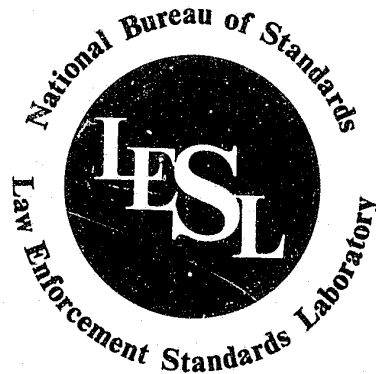


**EQUIPMENT SYSTEMS IMPROVEMENT PROGRAM  
STANDARDS AND GUIDELINES GROUP**

**MARCH 1974**

**Progress Report of the  
LAW ENFORCEMENT STANDARDS LABORATORY**



**Prepared for the  
National Institute of Law Enforcement and Criminal Justice  
Law Enforcement Assistance Administration  
U.S. Department of Justice**

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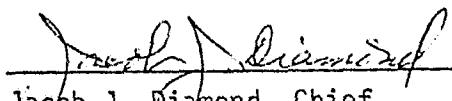
LAW ENFORCEMENT STANDARDS LABORATORY

March 1974 Progress Report

Submitted to:

National Institute of Law Enforcement  
and Criminal Justice

Approved by:

  
\_\_\_\_\_  
Jacob J. Diamond, Chief  
Law Enforcement Standards Laboratory

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## EXECUTIVE SUMMARY

### A. Major Accomplishments

1. The LESL anti-burglary, door security project received further exposure in the media on two occasions. A two-minute spot was produced by John Harter and shown on WMAL-TV (Channel 7) on March 12; a highlight of the spot was an interview with Charles R. Work, Deputy Administrator of LEAA. On March 29, Geoffrey Alprin, Director of the NILECJ Office of Research Programs, was featured on a similar program taped by the General Electric TV Network. This was part of a larger program featuring the work of the NILECJ Equipment Systems Improvement Division, and included an interview with Donald E. Santarelli, Administrator of LEAA.
2. LESL completed the proposed NILECJ report on "Repeaters for Law Enforcement Communication Systems" and submitted it to NILECJ with the recommendation that it be published as LESP-RPT-0206.00.
3. LESL completed the proposed NILECJ report on "Comparative Life Cycle Cost Techniques Applicable to Law Enforcement Facilities" and submitted it to NILECJ with the recommendation that it be published as LESP-RPT-0701.00.
4. The report entitled, "LEAA Police Equipment Survey of 1972, Volume 7: Patrolcars", has been completed and submitted to NILECJ with the recommendation that it be published as LESP-RPT-0007.00.

### B. Major Project Changes

None.

### C. Project Highlights

1. Wilbur Rykert, Director of the LEAA-sponsored National Crime Prevention Institute (NCPI) of the University of Louisville School of Police Administration, visited LESL on March 28, together with Luke Gallant, of the LEAA Office of National Priority Programs, and Lester Shubin. Tentative arrangements were made to channel LESL documents and data through the NCPI to its many students and graduates in State and local law enforcement agencies. This is seen as a highly effective and rapid means of putting to immediate practical use the results of LESL's efforts relevant to crime prevention.

2. William I. Martin, Jr., Assistant to the Director of the Texas Municipal League, met with LESL and expressed his intention to prepare for Texas anti-burglary legislation based on the burglar alarm and door/window security standards being developed by LESL. This is typical of many similar expressions of interest and intent which have reached NBS and LEAA such as those from Montgomery County, Maryland; Washington County, Oregon; Fremont, California; and the New Zealand Embassy.
  3. Deputy Chief Arthur R. Rice and Lieutenant Donald Lyon of the Ottawa Police Force spent the week of March 25-29 at LESL being briefed on all aspