(b)	Illegal Use of Metal Tires
	Sec. 135(c)	Illegal Cleats
	Tex. Ed. Code, Sec. 4.18	No Signs on School Bus (applicable to front and rear only)*
	Tex. Ed. Code, Sec. 4.18	Improper Signs on School Bus
Tex. Ed. Code, Sec. 4.18	Failed to Conceal Signs on School Bus	

II. ALL OTHER TRAFFIC LAW VIOLATIONS (cont'd)
(Non-Hazardous)

<u>General Group</u>	<u>Legal Reference</u>	<u>Arrest Titles</u>
Size and Weight	PC 827a-3(a)	Overwidth
	PC 827a-3(b)	Overheight
	PC 827a-3(c)	Overlength Vehicle (single vehicle)
	PC 827a-3(c)	Overlength Combination
	PC 827a-5	Overweight
	Sec. 106(a)-also PC 827a-3(c)	Pull More than One Trailer or other Vehicle(when not authorized to do so)*
	PC 827a-3-3(d)	Illegal Load Extension-Front (or rear)
	PC 827a-3-3(e)	Illegal Load Extension to Left (or right) on Passenger car)
Regulatory Parking	Sec. 97	Parked without Locking Ignition and/or Removing Key (specify)
Overtime	(city ordinances)	Parked Overtime
	(city ordinances)	Parking Meter Violation
	(city ordinances)	Park All night where Prohibited
Parking Where Prohibited	VCS 6889-2,4	Park in Prohibited Military Zone

HAZARDOUS VIOLATIONS
 UNSAFE BEHAVIOR-DRIVERS

SPEEDING
 12 specific violations

R.O.W. for VEHICLES
 8 specific violations

TRAFFIC SIGNS, SIGNALS & MARKINGS
 22 specific violations

TURNING MOVEMENTS
 9 specific violations

WRONG SIDE OR WRONG WAY
 16 specific violations

FOLLOWING
 3 specific violations

OVERTAING
 10 specific violations

SIGNAL INTENTION
 7 specific violations

PULLING AWAY
 1 specific violation

VIOLATIONS AGAINST PEDESTRIANS
 8 specific violations

MOTORCYCLE VIOLATIONS
 4 specific violations

MISCELLANEOUS VIOLATIONS
 57 specific violations including
 1 D.L. violation

UNSAFE BEHAVIOR-PEDESTRIANS

R.O.W. BY PEDESTRIAN
 4 specific violations

TRAFFIC SIGNALS
 4 specific violations

OTHER PEDESTRIAN VIOLATIONS
 10 specific violations

UNSAFE BEHAVIOR-PEOPLE OTHER THAN
 DRIVERS AND PEDESTRIANS
 15 specific violations

UNSAFE CONDITIONS

DRIVER
 1 specific violation

HIGHWAY 5 specific violations

VEHICLE-LIGHTS, BRAKES, MISC.
 57 (plus) specific viola-
 tions

PARKING VIOLATIONS
 25 specific violations

ALL OTHER TRAFFIC LAW VIOLATIONS

D.L. VIOLATIONS
 27 specific violations

MISCELLANEOUS
 17 specific violations

REGULATORY PEDESTRIAN VIOLATIONS
 1 specific violation

OTHERS, EXCEPT DRIVERS & PEDESTRIANS
 15 specific violations

EQUIPMENT VIOLATIONS
 Lights
 5 specific violations

MISCELLANEOUS EQUIPMENT
 15 specific violations

SIZE AND WEIGHT
 8 specific violations on
 size(weight no classified)

REGULATORY PARKING
 Overtime
 4 specific violations (3
 applicable to cities in
 the most part)

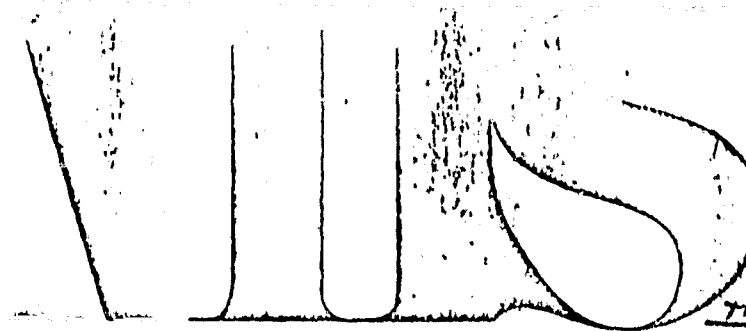
Parking where Prohibited
 1 specific violation

APPENDIX G

PROGRAMS FOR NORTH RICHLAND HILLS TO CONSIDER FOR
RESEARCH AND DEVELOPMENT

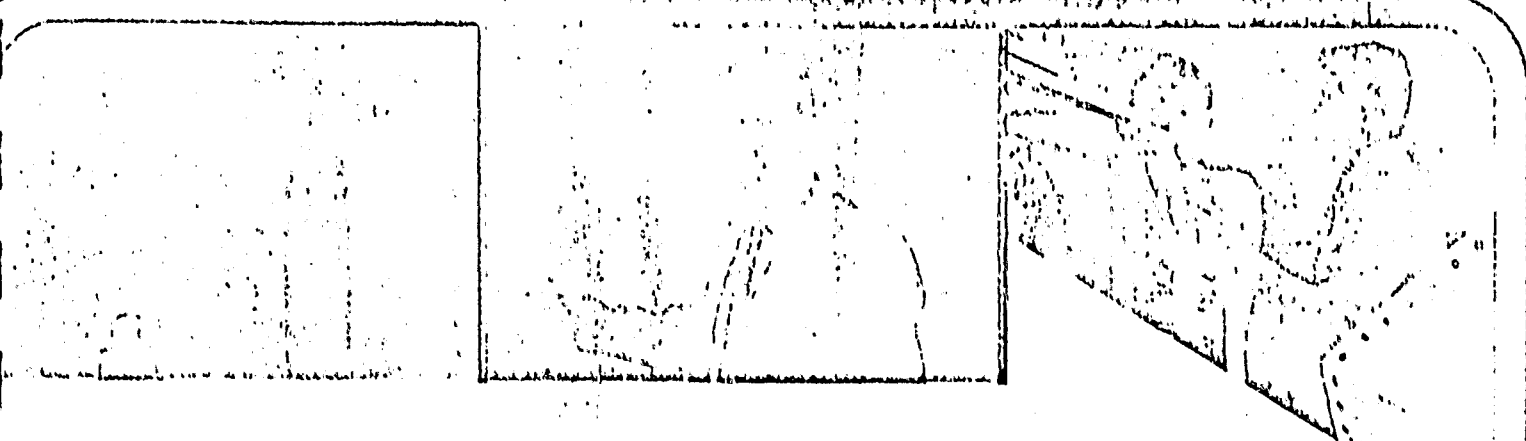
1. Control equipment purchasing and specifications to allow agencies to take advantage of quantity contract buying, and to encourage standardization of equipment among the neighboring jurisdictions.
2. Improvements in techniques and results of voluntary contributions to regional planning councils for the compilation of crime and resource inventories.
3. Model programs for public information and education to be adopted by other bordering agencies.
4. Economic and location feasibility studies for the construction of new facilities for inter-jurisdictional uses.
5. Adaption of scientific management and system analysis techniques for more expedient, efficient and effective processing of cases.
6. Feasibility, design, and implementation studies to provide electronic data processing information system capability in cooperation with other joining jurisdictions.
7. Research into techniques designed to identify and harden targets especially vulnerable to crime, such as late-night retail establishments, walking routes of school children, banks and other financial institutions.
8. Conversion of existing data files to machine-readable form.
9. Methods and programs to familiarize operational personnel in electronic data processing practices and operation-machine interaction.
10. The development of basic standards for inter-agency information exchange and data communications.
11. Consider implementation of a MIRACODE System or some type of system using a coded input, retention, access and retrieval system utilizing microfilm on an interagency basis. This type system provides for high-speed storage and retrieval of mugg shots, rap sheets, fingerprint cards, accident reports, offense reports and arrest records.

APPENDIX H



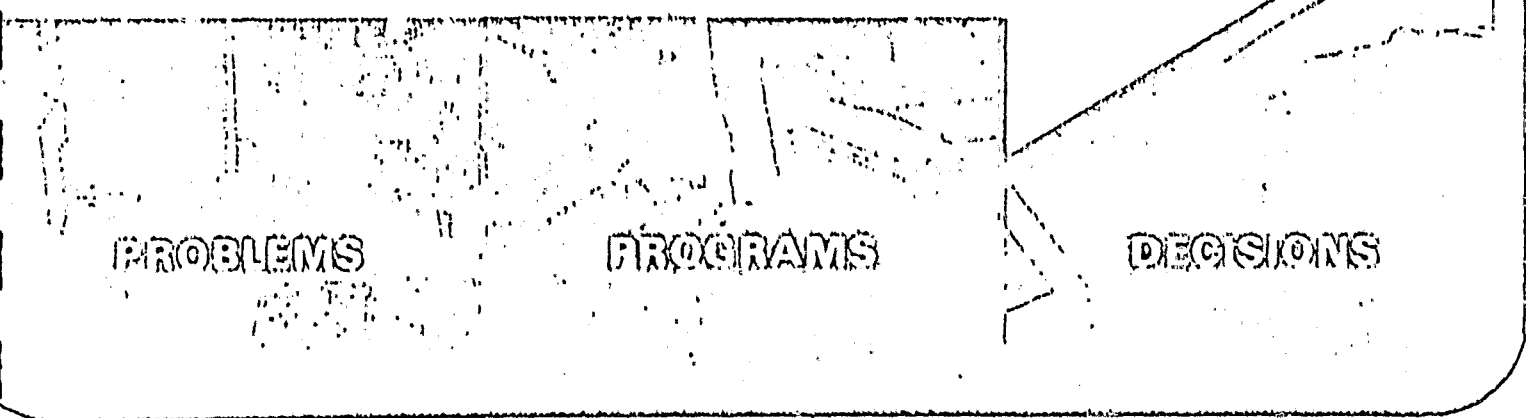
1. H.V. Bryan
 2. John C. ...
 3. Tommy ...
 4. Bob She ...
 5. Tom Cross
- Return.

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 International City Management Association / April 1971, Vol. 3 No. 1
 Thank you Alan Walker & Return to File for Reference



PROGRAM DEVELOPMENT AND CONTROL TECHNIQUES

A Systems Approach to Public Management



THE REPORT AT A GLANCE

Systems approach to public management...
 information systems (MIS) into...
 of the normal annual budget...
 What the program...
 a part for management...
 the program...
 for the development...
 public applications...
 special requirements...
 public management

PROGRAM DEVELOPMENT AND CONTROL TECHNIQUES

This report brings together a number of theories and approaches to management systems into one concept for directional and control purposes. It seeks to meet the needs of chief municipal executives for a unified system that will enable them better to fulfill their principal managerial roles. The total system as described in this report does not exist in any jurisdiction; however, virtually every part of it has been tried and tested in one or more local governments. It is the principal objective of this report to synthesize a number of "systems" approaches for meeting the varied needs of public management and to provide a conceptual framework on the basis of which any medium or large-sized city (that can afford a medium-scale computer) can develop a system to meet its specific requirements.

As described herein, there are seven basic components to the system. These are illustrated in some detail in Figure 1 and explained further throughout the report. Virtually each of the components can be adopted independently of the others; however, when developed together as one unified system, they will have a much greater impact on the effectiveness of management than is possible if any part is missing. It should be emphasized that this report does not provide a "kit" ready for easy installation in any city. Some features of the system are much nearer being implementable than others, while still others require more basic research.

While such concepts as performance budgeting; planning, programming, and budgeting systems (PPBS); and data banks have come to have fairly well-accepted characteristics and features, management information systems (MIS) have not. The term is one often seen in articles or on conference programs, but there is little agreement as to its contents or uses. Because of the misuse and misunderstanding that prevails with respect to MIS, this report speaks instead of Program Development and Control Techniques. At the risk of belaboring the reader with yet another clumsy combination of letters, this system is referred to in this report as PDACT. It is felt that this term goes much further than most MIS discussions in particularizing the needs of public management for a system that provides for program planning, development, adoption, and administrative analysis and control.

The Information Needs of Management

An information system should be designed from the top down, because any system design must start with the required products, or "output." Thus, a properly designed management information system must start by determining needs of management (at all levels) for information.

To illustrate this approach, the following steps set forth the process by which any management analysis and control system should be built:

This report was prepared by J. Ward Wright, Director, State and Local Government Administration, Auerbach Associates, Inc., Philadelphia. Reviewers were Picot B. Floyd, City Manager, Savannah, Ga.; Harris Stevens, Village Manager, Oak Park, Ill.; Edward Lehan, Executive Secretary to the City Manager, Hartford, Conn.; John K. Parker, Assistant Director, Organization and Management Planning, District of Columbia Office of Budget and Executive Management, Washington, D.C.; and Myron E. Weiner, Coordinator, Municipal Information Technology Program, Institute of Public Service, University of Connecticut.

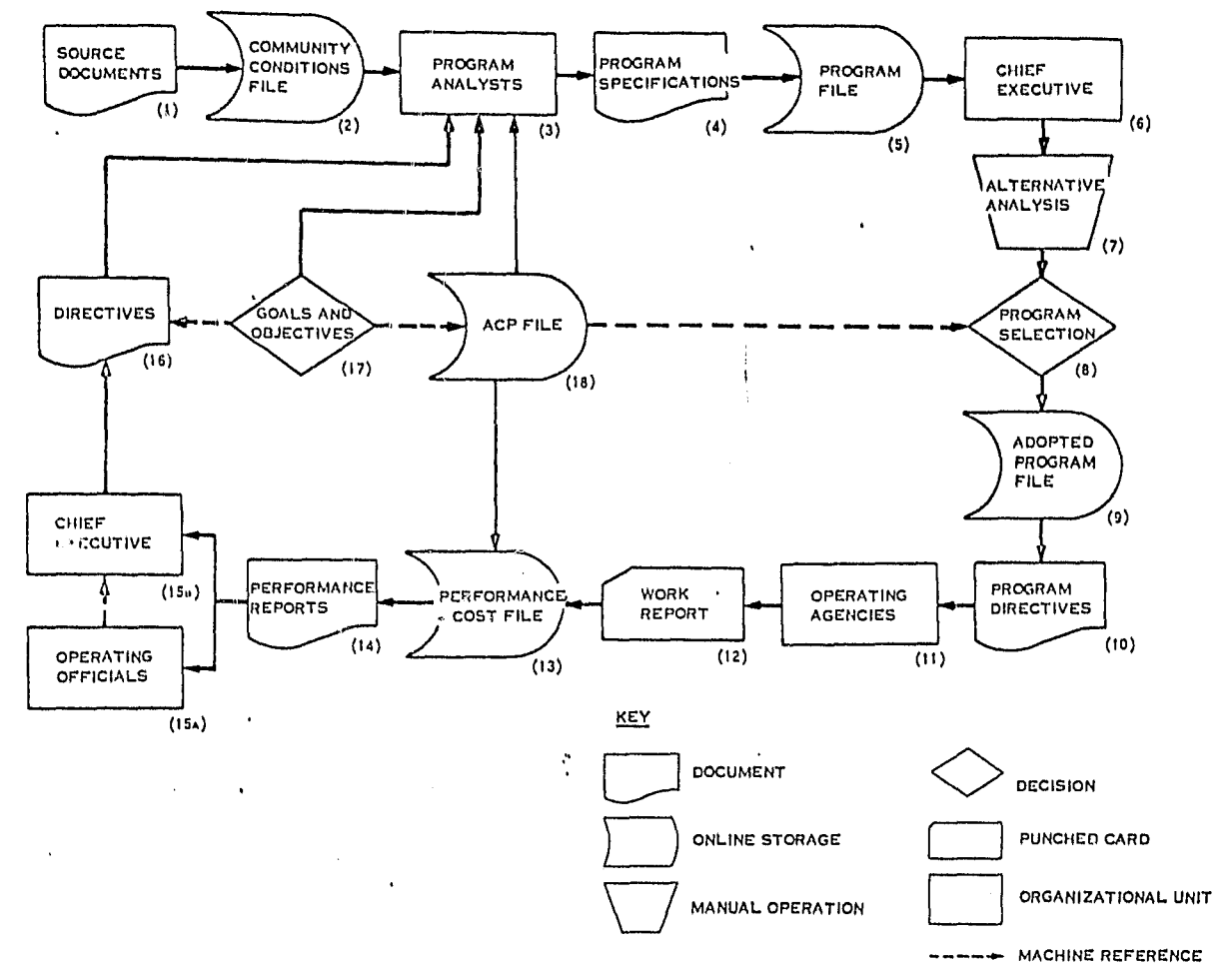


Figure 1 - Overview of PDACT

- Define what management needs to know about the community and its needs.
- Define with precision what management needs to know about each aspect of the government operation.
- Identify the types of raw data necessary to provide the required information.
- Ascertain the availability of these types of data (both currently and in the foreseeable future), and determine what compromises with respect to currency, accuracy, and comprehensiveness are necessary to gather these systematically and to what degree such compromises will vitiate the usefulness of the results.
- Develop a plan for gathering and storing these data.
- Develop a plan for the "system" that will transform these raw data into managerial information, considering the fact that a system includes:
 - The people who will handle and use the information,
 - The hardware that will process the data,
 - The software necessary to support the hardware,
 - The operating policies concerning the acquisition, storage, processing, and distribution of the information.

Modern public administration looks to top management (including both policy-makers and chief executives) as prime-movers. Thus, top public management should know as much as possible about the community and the government if it is to play an effective role. This is a challenging requirement that most systems theorists choose to sidestep by dealing with only part of the problem, as if it were separable. Accordingly, performance budget advocates direct their attention to the costs of units of performance, PPBS theorists cope only with the problems of goal designation and program development, and operational systems specialists (e.g., police command and control systems, financial control systems, property characteristics data banks) each function within fairly well-defined conceptual parameters. The published and demonstrated results can lead only to confusion in the minds of most public managers, especially those with limited sophistication with respect to computer-based information systems.

All of this is not to say that each of the foregoing groups of specialists defines the universe as being comprised of his efforts. Increasingly well-defined demarcations are being specified. However, this increasing categorization and specialization makes it even more difficult to articulate a master design that will eventually evolve into a comprehensive, unified,

integrated system suitable to the total information needs of an entire local government. Certainly a continuation of current trends toward separatism can only further complicate a confusing situation. There is a need to synthesize these theories and experiences.

A first step in such a synthesizing process is to recognize the basic categories into which all of these systems fall. It seems clear that there are two fundamental classifications that subsume all of the others:

- (1) Systems that deal with the analysis of community conditions and needs and which are concerned with the impact of municipal services on these conditions;
- (2) Systems concerned with the issuance of administrative direction, measurement of service delivery, and evaluation of administrative efficiency.

There is nothing novel in this particular dichotomy. It is based on the timeless distinction between policy-making and administration. However, the distinction is not drawn here to indicate that some systems should serve only legislators while others serve only administrators. Rather, it is to distinguish between two sets of fundamentally different challenges that are posed by any attempt to develop a comprehensive design for a municipal information system suitable to all of the requirements of top management.

While systems to monitor community conditions on a continuous basis will require many years of additional research and development, the current state of the art permits the development of systems that deal comprehensively and effectively with the delivery of services for purposes of more effective administration. This is not to say that comprehensive systems have been developed; it is only to emphasize that they can be. Because of the feasibility of the technology and the obvious necessity for systems, this report necessarily places its greatest emphasis on administrative systems (the second type of systems mentioned above). Accordingly, it is concerned with the following:

- o How programs are formulated,
- o The relationship between objectives and programs,
- o The development of directives,
- o The development of a performance monitoring system,
- o The relationships between performance evaluation and control and administrative support and operating subsystems.

While recognizing the paramount importance of the continued quest for effective community information systems, it is a basic premise of this report that development of administrative systems must continue and be perfected as rapidly as possible. The important consideration is that due provision be made for the incorporation of systems that monitor

community conditions on the basis of the best information available concerning the techniques such systems will probably use. This conclusion is based on the assumption that any manager should know as much as possible about the community and his operation on the basis of the best systems currently available.

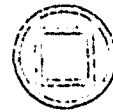
Management Analysis and Control

The preceding material has placed emphasis on the broad spectrum of information a manager requires. This might be summarized briefly. Any management system should have the following features:

- o *Objectives.* The manager needs to know specifically what needs to be done for the community in terms of services, regulatory activities, and improvements.
- o *Programs.* He must have a staff and the techniques for translating identified needs into specific programs that are feasible with respect to existing laws and available resources.
- o *Operations.* The manager should have a system that generates the directives and guidelines necessary to assure performance.
- o *Standards.* Operating standards should be developed against which actual work can be evaluated.
- o *Accountability.* As work is undertaken, reports should indicate to the manager what was done, the extent to which it conformed to original directives and standards, and who was responsible for significant deviations.
- o *Evaluation.* There should be techniques for evaluating results in terms of conformance with instructions, efficiency, and effectiveness.
- o *Adjustment.* Procedures should ease the task of redeploying resources, changing objectives, developing new programs, and otherwise making the adjustments necessary to improve services.

Designing one comprehensive system that meets all of these needs is a difficult task. An even greater challenge, however, is designing the system so that it meets the actual needs of any given manager and can be used by that manager. This raises the question of whether one standard system can be used by any municipal manager. Almost certainly it cannot! A system usable by an experienced city manager who is a professional administrator is by no means necessarily understandable to a newly elected mayor who has little or no administrative or municipal experience. Even among professionals, there are those who are very sophisticated with respect to information systems and are data-oriented, while there are others with little expertise in this area.

This report is concerned with outlining a plan for systems development suitable to the generalized requirements of municipal top management. In the actual application of these principles, however, a number of factors must be kept in mind so that the



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specific system developed in any particular city will actually be used. These principles place emphasis on the need for a system that is:

- *Relevant.* The system must contend with the types of problems that characterize the particular community. A system suitable to a major city with large ghettos and major social problems will not necessarily suit a wealthy suburban community more interested in the balance between taxes and gilt-edged services.
- *Significant.* The system should focus municipal management's attention on those problems and areas of administration that are most significant for purposes of analysis and control. Overly detailed data that do not direct attention to major operating problems will soon make any system largely irrelevant to top management.
- *Comprehensive.* The system should comprehend all aspects of the operation so that management will not be vulnerable in any area due to a lack of information. Failure of the system in any one significant respect can undermine its creditability in all other areas.
- *Dynamic.* Once established, the system should be, to the extent possible, self-generating. It should be built on a data base that is continuously updated without the need for special, costly periodical studies or data-gathering efforts.
- *Feedback-Oriented.* The system should follow the logic of the decision-making process so that each level of management automatically receives the notices and information it needs at the time a decision is required to provide new direction

Each step in the process should be the basis for another step so that the entire system eventually constitutes a closed loop.

Administration as a "System"

As indicated earlier, this report seeks to delineate and describe an approach to the development and use of program development and control techniques (PDACT) in an integrated systems environment. The following terms will be used frequently and require definition:

- *Integrated.* This term refers to the manner in which the data base for a system is organized and operates. Each item of datum should be stored so that it will serve every purpose required by the system. Thus, a record of an arrest may concurrently have implications for public safety, analysis of social conditions, and educational matters, to mention only a few possibilities. This type of storage and data handling not only increases the efficiency with which the data files operate, it also maximizes the relevance of each item of information contained in the system and permits the highest possible degree of automation.
- *Management.* PDACT is designed for the requirements of all the officials and supervisory personnel throughout the government, including members of the legislative body, the chief administrative officer, staff officials, department heads, and divisional level supervisors.
- *Program.* In the context of PDACT, this refers to a specific plan of action to achieve a given purpose with designated resources.
- *Control.* This refers to all directive activities, including the issuance of operational orders, analysis of operations, assessment of supervisory performance, and redirection in the light of actual performance.
- *System.* The entire process is formulated as a unified whole, with each of its parts interdependent and mutually supportive. Each step feeds one or more subsequent steps, and the entire procedure feeds back through management for purposes of analysis, adjustment, and redirection. Finally, it is assumed that the entire system will rely on electronic data processing — thus, it is a computer-based system.

To achieve these goals, PDACT is a system consisting of a series of subsystems, each of which involves a number of elements. An overview of the entire system is presented in Figure 1. As can be seen, there are the following seven basic components or subsystems (each of which consists of one or more "events," as numbered parenthetically in Figure 1):

- (1) *Need Determination.* (Events 1 through 3.)
Data concerning community affairs and conditions that enter the system from the outside

(either through various monitoring systems, special surveys, or through analytical summarizations of operating documents) are assembled to provide a profile of the community with respect to the functional areas for which the municipal government is responsible.

- (2) *Program Development.* (Events 4 through 9.) On the basis of this profile, program analysts formulate proposed programs on the basis of standing policies concerning goals and objectives and the results of past operations. These proposed programs may be considered for adoption at any time or during the normal budgetary process.
- (3) *Performance Direction.* (Event 10.) A high degree of automation is sought to generate notices to activate programs, prepare specific operating instructions, and otherwise initiate action.
- (4) *Performance* (Events 11 and 12.) The work is undertaken in accordance with directives, and work reports are developed recording what was done.
- (5) *Performance Analysis.* (Events 13 and 14.) As work is completed, performance reports are generated that indicate what services were delivered where and what personnel, equipment, and other resources were used in the process.
- (6) *Effectiveness Analysis.* (Events 15a and 15b.) On the basis of an analysis of performance reports, together with a study of changing community conditions, conclusions are drawn concerning the success or failure of each program.
- (7) *Redirection.* (Event 16.) As a result of the preceding analysis, goals and objectives are reconsidered and new directives are issued to program analysts so that new programs can be developed or existing programs modified.

PDACT does not include all the data-based systems that may exist in a city. Each agency or group of related agencies may be utilizing special, or even dedicated, operating subsystems for such things as police patrol information, fire command and control, utility billing, and similar purposes. These may feed data to the overall system, depending on the nature of the subsystem in question.

Each of these components of PDACT summarized above is described and discussed in detail in subsequent sections of this report. First, however, there must be a brief discussion of the relationship between PDACT and the computer. A system is something independent of the computer, though it may utilize one. In addition, it is important to realize that PDACT is not, by any means, a completely automated system. In some parts of the system, a high degree of automation is prescribed; however, a simplified version of the system could be operated in smaller jurisdictions without the benefit of electronic computers. However, for municipalities of any appre-

table size and complexity (say, 50,000 or more population), the availability of any appropriate computer should be considered essential to the particular system postulated by this report.

Attention is now directed to the basic components of PDACT as illustrated in Figure 1.

Need Determination

PPBS has properly stressed the necessity of developing long-term goals and objectives as the basis for resource allocations and program development. Accordingly, as was explained in *Municipal Goal-Setting*¹, many cities have formed citizens committees and delegated the time of a number of key municipal employees to develop goal statements that are often quite far-reaching and elaborate.

All too few managers have seen the relevance of their ongoing operations to the problems with which the city is, or should be, contending. Most operating forms and data-gathering activities are for the limited purposes of providing a service or administering regulative laws. In each instance, the data are recorded and filed, and that is the end of it. If these data were to enter centralized, integrated files, and if each event were related to other events with respect to given functional areas, definite problems could be identified and trends delineated. For example, in a given neighborhood there could be a direct, meaningful relationship between recordings of increasing crime, increasing school-dropouts, rising welfare rolls, falling tax collections, and similar data. The challenge is to aggregate these data in a form and manner suitable for analysis by people qualified to translate the data into specific program proposals.

Cities have not been totally without experience with this type of effort. Data "banks" have been developed and utilized almost since computers became commercially available. Of course, these have usually been almost completely restricted to information concerning the characteristics of property and improvements. Among the shortcomings of these banks have been a failure to update data continuously, an absence of the type of "people" information necessary to provide really meaningful information concerning community problems to municipal management, and very high maintenance and processing costs considering the limited value of the data. Clearly a move must be made from descriptive static data banks to dynamic files that are in a process of continuing change and which manifest the changing conditions in the community itself.

A surprisingly easy source of analytical data that municipalities seem seldom to have considered for general analytical purposes is the survey. While surveys for land-use characteristics or for special proposals (e.g., a new swimming pool or an urban renewal project) are fairly common, few attempts

¹See January 1970 MIS Report, Vol. 2, No. LS-1.

have been made to use them to maintain a current picture of social conditions and attitudes in the community. Experience with statistical selectivity is now such that it should be fairly simple to determine a statistically sound sampling that would require relatively few interviews to achieve effective results. If the questionnaires were properly oriented toward computer-processing requirements, the results easily could be fed to the computer files for further analytical processing.

Beyond these direct efforts of municipalities to acquire and process data concerning community conditions, few managers make an effort to utilize the many sources of data available in a community from nongovernmental agencies or agencies of other levels of government. This is especially true in the economic area, where such data are available and very pertinent to city government. Unemployment information, bank clearings, retail trade statistics, telephone traffic, and U.S. mail activity are all data that are available in almost any city and that provide valuable interpretive information.

The multiplicity and variations of data should make it clear that coordination and planning are required if municipal management is to develop the type of dynamic, comprehensive data base concerning community conditions that modern management requires. All of the data should be considered as a means of identifying the following problems:

- Types of existing or foreseeable adverse conditions with which the municipal government should be concerned,
- Geographical locations of these conditions,
- Specific people, or types of people, affected by these conditions,
- Implications of these conditions for the municipal government.

The data-gathering process must be systematic and directed toward the requirements of computer technology if an efficient, integrated system is to result. For the analytical work, a special activity of government with a new type of functional designation will be required. For purposes of this report, these individuals will be referred to as program analysts -- a professional category still rather new but increasingly recognized in cities around the nation.²

It is a major position of this report that problem identification must become a significant, explicit function of top municipal management. In addition, management must accept a high degree of responsibility for the articulation of goals and objectives (Event 17 in Figure 1), though the local legislative body will obviously be the ultimate arbiter of these matters.

Of course, PPBS has addressed this problem, but it

²The Metropolitan Government of Nashville-Davidson County, Tennessee, recently established a program analysis division within the Office of the Budget to undertake many of the duties recommended in this report.

is the position of this report that this process has dealt all too much in idealized abstractions for goals (e.g., seeking a safe, happy, and healthy community) and broad generalities for objectives and programs. Few of the systems (at least at the local government level) have attempted to solve specific problems in well-defined geographical areas -- especially for relatively short, ad hoc purposes. As a consequence, while the budgetary process itself may well be better rationalized, it is doubtful whether city management has found PPBS to be a useful decision-making tool during the course of the year. Accordingly, PDACT stresses a system that identifies the problems with which the city should contend, regardless of the time within which a solution may be effected (either long- or short-range), and provides an information system suitable to the specific requirements of management in identifying each problem, deciding what to do about it, and following up to assure corrective performance. For this approach, problem identification is the first, and almost the key, element in the entire process.

Problem identification on the basis of the analysis of exogenous data concerning community conditions cannot be the part-time responsibility of the manager or anyone else. Except in the smallest communities, a special unit of program analysts should be formed to work with these data and to develop programs designed to cope with the conditions identified. There should be three aspects to their work:

- *Existence.* Conditions should be defined at the outset that indicate the degree of adversity necessary to merit consideration for corrective action or other types of programs. This often will mean the establishment of thresholds for certain types of data which, when reached, signal the necessity for attention (even if there have not yet been any complaints or other usual symptoms of unrest).
- *Significance.* Objective standards should be established, in accordance with the city government's own explicit priorities and policies, that "rate" the seriousness of a problem or adverse condition in terms of its significance for both the long and short term.
- *Response.* Careful consideration should then be given to the responsibility of the city for these conditions, the existing programs that may alleviate the conditions, and the possible necessity of new programs for the allocation of existing or new resources to correct these conditions.

The "response" aspect (wherein programs are developed) is the subject of the next section. The emphasis here is on the initial recognition of the need for action. Because of the complexity of these conditions in a community of any size, especially one with a significant disadvantaged population, the job of problem analysis and program development is specialized, vital, and continuous.

Program Development

The problem of program development is integrally related to problem identification, the subject of the preceding section. Figure 1 illustrates this relationship and demonstrates the critical role of the program analyst. As will be seen in the following subsections, this is also the critical step for the delineation of programs in a format and method that will eventually permit a high degree of automation in the critical decision-making process. The following three subsections discuss further the many policy and technical problems involved in this process.

FROM PROBLEMS TO PROGRAMS

One of the major shortcomings of most advanced systems designs is that the manner in which problems are enunciated and described seldom considers the techniques that might be used in developing responsive programs. This is especially true if a high degree of automation in the acquisition, storage, processing, and utilization of exogenous data (Event 2 in Figure 1) is assumed to be a desirable feature of the overall system, as it is in PDACT. These rather abstract observations deserve a fuller explanation.

Suitable programmatic responses to a given adverse condition are by no means as obvious as many people, even many in public office, often assume. For example, literally hundreds of approaches to solving various types of juvenile delinquency have been authoritatively proposed and tried by cities. Assuming a sudden increase in juvenile delinquency in a ghetto area, for example, a city could increase its police activity to stamp out any further activity, or much greater social service and educational activity could be centered on the area, or urban renewal plans could be used to wipe out the physical area (though this might simply redistribute the delinquents). In turn, any combination of these and other techniques might be used. How should the choice be made?

Much of the material on PPBS speaks blithely of "cost-benefit analyses" as if one need only work up a few alternatives, place a price tag on each, and select the one that gives the best return for the money. Describing the process is easy; doing it is quite another thing. In the first place, before a local manager concerns himself with costs, he must focus on effectiveness. Returning to the example of juvenile delinquency, the real question is which program or combination of programs is likely to have any effect at all, and which of the programs that are likely to be effective will have the lesser adverse ramifications. No generalized answers to these questions are possible, but systematic analysis and consideration clearly are required.

Program development is a full-time job in even relatively small municipalities, and it must be given organizational cognizance if any truly effective management information system is to be developed. Referring again to Figure 1, it can be seen that the

program analysts are to devise their proposals (Event 4) and store them in the computer (Event 5) for subsequent consideration (Event 7). Such storage requires a highly structured method of analysis and documentation as programs are formulated. One method for proceeding in this fashion is illustrated by the form in Figure 2. This form requires the aggregation of "activities" to develop responsive "programs." This, in itself, is something of a departure from the traditional PPBS approach, and more will be said below about activities as program building blocks.

At this point, a review of the PPBS process will illustrate the recommended approach. An excellent functional breakdown of programs is provided in Appendix A of *Introduction to Planning, Programming and Budgeting Systems*.³ The first category is concerned with broad municipal functions, such as "personal safety." The objective of this is "protection from personal harm and property loss." Clearly this is too broad a statement to have much relevance to day-to-day decisions. Accordingly, it is further broken down into a series of programs, such as law enforcement ("crime prevention and control"). In turn, this is broken down into more specific programs for such activities as crime prevention and crime investigation.

The author makes it clear that this "is not a complete program structure"; however, this method is as far as most PPB structures in practice actually go. The final category serves as the appropriation classification, and line-item appropriations are associated with it.⁴ In this process, each manager of a program area is responsible for "showing results to be achieved and resources to be used in each year of the forthcoming five-year period." As an abstract description of what ought to be, it is impossible to argue with this approach. However, there remain the more difficult problems of delineating exactly what the steps should be if:

- The results of the process of program development are to have *operational* significance, and
 - The programs are to be set forth in a manner that will permit an *automated* approach to decision-making and performance analysis.
- The balance of this discussion will be related more directly to the process of program development and the role of data processing in this process.

PROGRAM DEVELOPMENT AND EDP SYSTEMS

One of the most fundamental themes of this report is the need for a revised approach to the development of objectives and programs and the

³See September 1969 MIS Report, Vol. 1, No. L-9.

⁴The 1970-71 budget for the state of Pennsylvania is an excellent example of this approach, although the terms are quite different.

PROGRAM SPECIFICATION REPORT	DESCRIPTION To reduce the incidents of juvenile delinquency in the University Park area by 20 percent in the next year and by 75 percent by 1976	OBJECTIVES		AGENCIES		SUPPORT		AUTH.		MAYOR		DATE			
		408	417	791	12	15	DEPARTMENT		FINANCE		DATE				
CORR	CONTROL	TYPE	STATE		FEDERAL		NEW AUTH.		CHANGE AUTH.						
	1001	374	6040		440 470		1-1-70								
ACTIVITIES			PERFORMANCE				1970 COST ESTIMATES				LONG-RANGE COST ESTIMATES				
CODE	STATUS	DESCRIPTION	DATE	CODE	AREA	ZONE	PER. SER.	EQUIP.	OTHER	TOTAL	1971	1972	1973	1974	1975
8949	10	Type A Police Patrols	4/30/70	1	604	7	25,000	2,400	1,600	29,000	12,000				
9680	11	J.D. Investigations	4/30/70	1	604	7, 10	10,000	1,500	600	12,000	6,000				
9686	15	Juvenile Bureau	5/15/70	1	604	7, 10, 12	12,500	500	750	13,750	7,500				
8045	10	Type B Patrols	1/1/71	2	604	7					25,000	25,000	27,000	24,000	20,000
4035	05	Educational Programs	3/15/71	2	604	7, 10, 12					12,000	15,000	20,000	22,000	25,000

Figure 2 - Program Specification Report

specific operations of the municipal government. For purposes of better understanding, the following definitions are suggested:

- **Goals.** A goal is an ideal for which the community continuously strives. It should be expressed in abstract terms and serve as a more or less permanent statement of community direction. Such an ideal would be concerned with such things as the maintenance of healthy, economically stable, safe, and aesthetic conditions.
- **Objectives.** An objective is a status that reaches toward one or more goals and yet is capable of both attainment and measurement. For instance, "adequate recreational facilities for all residents" would be an objective. If a condition of "adequacy" is specified with precision, then progress toward achievement can be planned and measured.
- **Programs.** A program is a specific plan to utilize governmental and other resources during specified periods of time in specific areas for definite purposes that are designed to move toward and/or achieve the objectives to which they are related.
- **Activities.** An activity is a basic productive unit of the government. It can be an individual or group engaged in any municipal activity such as sewer rodding, social case work, or medical care.

At first glance, this classification might not seem to differ significantly from the approach taken in numerous PPBS publications, and with respect to the first three categories, it does not. It is with respect to the "activity" level that PDACT calls for a sharp departure from past practices.

The normally prescribed PPB structuring method starts with goals and moves steadily down through objectives, programs, and subprograms until the level

of appropriation is reached. The PPB exercise in PDACT would stop at the objective level. Goals and objectives would make up the policy guidelines and could be changed only by action of the policy-makers.

At the same time the top-down classification is proceeding, the operations of the city government should be studied and the basic *productive units* delineated. These are "activities," and each of these may be an individual or a unit (assuming reasonably stable personnel assignments). Associated with each activity should be:

- An agency designation,
- Manpower assignment (either by name or work class),
- Normal resource usage (e.g., trucks, cars, sweepers),
- Fiscal designation (i.e., fund and appropriation),
- Supervisory designation (by immediate supervisor),
- Productive capacity (i.e., units per hour/day/week that should be produced).

Once established, each of these activities remains as a unit until changed. It is with these activities that the program analysts "build" their programs to meet objectives and cope with identified community needs and problems. Thus, programs would be developed in response to the specific conditions in the community with which the municipal government is concerned.

With reference to the classification of activities, every operating agency of the municipality should be studied and its productive units identified. These may be such things as caseworker units, ground maintenance crews, individual doctors, or fire companies. The important thing is to identify the basic units

that undertake the work of each organization, whether they be one individual or a group, in the case of each activity. The results should then be incorporated in an activity classification plan (ACP) (Event 18 in Figure 1). A sample of how the results of such an analytical process might be documented is shown in Figure 3.

A word should be said about the method of developing an ACP initially. The classification process would proceed as follows:

- (1) Each agency of the government should be analyzed to determine what the basic units are for work production. These will be the "activities." The designation should be based on the units of work production (e.g., miles of street swept, public health visits), and these units should be the most fundamental indices of success or failure of agency operations.
- (2) As the activities are identified, they should then be grouped into "programs" that are explicitly or implicitly operative (in other words, every existing activity should be related to some program, even if the program was not explicitly recognized as such before the ACP was developed). If the city has already gone through the PPB classification process, this should be relatively simple. However, for most cities, identification of existing programs may be a largely imaginative process since the original reasons for existing activities are often lost in the misty regions of local folklore.
- (3) Program specifications (Figure 2) should be prepared for existing programs and these data stored in the program file (Event 5 in Figure 1).

With the completion of this process,⁵ the program analysts will have the data they need to determine the impact of any proposed new programs on the existing functional structure since a new program will require the reallocation of existing activities or the development of new ones.

Associated with each productive unit, or activity, are all of the cost factors required to keep any unit of the government operative. In addition, the unit's basic type of work should be identified and a productive capacity associated with it. This is very important because of the problems that arose during the performance budgeting era concerning "work units."

Performance budgeting was very concerned with the production record of each individual, and records were maintained for such things as numbers of letters typed, documents filed, and purchase orders issued.⁶ There were a number of problems resulting from this

⁵Nassau County, New York, developed an excellent example of an Activity Classification Plan.

⁶The annual budget of Milwaukee, Wisconsin, is an excellent example of this approach.

type of detailed cost accounting. In the first place, there was a strong inclination to "count the countable." Whether it was cleaning a catch basin, issuing a permit, or performing a major surgery, each thing was to be included. This led to a crippling amount of record-keeping in those jurisdictions that kept records of actual counts rather than periodically made rough estimates.⁷ Since this approach to performance analysis originally came before computers were commercially available, the process fell into disuse in all but a few jurisdictions.

More important than the mechanics of maintaining these types of records is the question of significance and purpose. All too often, these records were maintained simply to give the *impression* of a great deal of activity and tight operational control. But the results were seldom related to the missions or objectives of the agencies for which the data were collected. One could study pages of these statistics and still not know what public purpose the activity sought to serve or how close to its objectives it came. The efficiency of personnel, rather than the purpose of the work, received the principal attention of those interested in traditional performance budgeting.

Any system designed to meet the needs of modern public management must produce reports concerning the results of the work of each agency that are significant as a sign of success or failure in meeting given objectives. These results may be expressed in two terms:

- *Production.* A quantitative statement of output of work in conformance with the plan of action for any given program.
- *Impact.* Recorded, measurable changes in community conditions that can be attributed, at least in part, to the activities of a given program or group of related programs.

PDACT is concerned with both types of measurement, but only the production measurements are the subject of this section. In developing the activity classification plan (ACP), it is vital that the output attributed to each activity be as significant as possible as a criterion of the success or failure of the agency. A relatively high degree of generalization should be sought for the activity as a whole with relatively little concern for the types of records that measure only the efficiency of individual employees. A fire company, for example, does many things, such as maintaining equipment, holding drills, and answering alarms. The important productive criteria, however, are concerned with the number and types of calls answered and action taken. (Impact on the other hand would be measured in terms of decreases or increases in damage from fire in given areas of the community.) Snow-plow crews also mount plows and other equipment and drive their equipment a given number of hours over a measurable number of

⁷Los Angeles probably made the biggest effort at this, although it restricted costs to personal services.

ACTIVITY CLASSIFICATION PLAN WORKSHEET

CODE	ACTIVITY DESIGNATION	AGENCY	FUND	ASSOCIATED DAILY COSTS			SUPERVISOR		PRODUCTIVE RATE			MAN-POWER (FTE)	MAN-HOUR STANDARDS		UNIT COST STANDARD	
				EQUIPMENT		FACILITIES	MAT. AND SUPPLIES	NAME	NO.	UNITS	PER		NO.	NO.		PER
				NO.	AMT.											
7089	Soc. Work-Interview	Welfare	Gen.	301	8.00	-	12.75	Walker	4683	Inter.	Day	6	2	6	Day	10.00
4778	Air Pollution - Field Investigation	Health	Gen.	408	8.00	5.00	8.50	Jones	6009	Trip	Day	20	2	10	Day	6.25
0794	Hwys.-Constr. Survey	DPW	Hwy.	897 898 900	20.10 21.00 18.50	250.00	15.00	Smith	3280	Survey	Day	4	4	4	Day	90.75

Figure 3 - Activity Classification Plan (Worksheet)

miles. The important thing is the number of inches of snow they are able to remove in a given period of time. (Impact here might be in terms of increases or decreases in relative number of hours streets are open or closed for each inch of snow.)

Many communities have wrestled with these classification problems for many years. Dayton, Ohio; Milwaukee, Wisconsin; and Nassau County, New York; to name a few, have come up with comprehensive functional classification systems that go into varying levels of detail to describe production.⁸ Undoubtedly many more years of effort in a number of municipalities will have to be expended before a completely suitable ACP of this type can be developed. For purposes of the initial development of the ACP, it is important to try to associate only one output for each activity in an effort to maximize relevance to mission while minimizing the need for coding and record keeping.

In the course of developing the ACP, a sharp distinction should be drawn between direct service activities and overhead activities. These activities might be defined as follows:

- *Service.* These are the activities that result in products, facilities, or services directly to the public in terms of such things as better streets, more protection against crime, or greater opportunities for relaxation.
- *Overhead.* These are directive or supportive activities such as general management, staff services within the government (e.g., finance, personnel, legal services), and purely administrative service functions (e.g., building maintenance, issuance of licenses and permits, switchboard operations).

A major question in the development of a cost and

⁸While each has its merits, in the author's opinion, none has yet found an acceptable balance between detail and significance. This observation is offered in spite of the fact that the author designed and initiated the Nassau County approach.

performance analysis system concerns the manner in which accounting for overhead activities is undertaken. Performance budgeting made no particular distinction in this respect, the work output of supportive staff being counted the same as the production of line workers. This led to the many statistics for such activities as letters typed, permits issued, employee interviews conducted, and telephone calls processed. It is doubtful whether such data have ever had much meaningful managerial value. It would appear that a far more significant question would concern the relationship in terms of costs, and perhaps man-hours, between productive and overhead activities. If overhead costs went, say, from 50 percent to 60 percent of productive costs within a year, this would suggest a great deal more to management in terms of the allocation of resources than do the many meaningless statistical data previously produced.

Another policy matter with respect to overhead concerns how it is attributed to various programs. Some past efforts have gone to great lengths to use codes in relating administrative activities very specifically to particular productive activities. In many instances, this attribution may be possible (as when a public works switchboard processes complaints). In general, however, it would appear to be just as useful to attribute total overhead costs in various functional areas (e.g., public works, health, welfare) to each program on a proportional basis with respect to the percentage personal service costs for each line activity constitute of the total of personal service costs for all activities within the functional group. Thus, if salaries for sewer maintenance are 10 percent of all public works salaries, that percentage of the overhead costs would be attributed to it. This latter method also simplifies greatly the record-keeping problem by reducing the need for daily work reports for overhead activity. Regardless of the method used, standards should be developed concerning the percentage overhead should constitute of total productive costs, and these percentages should be incorporated in the

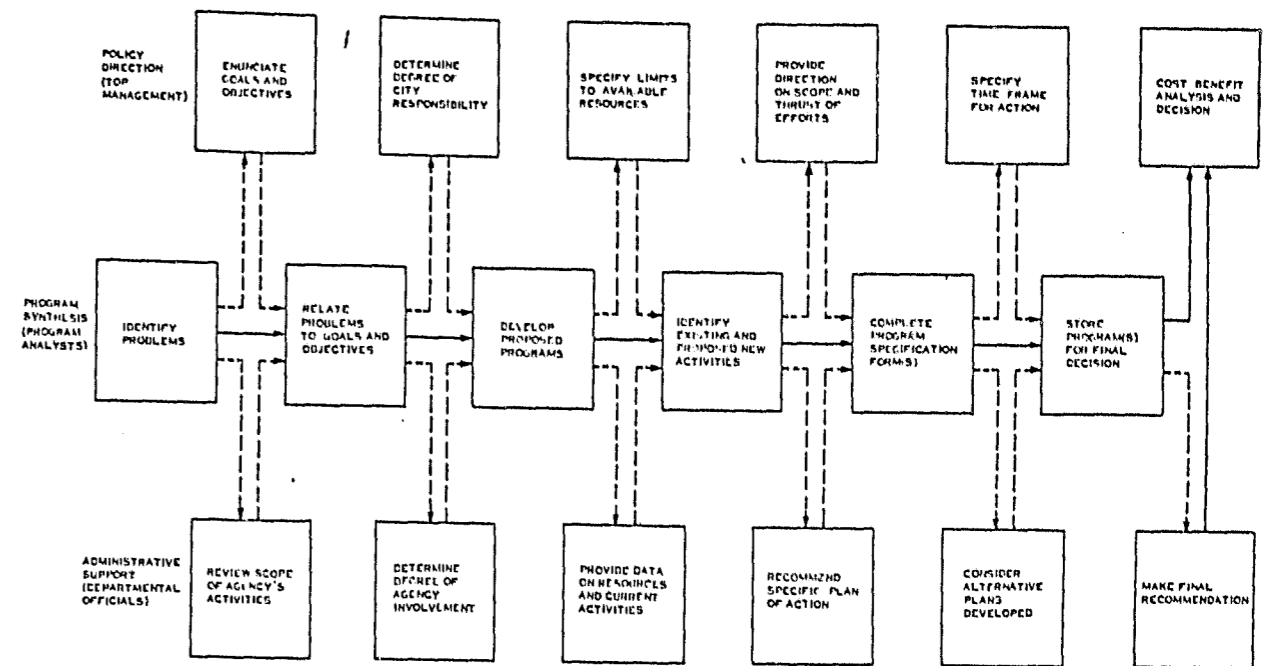


Figure 4 – The Three-Level Process of Program Development

annual financial program (see Figure 5).

Once the initial activity classification plan (ACP) is completed, the program analysts have the "building blocks" they need for developing programs that are responsive to the needs of the community. This approach is illustrated in Figure 1 (Events 18, 3, 4 and 5 in Figure 1). Associated with each activity are the necessary costs and productive capacity which, taken together, describe each program in a manner suitable for computer storage and processing. The *program* category in PDACT is not just a subdivision of an objective; rather, it prescribes the manner in which activities will be grouped and coordinated to meet given objectives in each area of the community. There may be relatively permanent programs, such as garbage collection, street cleaning, routine police patrol, and fire inspections. On the other hand, there may be ad hoc arrangements that respond to problems limited in terms of location and time, such as emergency storm damage cleanup or riot control.

AUTOMATION OF PROGRAM DECISIONS

The key to the success of the automated features of PDACT is the manner in which activities are structured, recorded, and coded so as to provide the desired programs. For each proposed program, a written specification should be prepared. A sample specification form is illustrated in Figure 2. As can be seen, each program is developed from existing or proposed new activities. Heavy reliance is placed on codes, since these will permit machine storage (Event 5 in Figure 1) and maximum automation during the process of reviewing and evaluating alternative programs. Some of the possible codes are illustrated in Figure 2:

- **Control.** This is the principal designation of the program for all reference purposes.
- **Type.** This indicates whether the program is a service, capital improvement, or regulatory function.
- **Status.** This code is concerned only with programs that have not yet been implemented and serves to indicate whether it is a new program or a modification of an existing one.
- **Objective.** This indicates the primary objective with which the program is associated. (Other codes could be added to indicate indirect or supportive relationships to other objectives.)
- **Location.** If the program is directed toward problems in a definite geographic area, the appropriate geophysical code is designated.
- **Sector.** If an identifiable section of the social structure (e.g., poor, sick, or elderly) is to be serviced and this is a significant factor, an appropriate code is designated.
- **State.** This designates relationships with any state-aided programs.
- **New Authorization.** This designates the authority required to amend the program once it is adopted.

It should also be noted that the program specification provides for a detailed estimate of the forthcoming year's costs and projections of total costs for five additional years for each activity. One of these forms should be completed initially for each existing program and subsequently for each new program to be considered. Where several alternative programs are to be considered, a separate form should be prepared for each.

It is not assumed that the program analysts develop program proposals on their own initiative.

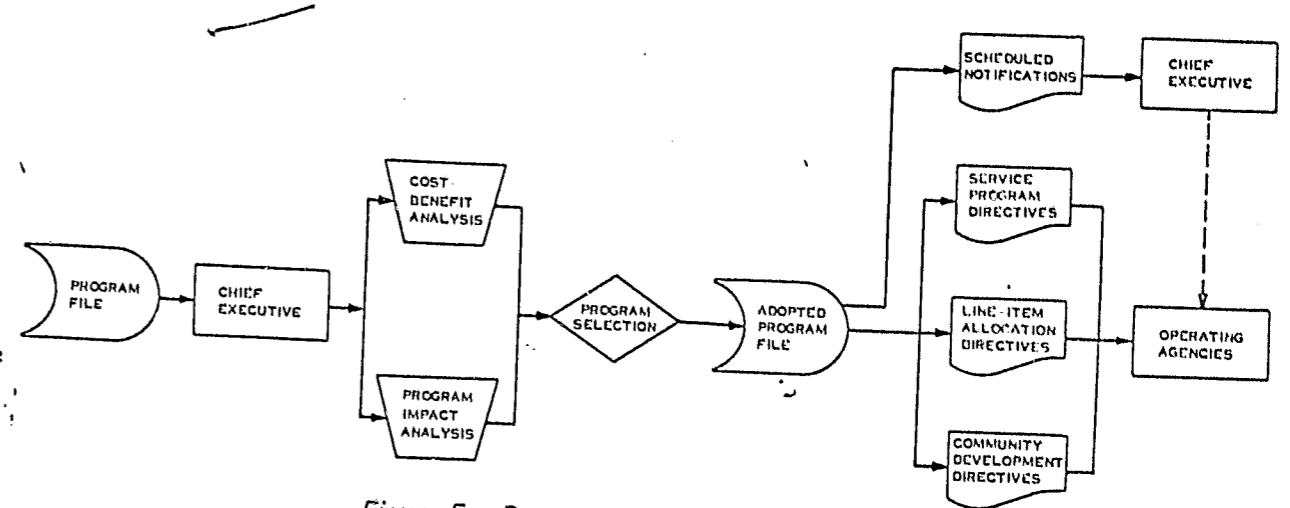


Figure 5 - Program Adoption Process

The specifications should be developed as a result of conferences and work with top management, staff officials, and departmental officials at every level concerned with the related problems. The program analysts review data (see Figure 1) and bring problems to the attention of management. The program specification simply records the conclusions reached, or at least the alternatives to be considered, as a result of authoritative review. When completed, the data from each specification are stored in a program file (Event 5 in Figure 1) for consideration when desired.

It is impossible to prescribe the exact manner in which problems are analyzed, conclusions reached, and responsive programs developed. Each organization will have its own approach. Figure 4 illustrates some of the steps and the relationships between the work of the program analysts (program synthesis - the middle level), top management (policy direction - the top level), and the departmental level (administrative support - the lower level) in each stage of the analytical and developmental process. The net result of this process is the preparation of the program specifications and the aggregation of these for the use of management in developing programs consistent with the basic objectives of the municipality.

Program Adoption

Considering the format of the program specifications that were stored in the program file, it is easy to see that the computer has the data necessary to aggregate various programmatic alternatives in terms of all cost factors. This is because each program was built from activities, and each activity has all cost factors (by object) completely specified in the ACP. In addition, each activity has an assigned productive rate; that is, the average amount of service the activity can provide in a given period of time is stipulated quantitatively. Other factors are also associated with the activities and programs, but these serve only to illustrate further the capability of the

computer in aggregating and reporting program alternatives in terms of production, costs, and assigned resources. With additional input to the computer file, the computer can also compare these factors with such constraints as:

- Current limitations on taxes,
- Fund structures,
- Available manpower in each agency,
- Predetermined levels of effort that are considered operative as a matter of policy in accordance with the municipality's goals and objectives.

The basic steps in the program adoption process are illustrated in Figure 5. As the chief executive studies individual proposals stored in the program files, he can make modifications and ask the computer to recalculate the impact of his detailed changes on the total of all service costs - both for the short- and long-range future. In this manner, he can go through all existing and proposed programs until he has developed the specific service configuration he desires. And, during the entire time, the chief executive can be continuously aware of the fiscal and other resource and service implications of each incremental change he is considering, because the deletion, transfer, or addition of an activity automatically includes a change in related costs and productivity factors.

The speed with which this will proceed depends, of course, on the computer configuration available. In its most advanced form, the chief executive could be making his inquiries and most of his changes from a video viewer on his own desk. Otherwise, he may have to work with computer printouts and wait a few hours after he has designated the changes to be made at each stage. In any event, the entire process permits an infinitely higher degree of awareness and much greater speed in the decision-making process than is available with existing systems. It is this automated decision-making process that is the most unique feature of PDACT.

The use of program specifications (Figure 2) and a

high degree of automation permit the virtually automatic development of documentation once the basic programmatic decisions have been made. PDACT calls for the development of three basic types of documents (see Figure 5). Each of these types is discussed in the following subsections.

LINE-ITEM ALLOCATIONS

In spite of literally decades of abuse, the much denigrated line-item budget lives on. In virtually every instance where a government has a budget in performance, program, or PPB formats, the same data are also cast in traditional terms in accordance with which agency is going to spend how much for what "objects of expenditure." There are many reasons for this. The one most commonly emphasized in the literature is that most executives and legislators understand the line-item budget and are confused by the others. Another reason that seems even more important is that a line-item budget provides the basis for a tight accounting system, whereas the other formats are much looser and input controls are much more difficult to develop. Considering the ease with which a comptroller can control expenditures for salaries, purchases, and contracts, this argument obviously has much merit.

In fact, given the flexibility of modern computers, which are available even to smaller communities, there is no reason why several systems for direction and control cannot operate concurrently - provided that there are suitable checks and balances (or "crosswalks") between the various systems.⁹ Such checks and balances will be referred to in several appropriate places in this section.

Another advantage offered by computers is that provisions can be made for a flexible reporting system whereby the same types of information are arranged in different ways for various types of controls. Thus, during the process of developing the traditional line-item budget, the computer can produce other programmatic directives for specialized purposes. Accordingly, the general designation of "line-item allocation directives" (see Figure 5) would include the following:

- o *Appropriations by Object.* This is the traditional budget wherein appropriations are set forth in terms of the allocations made to each agency for personal services, equipment, materials and supplies, and contractual services. It is a resource-oriented plan and provides the basis for financial accounting.
- o *Cash Flow Analysis and Control.* This document is based on the assumption that at least a quarterly allotment system is used for both actual revenues and expenditures (i.e., on a cash basis). Reports would compare projected receipts with projected expenditures by fund and predict a cash balance

⁹See J. Ward Wright, "EDP and the Budgeting Process," *Municipal Finance*, May 1967.

status for the conclusion of each allotment period. This would provide an excellent guide for borrowing and investment planning purposes.

- o *Manpower Utilization Plan.* This would be a special plan for the use of each agency as well as the personnel director. It would list for each agency the approved positions, associated salary data, expected dates of hiring for new positions, and man-hour productivity standards for each position or class of positions. This last factor (i.e., productivity) should be generated both for units of production per hour (or day or week) as well as anticipated costs of units of production if the program specifications (Figure 2) are completed for all programs. It should be noted that these productivity "standards" are for general guidance only. For each such standard, acceptable deviation limits should be developed (e.g., 10 percent over or under) so that exception reports will not be too voluminous.

As indicated above, each of these reports can be automatically generated if the program specifications were completed. Closely associated with these types of resource-oriented reports are two others that will require additional input beyond the normal budgetary material for automatic generation:

- o *Equipment Utilization Plan.* This is a proposed plan for estimating the use to be made of each significant item of motorized equipment in terms of costs (e.g., total, per mile, per hour) and amount of utilization (e.g., total hours, percentage of total). This would require a special input by each using agency indicating:
 - Vehicle number
 - Assigned driver (if there are permanent assignments)
 - Associated fuel, oil, and maintenance costs (estimated)
 - Times of expected use (as exact as possible, if not 100 percent)

Such a plan could be used for cost control and planned vehicle assignment in an effort to achieve maximum total utilization, effective maintenance planning and control, and driver scheduling.

- o *Annual Purchasing Plan.* This plan requires a special analysis of each department's needs for materials, supplies, and equipment by the purchasing department. The plan itself would be the purchasing department's own plan of action for the year and would include the following:
 - Amounts of each commodity required
 - Requirements of each agency
 - Optimum overall seasonal purchasing patterns
 - Seasonal use requirements of each agency
 - Storage capacities (warehouses and storerooms)
 - Anticipated total cost impact during each period (monthly or quarterly)
 - Amounts of each commodity available in current inventoryThis plan will provide a strategy for the purchasing

department, act as a monitoring device for management, and help assure adherence to the cash flow plan.

It is perhaps important to reemphasize that the purpose of all of the reports in this group (i.e., line-time allocations) is fiscal accounting and cost control. Each directive and report calls for traditional types of data even though most of these reports would be novel for most cities.

SERVICE PROGRAMS

This class of budgetary directives is concerned primarily with providing the basis for the control and direction of actual work during the course of the year. These directives most clearly represent the importance of the program specifications as the basis for data entry. Generally, service program documents are of two types:

- *Service Commitments* on the basis of which monetary appropriations were made. These are, in effect, pledges by operating departments to deliver the services set forth in the budget.
- *Program Directives* that are managerial instructions to each agency to undertake given programs at specified times and in accordance with specific conditions.

It is recognized that these types of budgetary documents would be entirely new in content and form to virtually all municipalities; however, they do not call for any more or different data than are described in the program specifications. Again, it should be emphasized that there is nothing novel about any of this information, nor is it unusual or exotic. Many cities develop similar programmatic and operational data for other purposes. These reports set the data forth in a form specifically tailored to the directive needs of management and the processing requirements of computers. While any number of reports could be included within this classification, the following four will serve to illustrate the most important basic requirements:

- *Delivery Commitments.* This should be the total service program for the municipality (regardless of funding or the nature of the expenditures). It indicates how much of what service is to be delivered where (at least generally, if not in accordance with specific geocoded designations), by whom, at what time (i.e., time of year, month, week, or day).
- *Performance Standards.* These would be, primarily, anticipated average unit costs of delivery. They would be calculated by the computer by dividing the amount appropriated for an activity by the number of units to be delivered (this is based on the assumption that the unit costs themselves were developed on the basis of tests, recognized standards, or historical studies). In addition, quality

control standards could be added where they are possible; however, it is recognized that these are not readily available for most cities at this time.

- *Agency Directives.* These are machine-generated directives to each agency of that part of the overall program with which it is concerned. The directives might well contain more detailed and specific data than the two preceding, generalized types of reports.
- *Program Initiation Notices.* The capability of producing these notices assumes that the computer has been programmed to act as a form of tickler file. For all special, ad hoc, seasonal, or other time-limited programs that are not year-round, notifications are produced when each phase of activity should begin. This might include notices to hire personnel, develop specifications, let bids, or otherwise undertake activities preliminary to providing the services required. The reports could be generated and distributed automatically for the agencies or be provided to the chief executive or his staff for their own use.

With the exception of the initiation notices, each of the foregoing reports can be produced automatically on the basis of the data set forth in the program specifications. Even the initiation notices, however, require only the addition of dates and "action to be taken" data to be generated automatically.

COMMUNITY DEVELOPMENT DIRECTIVES

The final class of budgetary documents is concerned with concepts that are familiar to any community that has used critical path methods (CPM) or program evaluation review techniques (PERT) to monitor and control projects. These directives are concerned solely with project-type activities; that is, activities which have a definite beginning and end and result in a physical product. They may be buildings, other public works, or community renewal projects of one sort or another. The reports are all based on the assumption that the work can be scheduled in terms of time, percentage of completion, and costs. In some instances, milestone charts or event-oriented program networks can be the basis for exact control over the details of construction. Regardless of the degree of detailed control sought, the following three types of reports would seem to cover most possibilities:

- *Construction Schedules.* These are related to facilities or improvements (e.g., buildings or roads) with a separate schedule for each. They should indicate the schedule for completion, either with respect to specific events, percentage of completion, or both. Each of these phases should, in turn, be set forth both in terms of time and costs to each planned point in time.
- *Project Schedules.* These schedules relate to large-scale projects (e.g., urban renewal or facility complexes) that may involve nonconstruction ac-

tivities even more than construction. Thus, specific schedules for such matters as family relocations, property acquisition, clearance, land preparation, and sales to developers would be typically scheduled events. Again, the schedules should be set forth for each project independently and in terms of time and costs.

- *Contractor Performance.* Closely related to the foregoing directives are the same types of schedules and data that are, in this case, generated for each contractor separately. Depending on the degree of control sought, they could be for every contractor of every type or just for the general contractors (in those states that permit the use of general contractors on public projects). In addition to scheduled events, time, and costs, there should be indications of quality standards for the use of inspectors in monitoring the work.

It is vital to note that this category of budgetary directives does not result as an automatic by-product of the program specifications and the budgetary decision-making process. While the program specifications can and should accommodate capital projects of this nature, additional information concerning events, speed with which the work should progress, cumulative costs at each milestone, and performance expectations of contractors and others would have to be fed to the computer with the use of other forms. Since these types of forms and data are described in many CPM and PERT publications, there is no need for reiteration in this report.

PROGRAM COORDINATION

It is vital to recognize that, taken together, all of these documents constitute one, coordinated program for the municipality. Each fills a definite administrative purpose and is directed toward the official or agency responsible for that specific aspect of the work and its direction and control. Since the data for virtually all of the nonproject reports are extracted from the program specifications, the commonality of the data base is assured. The specifications aggregate all activities with respect to a given purpose regardless of the sources of funding (e.g., local tax, state, or federal aid), category of appropriation (e.g., capital funds, operating funds, enterprise funds), method of financing (e.g., current revenue or debt financing), or organizational responsibility. Management can then make its decisions solely on the basis of functional purposes, production, and anticipated service impacts. Once these decisions are made, the coding structure set forth in the program specifications permits the computer to reaggregate the data in the forms necessary to generate the types of reports and directives discussed in this section.

PERFORMANCE DIRECTION

A major fault of management in most American

cities is the apparent faith that once a program is set forth in the annual budget or otherwise announced as a public policy, it can be assumed that it will be done. Of course, few budgets delineate programs very specifically. Most budgets simply provide the means for going on as usual. With the resources stipulated, each agency formulates its specific programs of action as the year proceeds, returning for additional funds if circumstances seem to warrant the request. This is the normal course of affairs in the overwhelming majority of American cities.

PDACT, by contrast, is an action program for every agency of the local government. It places all activities within the context of functional objectives. In addition, each of these programs stipulates the following specifications:

- When the service is to be provided,
- Where it is to be provided,
- Exactly which agency or agencies are involved in the effort,
- The amount and type of service to be provided,
- The manpower and other resources to be utilized in the effort,
- Associated costs,
- The specific conditions to be alleviated or other community purposes to be served.

The initial directives to each agency and supervisor will be automatically generated and distributed, as was indicated in the preceding section. While this process may occur mainly at the conclusion of the budgetary process, it also could take place at any time a particular program specification is completed. However, formulation of programs is only one step in the PDACT process.

Managing the administration of ordinary line-item budgets today is not too difficult. Since the chief executive is not presented with an array of programs, he can focus his attention on the few special efforts with which he is familiar and in which he is interested. For many municipal managers, budgetary administration has little or nothing to do with programs; rather it is merely a process of casting an occasional glance at the monthly budgetary status reports.

PDACT places the entire program before the chief administrator, together with detailed specifications for performance in terms of costs and production. While this poses a much greater administrative challenge, PDACT also provides the automated basis for easier direction. Each program specification should include critical dates for performance, at which points in time notifications, directives, and other information would be automatically generated. This step is indicated as "Scheduled Notifications" in Figure 5.

The first date is for an indication to management that initial action should start. This might be for legislative action, executive direction, or acquisition of necessary resources. At the same time the automatically generated notice goes to management, the

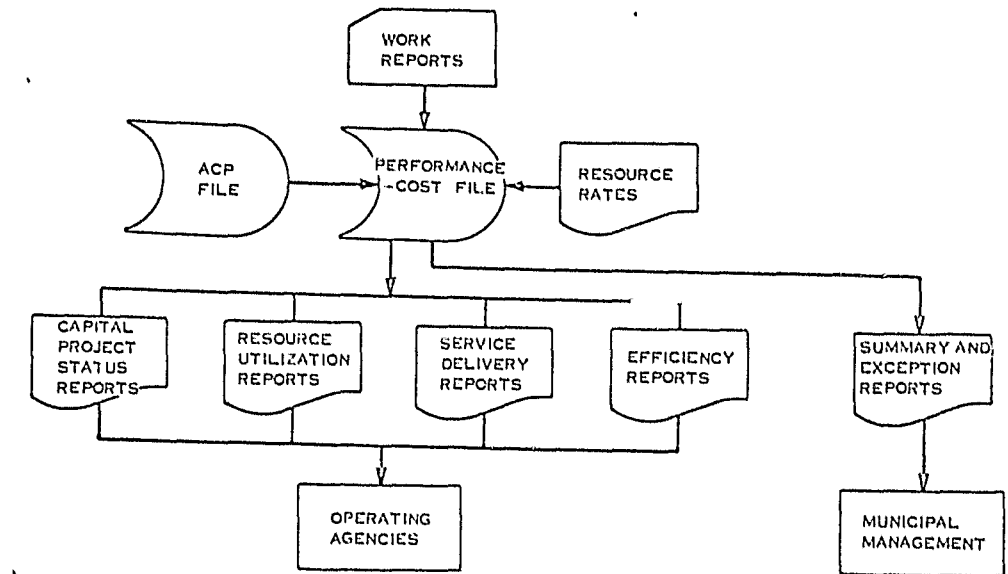


Figure 6 – Performance Analysis Process

in many communities. They are usually very crude systems, developed by each agency separately, and their use usually stops at the level of some departmental bookkeeper or statistician who transcribes the data into ledgers and then files or destroys the work reports themselves. This information is used for varying purposes, such as charging departments or individuals for special work, maintaining work counts for performance budgeting systems, or answering inquiries concerning the agency's work. Seldom do these systems keep very detailed data concerning work output. In none of the jurisdictions with which the author was involved were the standards for the reports prescribed by an authority higher than the department level, nor were they uniform in any way from one department to the next.

Several characteristics of the reporting in the relatively few communities that undertake this work on a jurisdictionwide basis are very common. The production reports are usually transmitted monthly, quarterly, or annually from the departments to the data center, and it is left to each agency to determine the manner in which these data are developed. Usually, the output data appear to be sheer estimates. In addition, the cost data are usually restricted to costs associated with personal services, and these data are not the same employee activity data recorded and used for payroll purposes. Other costs, such as for equipment, materials and supplies, and personal service contracts, are either ignored or prorated against personal service costs.

In short, no satisfactory method of citywide work reporting could be found, in spite of the fact that there do not appear to be any major technical difficulties to be overcome.

Several points should be stressed in developing a system such as PDACT:

- *Frequency.* It seems essential that the data concerning costs and production be recorded on a daily

basis, whether or not the reports are aggregated and turned in to the data center that frequently. Greater periods of reporting time (e.g., monthly or quarterly) simply lead to estimates, and these invariably tend to slant the data favorably for the supervisors concerned (not that this is not a problem with daily reports too, but significant exaggerations are much easier to spot on a daily basis).

- *Payroll.* The same personal service data used for performance reporting should be the basis for paying employees. Not only does this eliminate the needless duplication of the reporting systems, it also increases the incentive for the reporters to record time faithfully and accurately.
- *Comprehensiveness.* The work reports should at least indicate the equipment used for the work, even if recording the use of materials and supplies is impractical. The latter cost can be prorated as a percentage of salaries in accordance with historical trends.
- *Recording.* The entire procedure for recording and transcribing the data concerning costs and production should be prescribed from top management to ensure, to the extent possible, accuracy and timeliness in the entire process.
- *Flexibility.* It must be realized that various types of employees have varying abilities to cope with written forms. Thus, while social case workers may be very capable of filling out fairly complex forms, a common laborer in a department of public works may easily be confused by even fairly simple forms. Thus, the system prescribed must carefully take into account the circumstance under which the forms will be completed and be field-tested under controlled conditions before the form is finalized and printed. The system usually must provide different formats for different agencies.
- *Simplicity.* Above all, regardless of the agency, the work reports should be as simple as possible. Thus,

the employee (or his immediate supervisor) should receive as much preprinted data as possible and should have to record only the basic facts of employment, such as hours worked, code number of the items of equipment used, code numbers of the activities engaged in, and number of units produced. Where mathematical extensions must be made (e.g., to translate employee and equipment hours into dollar values and to calculate costs of each unit produced), the computer should be programmed to make the calculations.

As indicated in Figure 6, the work reports are fed directly to the computer for inclusion in a performance-cost file. In addition, as illustrated in Figures 1 and 6, the contents of the activity classification plan (ACP) are fed into the performance-cost file so that the standards required for evaluative purposes will be related automatically to each activity with which the work reports are concerned. In addition, predetermined salary rates are stored in the file for each employee (using either average flat rates or actual salary figures by employee number) as well as cost rates for items of equipment and materials and supplies (designated as "Resource Rates" in Figure 6). It is recommended that no attempt be made to record the actual cost of materials and supplies, though this is theoretically feasible. This cost is usually a relatively small part of the total, the administration of costs can be controlled with inventory control systems (which are not part of PDACT), and the amount of computation necessary to maintain built-in unit rates is just too cumbersome. Accordingly, materials and supplies costs can be charged as a percentage of manpower costs (though this percentage should vary from one agency to the next in accordance with the relative amount of materials and supplies each of these activities generally uses).

Finally, in addition to resource rates, there should be an overhead cost factor allocated to each program (or work report) in accordance with predetermined formulas. Overhead would include managerial, administrative, and clerical support costs that are not directly included on productive work reports. For accuracy, employees in overhead categories may also be required to complete work reports, but these are not of great managerial significance unless they are directly related to productive work as overhead. The overhead factor should be based on analyses of work reports for these supportive activities.¹¹

¹¹For a more detailed discussion of work reporting, see *Nassau County, MIS*, a booklet written by the author of this report in June 1966. A short version of the Nassau County design approach is in the *Municipal Finance* article "FDP and the Budgeting Process," cited in footnote 9. (In 1968, Nassau County issued a new version of the 1966 MIS booklet. The author explicitly disassociates himself from the form and content of this revised version.)

PERFORMANCE ANALYSIS REPORTS

The ultimate value of any management information system (using that term in its generic sense) is represented by the quality of the system of analytical reports it is capable of producing. These reports are the "output" associated with all computer-based systems. A major objective of PDACT is to produce reports having the following three general characteristics:

- *Relevant.* They pertain to the specific types of problems and responsibilities with which the recipient is concerned at that time.
- *Significant.* They are concerned with activities and problems of a scale suitable to the responsibilities and interests of the recipient, and they distinguish between the important and unimportant.
- *Specific.* They should direct the user's attention to those items with which he should be especially concerned at that time. Thus, major deviations from acceptable standards or operating goals should be emphasized.

It is a principal objective of PDACT to provide for the minimum amount of input with the maximum use of the computer to generate automatically, to the extent possible, the widest possible range of usable products. A system of reports that meets these functional standards is a tall order. It means that user requirements *must* be analyzed with the greatest possible care in each municipality before the system is even designed.

A common mistake made by many system designers is to develop *one set* of reports that embody as many different users' needs as possible. The result too often is a volume and complexity that make the single set of reports unusable to virtually everyone, but most especially to busy executives at the highest levels.

The need is for a range of specialized reports, each suited to the special requirements of a specific user (in the case of important officials) or set of users (such as those at the middle-management level). Each type of report should contain only the information required by that person at that time for the purpose for which the form was required. The format should be suited to the natural inclinations of the user (even specific personalities in some instances) and should not require a high degree of technical expertise unless the user is technically qualified. In short, each report should be a usable product for each recipient at every level of management. The remainder of this subsection is concerned with the basic types of reports that might be generated.

The inputs to the performance-cost file illustrated in Figure 6 provide for an extremely high degree of automation. All arithmetical extensions would be automatic (e.g., cost data, production standards, unit-cost determinations). In addition, virtually all standard performance, delivery, and efficiency reports would be automatically generated. These reports would include the following types:

- *Service Delivery Reports.* These reports are concerned with the quantity, type, and timeliness of service delivered to the locations indicated. They are strictly production reports. The reports should be aggregated by organization, program, objective, and supervisor.
All of these reports would compare actual results with original directions and built-in standards for production.
- *Efficiency Reports.* These reports relate production to costs in an effort to keep costs as low as possible for each unit of work accomplished, each program, and related overhead costs. Included in this classification would be quantity-costs reports, man-hour productivity reports, and overhead-production costs ratios.
- *Resource Utilization Reports.* These reports would indicate the manner in which manpower, equipment, and facilities have been utilized, both in terms of degree of utilization and costs. This would include special performance reports for personnel, equipment, money, and land and facilities.
It is important to note that each of these elements requires a special computer-based system to provide complete reports. These systems are not included in PDACT. (The special requirements of resource utilization reports are explained more fully below under "Supportive and Related Systems.")
- *Community Development Status Reports.* These reports would compare actual progress on each project with construction and development schedules and with the terms of active contracts.

In the case of all of these reports, as illustrated in Figure 6, summary and performance exception reports (for both poor and outstanding performance) should also be automatically generated for the use of the chief executive, his staff, and other managerial personnel. This automation is achieved by programming for each line of each detailed report the degree of deviation that is significant enough to be included in the exception reports. In addition, summaries of data concerned with service delivery, costs, and use of personnel are generated with the assistance of suitable machine instructions.

The frequency with which this group of reports can and should be produced depends on several factors, the most important of which is the frequency with which work reports (Figure 7) are completed. As emphasized previously, it is strongly recommended that these be completed on a daily basis; otherwise, accuracy falls off very badly, and it becomes impossible to maintain an accurate real-time system, even where the sophistication of the equipment permits it. Considering the extreme simplicity of the work reports, this should not be difficult.

The second factor bearing on report frequency is the sophistication of the computer equipment and staff. If a very large computer is utilized, the entire

system may be maintained on-line and inquiries made through remote terminals (possibly using video viewers) at any time. This is the ideal situation and the one for which PDACT is primarily designed. A smaller computer configuration may be able to maintain most of the system on-line, thereby providing rapid answers to console inquires or very rapid responses to requests for printouts. Even on smaller, tape-oriented computers, the system can be built and maintained fairly economically and provide at least weekly printed reports of the type described above. In Nassau County, New York, the writer designed a rudimentary version of this system that was operable on a tape-oriented IBM 1401. Of course, design trade-offs will have to be made on the smaller equipment with respect to the amount of data that can be stored and processed, the speed with which the system can aggregate, summarize, and otherwise process data, and the variations in exception reports possible.

Finally, it should again be emphasized that the reports should not be extremely complex or designed to be understandable only by technicians. The management-level reports, especially, should answer the types of questions an EDP layman may ask concerning operations without requiring him to undertake analytical work in illogical or unnecessarily complicated patterns to understand what the report is supposed to be telling him. Elaborate codes that stand for various types of performance and similar action must be avoided. The report should say what it is transmitting without the manager having to look up meanings on a separate chart or table. For these reasons no special format for reports is prescribed here. The computer is very flexible in being able to display a host of data in tabular or graphic form. In developing the system, the designer should consider the form of government, review a number of possible formats with those people *actually in office*, and test results with mockups to see which is more informative in actual practice before the detailed designs for any significant portion of the system even begin. Above all, the system of reports should be a special effort separate from other aspects of the overall system design. It should *not* be the final phase of PDACT, added on after everything else is done.¹²

¹²An excellent example of problems encountered is the PPBS for the state government of Pennsylvania. The systems designers were more interested in functional analysis, impact indicators, the classification system, and the format of the budget than they were in performance analysis reports. The design work has now been completed at great cost in time and funds, and the state still does not have an operating system of PPBS reports. As a consequence, management support of the system has been severely jeopardized. In fact, it is not clear at this point that the system, as designed, is capable of producing meaningful managerial reports with respect to anything other than income and expenditures. For an excellent description of the approach taken, see Robert J. Mowitz, *The Design and Implementation of Pennsylvania's PPBS* (Institute of Public Administration, Pennsylvania State University).

NASHVILLE METROPOLITAN GOVERNMENT DAILY WORK REPORT				PROGRAM	ACTIVITY	DATE / /	
EMPLOYEE DATA				EQUIPMENT		PRODUCTION	
ID NO.	HOURS	SKILLS	HOURS	ITEM	HOURS	UNITS	LOCATION
				FOREMAN		DIVISION	
				SUPERVISOR		DEPARTMENT	

FUNCTION PROGRAM PUBLIC WORKS WATER POLLUTN TRMT/ DISPOSAL	DAILY WORK REPORT				SEWAGE DISTRICT #10				
AGENCY	ACTIVITY	DAY	MONTH	WORK UNITS	QTS	MAN-HOURS	QTS	PERSONNEL I.D.	CREW I.D.
00000000000000000000000000000000	00000000000000000000000000000000	0	0	00000000000000000000000000000000	0	00000000000000000000000000000000	0	00000000000000000000000000000000	00000000000000000000000000000000
10000000000000000000000000000000	10000000000000000000000000000000	1	1	10000000000000000000000000000000	1	10000000000000000000000000000000	1	10000000000000000000000000000000	10000000000000000000000000000000
20000000000000000000000000000000	20000000000000000000000000000000	2	2	20000000000000000000000000000000	2	20000000000000000000000000000000	2	20000000000000000000000000000000	20000000000000000000000000000000
30000000000000000000000000000000	30000000000000000000000000000000	3	3	30000000000000000000000000000000	3	30000000000000000000000000000000	3	30000000000000000000000000000000	30000000000000000000000000000000
40000000000000000000000000000000	40000000000000000000000000000000	4	4	40000000000000000000000000000000	4	40000000000000000000000000000000	4	40000000000000000000000000000000	40000000000000000000000000000000
50000000000000000000000000000000	50000000000000000000000000000000	5	5	50000000000000000000000000000000	5	50000000000000000000000000000000	5	50000000000000000000000000000000	50000000000000000000000000000000
60000000000000000000000000000000	60000000000000000000000000000000	6	6	60000000000000000000000000000000	6	60000000000000000000000000000000	6	60000000000000000000000000000000	60000000000000000000000000000000
70000000000000000000000000000000	70000000000000000000000000000000	7	7	70000000000000000000000000000000	7	70000000000000000000000000000000	7	70000000000000000000000000000000	70000000000000000000000000000000
80000000000000000000000000000000	80000000000000000000000000000000	8	8	80000000000000000000000000000000	8	80000000000000000000000000000000	8	80000000000000000000000000000000	80000000000000000000000000000000
90000000000000000000000000000000	90000000000000000000000000000000	9	9	90000000000000000000000000000000	9	90000000000000000000000000000000	9	90000000000000000000000000000000	90000000000000000000000000000000

PROGRAM				ADMINISTRATIVE	
AGENCY CODE	ACTIVITY CODE	ACTIVITIES	WORK UNIT	ACTIVITY CODE	ACTIVITIES
207	0235	METEORLOG-HYDROLOG	ANALYSIS		Supervision
207	0236	SOILS ENGINEERING	PR FT	9001	Accig/Finance/Budget
207	0237	GROUND WATER RESORCS	PR WELL	9003	Clerical/Office Services
				9004	Public Relations
				9005	Research & Planning
				9009	Staff Development
				9010	Mgmt Analysts

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Figure 7 - Sample Work Reports

Effectiveness Analysis

The ultimate test of any municipal operation is whether it achieved the results it sought in terms of a healthier, safer, and more secure community. The ethics of a local government may be unimpeachable and its administrative procedures "by the book," but if it does not effectively improve conditions in the community, it fails to fulfill its purpose. Unfortunately, measuring the impact municipal government activities are having on a community is an extremely difficult task. For example, even when something as quantitatively measureable as an urban renewal project is complete (i.e., the land has been acquired, cleared, sold, and rebuilt), there is inevitably argument concerning whether the social, economic, and aesthetic objectives of the project were in fact met.

One major problem is that local government activities are only part of the innumerable variables that help or exacerbate community problems. The police may be doing as good a job as possible, and yet crime be increasing because of changes in the nature of the population or adverse economic developments. The development of a first-class recreational facility may come to nothing because of vandalism or crime that frightens the public away. And the list could be extended endlessly.

One method of gauging effectiveness was described by Robert H. Davis in *Measuring Effectiveness of Municipal Services*.¹³ In this MIS report he proposed the use of "measures of effectiveness" (MOEs) by which the value of the activities of a municipality could be determined. These are excellent criteria, most of which are measurable on the basis of readily available statistical material. In connection with PDACT, MOEs should be developed for each activity during the course of developing the activity classification plan (ACP). However, the MOEs are not the complete answer for PDACT, nor did Davis maintain they were.

The ultimate emphasis in PDACT is on the formulation and administration of programs -- that is, groups of activities directed toward the achievement of specific objectives in specified areas within given time frames. In some custodial, routine services (or "continuing-need services," as Davis classifies them), the programs can be evaluated largely by examining the MOEs. This would seem to be especially true for most of those concerned with public works. In others, particularly programs concerned with specific social and economic problems, results probably would better be gauged by the satisfaction of the people in the area served. In other words, the success of a program may or may not be directly related to the performance of staff with respect to each activity in that program. However, the MOEs associated with each activity may be excellent criteria of how well the employees did their jobs, even though the overall

program proved to be unsuccessful. The program may have been ill-advised or have failed due to extraneous factors that were unforeseeable and entirely beyond the municipal employees' control. In short, evaluation of employee activity is often quite different from evaluation of municipal programs.

All this reemphasizes the points made several times in this report concerning the many ways in which performance is planned, analyzed, and evaluated. The several factors in the evaluative process include the following:

- Correction of adverse community conditions,
- Fulfillment of policy objectives,
- Delivery of services in accordance with directives,
- Efficiency in operations.

Some people may maintain that if the first of these cannot be measured with exactness, the rest are unimportant. That is *not* the position of this report. In PDACT, all of these are considered important criteria of success for purposes of responsible municipal management. Unfortunately, the first criterion is very difficult, and techniques for evaluating community conditions undoubtedly will have to be improved for many years before optimized conditions for this type of measurement are generally available.¹⁴ Meanwhile, each municipal government has an obligation to its citizens to do its best in formulating goals and programs and assuring compliance with directives as economically as possible. If the net results of the entire process in terms of community conditions are imperfect, the same can be said for most social institutions. The development of PDACT certainly will be a step in the right direction and a necessary precedent to the ultimate systems for public administration that the future hopefully will provide.

Redirection

PDACT assumes that management will act on the basis of the information it receives concerning unusual or adverse conditions or actions. Certainly the system will fail if management is indifferent or incapable of performance. The key to the entire procedure is the assumption that management at every level will want to take corrective action when errors have occurred or performance has fallen short of expectations, and that management will wish to

¹⁴Here, again, is another problem with the state of Pennsylvania's PPBS. The system is geared to *impact* measurement. However, many impacts require analysis of types and amounts of data that are impossible to gather. In addition, the impacts, in many instances, will not be manifested for years, during which time the programs will be continued. Clearly, the theoretical desirability of gauging performance by impact must give way to the feasibility of the present state of the art of data gathering and analysis. Unfortunately, production and cost data will have to suffice pending the social monitoring systems that the future, hopefully, will provide.

change the course of direction as various programs prove to be more or less effective.

In a sense, any management reporting system such as PDACT can only "lead the horse to the water." However, given the high degree of automation prescribed by PDACT, there are methods for at least reminding top management that bad conditions have not been corrected and of informing the chief executive that his department heads and other officials have not taken corrective action with respect to conditions that have been reported to them.

Such automatic reminders can be accomplished in at least two ways:

- *Programmed Response.* For each type of summary and exception report, there can be a programmed response required by which the supervisor responsible indicates awareness of the problem and the corrective action taken. Failure to file such a response could result in a machine-generated notice to management.
- *Automated Analysis.* During the process of drawing up exception reports, the computer can check back on previous reports to see if the same agency is having the same problems. This can then be indicated by special codes or in the form of special notifications to the next higher level of management.

Either of these methods would at least serve to make sure the principal problems are not forgotten, whether or not they are ignored. If they were given wide enough distribution, possibly including the city council, this type of information could become a strong incentive to administrative personnel to direct their attention to the problems manifested by the reporting system.

It should also be noted that it is assumed that some form of summary reports will go to the legislative body so that changes in basic policies can be made when it becomes apparent that various types of programs are not succeeding. In the case of both the legislature and the chief executive, the system must permit an override so that desires for new programs or changes in old programs can be given directly to the program analysts for inclusion in the program file (Event 5 in Figure 1) whether or not they are warranted by exogenous data.

Supportive and Related Systems

This report has been concerned with a system for program development and direction. It is highly automated, placing great reliance on computer technology. As described here, it is a system for the direct use of management at all levels, but especially top management in the municipality.

To be completely operative, it is assumed that a number of other systems or subsystems, as the term

is used in the USAC Project) will be developed. PDACT can be supported relatively independently of these subsystems if a municipality chooses, but the operating benefits will best be realized if each of the subsystems fulfills all of the functional needs for which it is designed. All of these subsystems would fall under two categories:

- (1) *Resource Utilization and Control.* PDACT regards all the means by which objectives are accomplished as "resources." Thus, under this definition, subsystems should be developed for each of the following administrative resources: (1) finance, (2) personnel, (3) materials and supplies, (4) equipment, and (5) facilities and property.
- (2) *Operating Subsystems.* This category includes the many departmental and functional systems required to operate efficiently and effectively. Included in this category would be the following: (1) police and fire command and control systems, (2) code enforcement inspection systems, (3) recreational planning and analysis systems, and (4) public works work order control systems.

This list could be extended to some length, and the content of each of these types of subsystems is by no means fixed or universally agreed upon. However, each subsystem has the limited operational purposes intrinsic to the function concerned.

The USAC Project (especially as described in RFP H-2-70¹⁵) is concerned with all of these types of systems. It chooses to regard the resource utilization and control systems as "horizontal" subsystems and the operational systems as "vertical" subsystems. The idea is that the horizontal subsystems will provide "linkages" to the vertical subsystems. This is an interesting concept, the usefulness of which in practice remains to be demonstrated.

PDACT uses a management control system as a means of linking all other computer-based systems. It is assumed that one set of data files will contain all the data to be used by all the subsystems and that these data will be integrated for maximum efficiency in use.¹⁶ The resource utilization subsystems will be of greatest importance as direct support to PDACT. For instance, they will provide the following types of data:

- Unit costs of work production,
- Unit rates per man-hour,
- Unit rates per equipment-hour or mile,

¹⁵See HUD RFP H-2-70, dated June 1969. On the basis of this, the USAC project was developed and is now under way.

¹⁶See pages 10-12 of *Total Municipal Information Systems* (MFOA Special Bulletin 1970E, September 1, 1970) for a description of a flexible, comprehensive computer file design suitable to the needs of a system such as PDACT.

- o Materials and supplies allocations,
- o Overhead percentage allocations.

These and similar data enable PDACT to operate without imposing onerous and expensive burdens on municipal staffs. For example, the work reports (Figure 7) do not require any computations by employees. Each employee lists the relevant codes (which are either machine-generated or printed on the back of the card), lists the hours of work and equipment used, and throws the card in a hopper for processing. From that point on, the process is automatic, except for key-punching (which conceivably could be automated with the use of sense-marked cards) and other handling by the operating personnel in the computer center. The resource utilization subsystems supply the numerical factors that extend the personnel, equipment, and other hours of use to dollar amounts.

Of course, the financial subsystem does provide the processing for the administration of the line-item allocations. This is the traditional form of budgetary control that was discussed in detail in an earlier section.

It is also important to emphasize that PDACT will have a significant impact on virtually every phase of operations, and its installation undoubtedly will curtail the necessity for many special operational or "dedicated" systems to be used by different agencies solely for their own purposes. Every department will see what its goals and objectives are, which programs it has been assigned, exactly which activities relate to each program, what was accomplished, how well it was accomplished, where major problems are, and what probably should be done to improve operations. This is a tremendously powerful management tool at every level and should suffice for most work analysis and directive purposes.

Conclusion

The major components of PDACT have been summarized and further illustrated in even more detail in Figure 1. There is no need to repeat that review. However, in closing, it would be proper to emphasize those elements of PDACT which are novel and which will probably have the greatest administrative impact on any local government adopting PDACT. This would include the following features:

- o The creation of a new unit of program analysts,
- o The development of an account classification plan (ACP),
- o The use of program specifications and a directly related computer file to develop municipal programs,
- o The automatically generated, three-part annual program in place of the usual line-item budget,
- o The installation of a work reporting system for performance analysis,
- o The largely automatically generated, multifaceted performance reports.

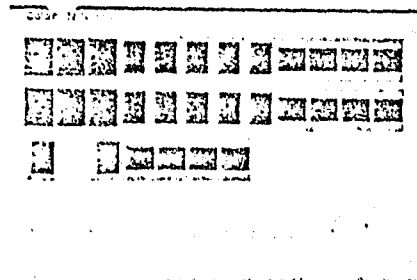
Only the addition of the program analysts calls for any new administrative costs; otherwise, the changes are procedural. This conclusion is based on the assumption that the municipality already has sufficient computer capacity and, of course, does not include any outside assistance the municipality may feel it needs to install the system.

PDACT calls for a new dimension of management — continuous awareness of community problems and governmental activity. It is a powerful tool for the manager who has the interest and technical skill to direct effectively every aspect of the governmental operations.

APPENDIX I

The NB Microfiche Jacket is the best way to file active records.

NOW! The new Color-Notch Fiche Jacket adds coding capacity for misfile prevention and more rapid filing and retrieval.



COLOR CODE

Each Color 'N Notch Fiche Jacket is colored along the visible edge of the index paper. 10 colors are standard.

NOTCH CODE

A section of the colored index is notched out to form a white recess in the color field. There are 10 notch positions available.

CODE FILING

Each color and each notch position can be used to code any class or sub class in your filing system. Each color can reference one class and each of ten notch positions can code a sub group in this class. Using all ten colors and notch positions, a maximum coded filing system for 100 reference groups is possible.

FLEXIBILITY

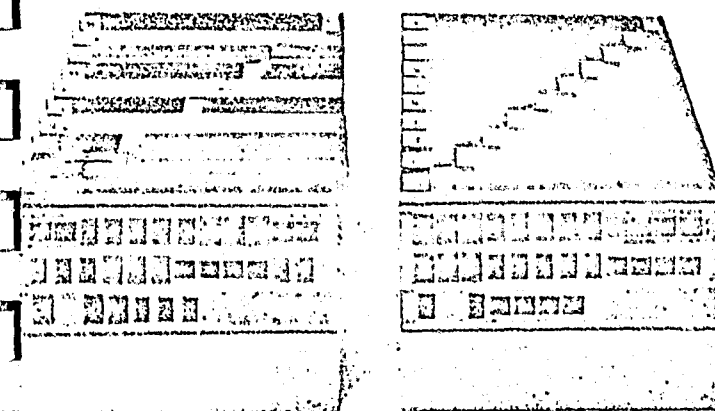
Color 'N Notch jackets are available in module groups of 100 jackets per color and notch position. Each file drawer can have the rainbow color pattern, or a solid color set. With either system you can choose 10 or less colors and notches depending on your filing principle.

TERMINAL DIGIT FILING

Is one of the many ways the Color 'N Notch Fiche Jacket system is used.

MISFILE PREVENTION

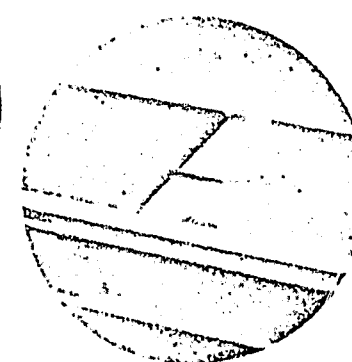
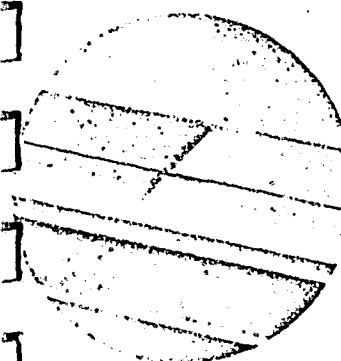
When a Color 'N Notch Jacket is misfiled, the error is instantly apparent. The color of the misfiled jacket sticks up in the white ground of the Notch and is instantly removable.



Rainbow Set

Solid Color Set

(which set has the misfiles?)*



Jackets available with Color stripe only—without notch.
Jackets available pre-numbered sequentially.

CENTRAL CALIFORNIA
CRIMINAL JUSTICE PLANNING REGION
1 SEPTEMBER 1971
PROPOSAL SUMMARY

APPLICANT: CITY OF MADERA
IMPLEMENTING AGENCY: MADERA POLICE DEPARTMENT
PROJECT DIRECTOR: W. HORACE DOWELL
TITLE: POLICE RECORDS TRANSITION TO MICROFILM JACKETS

This project will provide for purchase of microfilm equipment, microfilm jackets, and enough film to reduce all of the Madera Police Department's records to microfilm. The Department's clerical staff will then microfilm the records, place the film into microfilm jackets (one jacket for each old file) and then refile the jackets in the same numerical order that the old files were in. Once this process has been double-checked for accuracy, the old paper records will be destroyed. A duplicate copy of the file will be processed and stored on rolls at a remote location. The impact of this project will be to substantially increase the Department's efficiency and consequently substantially improve our ability to reduce the incidence of crime.

The major objective of the project is to reduce the incidence of crime by improving the operational efficiency of the police through:

- (1) reducing the time needed to recall records
- (2) reducing the possibility of suspects avoiding arrest due to the extreme time and difficulty required to search for records
- (3) eliminating the serious hazard of loss of records due to fire, bombing, accidental destruction, or natural disaster
- (4) reducing substantially the space now needed for filing records

The evaluation component will be implemented by the City of Madera and will consist of:

- (1) a study of the time-measurement log on records retrieval
- (2) a comprehensive study of project to include the quality and usefulness of the equipment and supplies used, time required to complete the project and the operational efficiency in regard to the ability to process arrests.

The proposed budget, based upon a matching ratio of 75 - 25, includes:

BUDGET CATEGORY	TOTAL	GRANT FUNDS	MATCHING FUNDS
Personal Services	2,870		2,870
Supplies and Operating	3,550	3,550	
Equipment	<u>5,061</u>	<u>5,061</u>	<u></u>
Total	11,481	8,611	2,870

The key budget categories are itemized as follows:

Personal Services:

1 Dispatcher/Clerk (part-time)

Supplies and Operating:

Microfilm and Jackets

Equipment:

Microfilm Recorder
Jacket Reader/Filler
Reader/Printer

CENTRAL CALIFORNIA
CRIMINAL JUSTICE PLANNING REGION
PROPOSAL EVALUATION

I. REVIEW AND SUMMARY

CCCJ No: _____

APPLICANT: Madera Police Department

TITLE: Police Records Transition to Microfilm Jackets

DATE REC'D: August 27, 1971 TASK FORCE: Police Services

PROJECT DIRECTOR: W. Horace Dowell LENGTH OF PROJECT 1 year

TOTAL COST OF PROJECT: \$11,481.00

TOTAL GRANT FUNDS REQUESTED: \$8,611.00

TOTAL FIRST YEAR COST: \$11,481.00

FIRST YEAR FUNDS REQUESTED: \$8,611.00

SUMMARY:

This project will provide for purchase of microfilm equipment, microfilm jackets, and enough film to reduce all of the Madera Police Department's records to microfilm. The Department's clerical staff will then microfilm the records, place the film into microfilm jackets (one jacket for each old file) and then refile the jackets in the same numerical order then the old files were in. Once this process has been double-checked for accuracy, the old paper records will be destroyed. A duplicate copy of the file will be processed and stored on rolls at a remote location.

This project has three goals: 1. To reduce substantially the space now needed for filing records; 2. To reduce the incidence of crime by improving the operational efficiency of the Department i.e. by reducing from 10% to 90% the time needed to recall records, and by reducing the possibility of suspects avoiding arrest due to the extreme time and difficulty required to search for records; 3. To eliminate the serious hazard of loss of records due to fire, bombing, accidental destruction, or natural disaster.

The impact of this project will be to substantially increase the department's efficiency and consequently substantially improve our ability to reduce the incidence of crime.

II. PROBLEM BACKGROUND

- a. Is the problem clearly defined? Yes x No ___
- b. Is there adequate evidence that a problem exists? Yes x No ___
- c. Are baseline statistical data presented? Yes x No ___
- d. Are statistical data adequate? Yes x No ___

COMMENTS:

The problem is indicated by the slow retrieval time of police records, the limited amount of storage place for the records and the poor security protection for the records.

III. PROJECT OBJECTIVES:

- a. Are objectives clearly defined? Yes x No ___
- b. Do the stated objectives adequately relate to a solution of the problem? Yes x No ___
- c. Are there other objectives more appropriate to solving the problem? Yes ___ No x
- d. Are objectives practical at this time? Yes x No ___

COMMENTS:

The objectives are well formulated and do not appear difficult to achieve.

IV. APPROACH TO SOLVING THE PROBLEM:

- a. Are procedures clearly defined? Yes x No ___
- b. Will the approach promote the resolution of the problem? Yes x No ___
- c. Are there alternative approaches which would be more feasible?

No. This approach is economically feasible and is accepted as a standard business procedure.

- d. Are the personnel qualified to perform their tasks?
Yes, qualified police personnel will undertake the microfilming task.
- e. Does the organization's experience indicate it can adequately implement this approach?
Yes, Madera Police Department is a well established professional law enforcement agency.

f. Statement of Work:

- 1. Are work tasks specified and/or identified? Yes No
- 2. Is the time frame specified and/or identified? Yes No
- 3. Does this step adequately promote the stated objectives? Yes No

COMMENTS:

Microfilm is an ideal storage medium for police records since it saves space, provides security, is durable, is easily retrievable, is capable of duplication and can be enlarged without loss of detail.

V. PROJECT EVALUATION COMPONENT:

- a. Are the evaluative procedures clearly defined? Yes No
- b. Do these evaluative procedures adequately relate to the project's objectives? Yes No
- c. Are these evaluative procedures sufficiently sensitive to measure the achievement of the project's objectives? Yes No

COMMENTS:

Evaluation tools are presented which are designed to measure the achievement of each objective. Also included is a comprehensive study of the project's impact on the Department's operational efficiency.

VI. BUDGET

	1st year	2nd year	3rd year	Total Cost
Federal	<u>8,611</u>	_____	_____	<u>8,611</u>
Grantee	<u>2,870</u>	_____	_____	<u>2,870</u>
Total	<u>11,481</u>	_____	_____	<u>11,481</u>

- a. What is the matching ratio? 75 - 25
- b. How does the budget compare with similar projects which were funded?
Taking into consideration the number of records to be copied, it compares favorably with _____ Police Department's "Pilot Microfilming of Records and Recall Demonstration" project.

c. Were matching funds authorized by resolution of the appropriate legislative body? Yes No Date _____

d. Would other sources of funds be more appropriate?
No. This project is directed toward improvement of the operational efficiency of a police department.

BUDGET DEFICIENCIES:

None.

VII. PROJECT EVALUATION:

a. How does the project comply with the priorities of the Criminal Justice System? (State and Regional)

The project is consistent with the state's goal of increasing the effectiveness of police agencies by strengthening the general staff functions which provide operational and administrative research and crime analysis.

This project complies with regional priority category VI which seeks the "development of systems, processes and techniques to reduce the strain on manpower resources".

b. What impact will the project have upon the Criminal Justice System?

The project should ensure close, fast, and secure police records retrieval and thus provide the Madera Police Department with the readily available information it must have to reduce the incidence of crime.

c. Is the project innovative?

Yes. Although the microfilming of police records has been implemented elsewhere, it has never been utilized by the Madera Police Department and is therefore innovative in this context.

d. Does the project meet the expressed needs of the community?

N.A.

e. Will the project encourage coordination between agencies of the Criminal Justice System?

Yes. An improved police record system should facilitate an improved flow of information among all criminal justice agencies.

Madera Police Department is facing a common problem among most police departments in the country - an increasing demand for law enforcement services without a corresponding increase in resources to adequately provide those needed services. Part of this problem can be alleviated through the modernization of police staff operations.

The adoption of a microfilm system for the storing and retrieval of police records has proven its worth in improving the operational efficiency of the police department. The final evaluation report of a recently completed microfilm program by the _____ Police Department states:

... the (program) has been a success ... Generally, the conversion from a full sized paper filing system to a microfilm system has had fewer problems than anticipated.

The system has made all police reports immediately available and, our loss factor, once a major problem, no longer exists. These files, so necessary for the successful investigation of offenses, are always immediately available to the investigator for quick reference.

Badly needed floor space has been recaptured ... This has enabled us to physically relocate additional personnel into the Record Bureau from the temporary office space they occupied for two years. As a result, morale and production has improved. We fully expect to regain even more space in the future.

In summary, we feel that this (program) has enabled us to establish a record system which is efficient, accurate and reliable. (p. 6)

Based upon the abovementioned considerations and upon the fact that this program fits into the regional plan, staff recommends a "Go Fund" decision on this project.

Application is hereby made for a grant under Section 301(b) of the Omnibus Crime Control and Safe Streets Act of 1968 (PL 90-351) in the amount and for the purposes set forth in this application.

(Official Use)

1. Short Title of Project: (Do Not Exceed One Typed Line)

Police Records Transition to Microfilm Jackets

2. Grant Application: (Check one)

Original Revision Continuation of Grant No. _____

3. Region

VII South

4.

5. Grantee Contribution

\$ 8,611

\$ 2,870

6. Total Project Cost

\$ 11,481

7. Duration of Project

10-1-71 to 9-30-72

8. Applicant or Implementing Agency or Government Unit:

(Name, address and telephone)

City of Madera
205 West 4th Street
Madera, California 93637
(209) 674-8802

9. Project Director: (Name, title, address and telephone)

W. Horace Dowell
Chief of Police
205 West 4th Street
Madera, California 93637
(209) 674-5611

10. Financial Officer: (Name, title, address and telephone)

Norman J. Wintermeyer
Director of Finance
205 West 4th Street
Madera, California 93637
(209) 674-8802 Ext. 53

11. Official Authorized to Sign Application: Type name, title, address and telephone)

William J. Venturi (209) 674-8802
Mayor
205 West 4th Street
Madera, California 93637
Signature

12. Project Summary: Summarize, in approximately 200 words, the most important parts of the statement of project plan presented in application, briefly covering project goals and program methods, impact, scope and evaluation. This project will provide for purchase of microfilm equipment, microfilm jackets, and enough film to reduce all of the Madera Police Department's records to microfilm. The Department's clerical staff will then microfilm the records, place the film into microfilm jackets (one jacket for each old file) and then refile the jackets in the same numerical order that the old files were in. Once this process has been double-checked for accuracy, the old paper records will be destroyed. A duplicate copy of the file will be processed and stored on rolls at a remote location.

This project has three goals: 1. To reduce substantially the space now needed for filing records; 2. To reduce the incidence of crime by improving the operational efficiency of the Department i.e. by reducing from 10% to 90% the time needed to recall records, and by reducing the possibility of suspects avoiding arrest due to the extreme time and difficulty required to search for records; 3. To eliminate the serious hazard of loss of records due to fire, bombing, accidental destruction, or natural disaster.

13. Index -- Please Indicate Respective Page Numbers

Project Summary	2	Problem Background	8
Detailed Project Budget	3	Project Objectives	9
Project Narrative	5	Achieving the Objectives	10
Project Representation of Costs	6	Schedule of Work	12
Other Sources of Funding	6	Project Evaluation	14
???	7	Appendix	

14. BUDGET SUMMARY FOR GRANT PROJECT

BUDGET CATEGORY	TOTAL FIRST YEAR*			TOTAL SECOND YEAR*			TOTAL THIRD YEAR*		
	TOTAL	GRANT FUNDS	MATCHING FUNDS	TOTAL	GRANT FUNDS	MATCHING FUNDS	TOTAL	GRANT FUNDS	MATCHING FUNDS
PERSONAL SERVICES	2,870		2,870						
TRAVEL									
CONSULTANT SERVICES									
SUPPLIES & OPERATING EXPENSES	3,550	3,550							
EQUIPMENT	5,061	5,061							
TOTAL PROJECT COST	11,481								
GRANT FUNDS REQUESTED		8,611							
GRANTEE CONTRIBUTION			2,870						

*Budget should be based on a grant year. (12 month or shorter period if the project is less than 12 month) other than calendar year or fiscal year.

DETAILED PROJECT BUDGET

BUDGET CATEGORY	TOTAL	GRANT FUNDS	MATCHING FUNDS	
			CASH	IN-KIND
15. Personal Services				
A. Salaries One dispatcher-clerk 836 hours at \$2.87 hr. over a one year period this is 40% of one dispatcher- clerk's time.	\$ 2,400			\$ 2,400
B. Employee Benefits	470			470
TOTALS	2,870			2,870

16. Travel

None				
TOTALS				

17. Consultant Services

None				
TOTALS				

CONTINUED

3 OF 4

BUDGET CATEGORY	TOTAL	GRANT FUNDS	MATCHING FUNDS	
			CASH	IN-KIND
18. Supplies and Operating Expenses				
Microfilm 253 rolls (2500 images per roll) at \$5.45 per roll. Price includes processing and tax of .27 per roll	\$ 1,450	1,450		
Microfilm Jackets 20,000 jackets at \$.10 per jacket and tax of .005 per jacket	2,100	2,100		
TOTALS	3,550	3,550		
19. Equipment				
1. Microfilm Recorder \$1495 + tax	1,570	1,570		
1. Jacket Reader/Filler \$1350 + tax	1,417	1,417		
1. Reader/Printer \$1675 + tax	1,759	1,759		
1. 8 Drawer Microfilm file cabinet \$300 + tax	315	315		
TOTALS	5,061	5,061		
20. TOTAL PROJECT COST	11,481	8,611		2,870
21. Percent of Total Project Cost	100%	75%		25%

22. Budget Narrative: Begin below and use as many continuation pages (numbered 5-A, 5-B, etc.) as may be necessary to relate the items budgeted to project activities and complete the required justification and explanation of the project budget. Explain the sources the grantee will utilize for its matching contribution. Enumerate those proposed expenditure items that require prior approval, as specified in Bureau of the Budget Circular A-87, and in CCCJ Fiscal Affairs Manual, so prior approval may be considered at the time application is made.

Section 15 A.

The most difficult and time-consuming portion of this project will be the transition from paper records to microfilm. Some of this work will be done by individuals sent to us for work training and experience by other agencies (Neighborhood Youth Corps, Department of Human Resources Development, Welfare Department, and Madera Employment Training Center.) The time of these individuals will not be a project cost for either grant or matching funds, since their time is donated by the agencies. However, a substantial amount of time will have to be spent by Police Department personnel in microfilming, jacket filling, and records destruction throughout the life of the project. Furthermore, substantial time will be required in training and supervising the individuals from the other agencies. In addition, their work will have to be carefully double checked to ensure complete accuracy. We estimate that during the one year project period approximately 836 hours of one dispatcher-clerk's time will be spent on the project. This will be approximately 40% of her time. The hourly rate for a Dispatcher-Clerk is \$2.87. $\$2.87 \times 836$ hours equals \$2400.

Section 15 B.

We measure our fringe benefits at between 19% and 20% of base salary. This amounts to about \$470, based on our salary costs of \$2400.

$\$2400 + 470$ equals \$2870, our total for the Personal Services budget category. This will be entirely in kind matching funds.

Section 16.

We will incur no travel costs for this project.

Section 17.

We will incur no consultants costs for this project.

Although it is of course impossible to count the precise number of documents to be microfilmed, we have made what we believe to be a reasonably accurate estimate of 316,000 documents. Each roll of microfilm will yield approximately 2,500 images. Thus we will need 126 - 127 rolls of microfilm for our basic record files. To ensure against loss and to provide records security, one copy will be made of each image. Thus, we will need 253 rolls of microfilm to provide two microfilm images of each document.

Microfilm costs \$5.45 per roll. This price includes processing and mailing. Adding tax of .27 per roll, the cost for 253 rolls will be about \$1,450.

Microfilm Jackets -- A jacket is a paper thin 4" x 6" transparent plastic container. All the documents in each file will be placed in one jacket. We have approximately 20,000 files; thus we will need 20,000 jackets. Jackets cost 10¢ each plus tax. 20,000 x 10.5 equals \$2,100.

\$1,450 + 2,100 equals \$3,550 total cost for the supplies and operating expenses category. All of this total will come from grant funds.

Section 19.

Our proposed microfilm system will require four pieces of equipment:

1. A microfilm recorder (camera). With this recorder, the operator will film each separate document. The film exposed by the recorder will be sent away for processing. Cost -- \$1,495 plus tax, or \$1,570.
2. A jacket reader-filler. This equipment enables the operator to remove from the processed microfilm roll the documents which came from each file and place them into a jacket.
3. A reader printer. This equipment enables department personnel to display on a viewing screen any microfilmed document which they need to read. A hard paper copy can be made from the filmed document if needed. Cost -- \$1,675 plus tax, or \$1,759.
4. An 8 drawer microfilm file cabinet. This is needed to hold 20,000 jackets, plus provide room for growth. Cost -- \$300 plus tax, or \$315.

The total equipment cost will be \$5,061. All of this total will come from grant funds.

The total project cost will be \$11,481. Seventy-five percent of this is \$8,611 which is our grant request. Our 25% matching funds will be \$2,870. All of this will be in-kind matching funds. The personnel who will provide the in-kind services are current employees of the Madera Police Department.

10	11,481	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	100%
9	10,333													90%
8	9,185													80%
7	8,037													70%
6	6,888													60%
5	5,741													50%
4	4,592													40%
3	3,444													30%
2	2,296													20%
1	1,148													10%
														0%

24. Other Sources of Funding

DATE	AGENCY REQUESTED	FUNDS REQUESTED	STATUS OF REQUEST
	N.A.		

RESOLUTION NO. 2492

RESOLUTION AUTHORIZING APPLICATION FOR GRANT OF FUNDS FOR MATCHING GRANT UNDER THE OMNIBUS CRIME CONTROL AND SAFE STREETS ACT OF 1968

WHEREAS, Section 301(b) of the Omnibus Crime Control and Safe Streets Act of 1968 (PL 90-351) provides for grants of matching funds to eligible applicants for approved projects; and

WHEREAS, the City of Madera desires to make application therefore for the purpose of obtaining microfilming of law enforcement records; and

WHEREAS, in the event a grant is received, the same will not be used to supplant ongoing law enforcement expenditures; and

WHEREAS, in the event a grant is received, the City of Madera will provide matching funds for said project;

NOW, THEREFORE;

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF MADERA as follows:

The Mayor is hereby authorized and directed to execute an application for grant of funds for law enforcement purposes to acquire a matching grant for obtaining microfilm equipment under Section 301(b) of the Omnibus Crime Control and Safe Streets Act of 1968 (PL 90-351).

The Madera Police Department has one major problem with its records system. There are too many records and not enough space to store them. There are three serious consequences of this problem.

1. Records overflow the building. They are stored in hallways, closets, and an old shed behind the station. Every available nook and cranny is used for storage, and, needless to say, the situation worsens every day.
2. Records retrieval is very slow and very difficult. It takes between 10 and 15 minutes for a clerk to find one record, dig it out, read it, return it to the file, and return to her desk. When the record is stored in the shed, she must request the assistance of an officer to lift the heavy boxes of records away until she reaches the one she needs. In this event, records retrieval can take as long as one-half hour.

As bad as this situation is, at night and on weekends records retrieval is impossible. There is only one dispatcher-clerk in the building after office hours. Thus if a record is needed which is not in the immediate vicinity, the dispatcher-clerk is simply out of luck. Retrieval must wait until the following workday. The possibility is always present that a suspect will avoid arrest simply because we were unable to search and locate records in a timely manner. Our records system actually hinders, rather than helps, our ability to effectively enforce laws.

3. Records security is very poor. The Police Station is a condemned building. While the obvious solution to this is to build a new station, in the interim, the records are highly vulnerable to loss due to fire, bombing, or natural disaster. The records stored in the shed would be particularly vulnerable to fire and bombing. Loss of any of these records would truly be a crippling blow to the Department's effectiveness.

The seriousness of the Department's records problem should not be underestimated. An effective records system is at the heart of modern, efficient, law enforcement. We cannot hope to significantly reduce the incidence of crime in our city with such a cripplingly inefficient records system.

Each of these consequences by themselves would be cause for corrective action. Taken collectively they present a crisis in our records system which must be resolved.

READ CAREFULLY !!!

PROJECT OBJECTIVES

Simply stated, our objective is to improve our Department's ability to combat crime by providing it with a highly essential tool in that fight: an efficient, secure records system. By ensuring close, fast, and secure records retrieval our Department will have readily available the information it must have to reduce the incidence of crime.

To do this, we will accomplish the following goals:

1. Substantially reduce the volume of space needed to store records. Records storage in the old shed will be stopped and never resumed. The files in the hallway and other inappropriate places will be eliminated. Records storage will be limited to the central dispatching office. The combined total of all microfilmed records, in their jackets, will easily fit into this office with plenty of room for growth.
2. Reduce the amount of time needed to retrieve any record to a minute or two at the most. All records will be easily available, at any time, in one central area. Being right at the fingertips of the Dispatcher-Clerks, the records will be more frequently and more effectively used. No one will have to leave the central office, and all inquiries requiring reference to records will be handled speedily and efficiently. We will thus eliminate the possibility that a suspect might go free simply because of our inability to search for his records.
3. Enjoy virtually complete records security. Records will be removed from the cardboard boxes in the shed and put into the central office. This office is more secure from fire and bombing. Furthermore, since the microfilm jackets will be stored in metal file cabinets, they will have greater protection in the event these disasters occur.

The best measure of security, however, will be provided by virtue of the duplicate rolls of film. These rolls will be kept under lock and key at a remote location. In the event of loss of the primary microfilmed records, for whatever reason, every record will be readily available for duplication. Nothing more than a temporary inconvenience will be suffered.

ACHIEVING THE OBJECTIVES

The procedure to be followed will be to film all documents, place the processed film into microfilm jackets in the same order that the corresponding paper documents were previously filed, and destroy the paper documents.

Microfilming is a tried and tested method of dealing with police records. Many law enforcement agencies throughout the country have used microfilming and most have enjoyed substantial improvements in dealing with their records. To our knowledge, there is no other practical method available which can effectively resolve any one of our three problems, not to mention all of them together. Any solution must very substantially reduce the amount of space needed to store records so that they can be used and protected. Microfilming, simply and surely, does just that.

The specific method of filing and storing our microfilm records, that of the use of microfilm jackets, is relatively new and untested. Jackets are a recent refinement to the microfilm process and as a result have not been adopted by law enforcement agencies. We believe that there is a tremendous potential for microfilm jackets in law enforcement, but more important we believe that they constitute the single best solution to our specific problems.

As indicated elsewhere in the application, a jacket is a paper thin 4" x 6" transparent plastic container. It has 5 slots running horizontally, into each of which as many as 12 microfilm images are placed. At the top is a narrow strip of paper onto which is typed the case file or arrest file number. Since most files contain far fewer than 60 documents, this allows plenty of room in each jacket for additional documents which must be added when the case is re-opened or the individual is re-arrested.

This approach has three advantages over other microfilm systems.

1. The records are unitized. All of the records relating to one case or one individual are in one place for fast, easy reference and comparison. Traditional microfilm systems would have records separated onto several different rolls after the initial microfilming.
2. Updating records is quick and easy. When a new document is to be added, the jacket is pulled from the file, the new film is nipped from the roll and is inserted into the jacket at the end of the most recent row of documents. There is no confusion concerning which document goes where, nor any necessity for cross-referencing to ensure that microfilmed records aren't lost in the middle of a roll. Each record is easily found and filed.



3. Records retrieval could not be faster or easier. The jacket is pulled from the file and placed onto the reader-printer where the image is automatically displayed. With traditional microfilm systems you would have to put the roll of film onto the reader-printer and search the roll until you found the needed record. Even if records were carefully indexed this could be a very time consuming process. Further, when updated records had to be located on another roll, the time would be magnified.

Jackets, which are filed in much the same manner as paper files, are easy to find in the files. Once found, the unitized records are easy to locate, display, and return to the jacket drawer. The strategy of using microfilm jackets is the only one that will allow us to reduce records storage space to manageable size and at the same time ensure that records updating and retrieval are speedy and effective.

STATEMENT OF WORK

The tasks to be undertaken by this project, in order, are:

1. Purchase of equipment and supplies. Much of the investigation and analysis, needed to ensure that we purchase the best equipment and supplies at the lowest reasonable cost, has already been done. At the beginning of the project a decision will be made regarding which brands will be purchased. After making our order, no more than one month should be required for delivery.
2. After receipt of the equipment and supplies we will enter the transition phase. The Dispatcher-Clerk assigned to the project, assisted by the donated clerical help from the other agencies, will microfilm each document in each file. Beginning with the oldest records, they will ensure that all of the documents in a file are filmed in consecutive order.

When the processed film is returned from the Company, the transition workers will place the film roll in the reader-filler. By viewing the images displayed on the screen, they will find all of the documents relating to a specific case or individual (since the documents in each paper file were filmed as a group consecutively, this task will not be as difficult as it seems). The machine will then snip the filmed documents from the roll and fill the jacket with them. The operator will then type the case or arrest number on the top of the jacket. The jacket will be filed in the metal file, ready for subsequent use.

The next step in the transition process will be to double check the security roll which will be returned to the department at the same time as the roll slated for use in the jackets. When the security roll has been checked for completeness it will be sent to the remote location for safekeeping.

The final step, taken only after the jackets are ready for use and the security roll is under protection, will be to destroy the paper records.

We estimate that the transition task will require eleven months. The project as a whole should be completed in one year.

It should be noted here that not all of the microfilm will be purchased at once. Due to problems of film aging we will purchase only one-half of our film needs at the beginning of the year. The remainder will be purchased when the original supply runs low, about half way through the project.

Regarding staffing, one Dispatcher-Clerk will spend about 40% of her time during the year with this project. The donated clerical help will provide 60-80 hours each week for the project.

Project progress will be reported in terms of the number of paper records filmed and destroyed. We expect a steady rate of progress throughout the year.

PROJECT EVALUATION

Evaluation of a project such as this will be relatively simple and straight forward. Related to our objectives, evaluation will be as follows:

1. The first objective is to eliminate records storage in all inappropriate places and put them all in the central office. Simple visual observation will confirm whether or not we have done this.
2. The second objective is to reduce records retrieval to 2 minutes maximum. To measure this, we will time our Dispatcher-Clerks starting with the records search and ending with the desired record displayed on the reader-printer. This will be done periodically throughout the project. However, it cannot be done successfully until the transition has been completed, since the true test will require the Dispatcher-Clerk to find the proper jacket file amidst all of the jacket files, remove it, and display it. A detailed log of these time measurements will be kept.
3. The third objective, records security, will of course be very difficult to measure except insofar as it relates to the first objective. Achieving the first objective will by definition achieve the first measure of security - having all the records in one protected place. The second measure of security, i.e. the duplicate roll of microfilm kept under lock and key at a remote location, will be a simple, observable fact.

When the transition has been completed a comprehensive study of the project will be prepared. This study will include, but not be limited to, the following subjects:

1. A report on the quality and usefulness of the equipment and supplies used.
2. A report on the time required to complete the project. This will be broken down into several sub-areas, including times needed for filming, jacket-filing, jacket filing, records destruction, and total project time required.
3. A report on any unusual difficulties encountered during the transition.
4. The time-measurement log on records retrieval.
5. Finally, and most importantly, we will evaluate our improved operational efficiency in regard to our ability to process arrests and handle suspects. The criterion will be: has the greater efficiency improved our ability to reduce the incidence of crime in Madera.

The study will be made available to anyone interested.

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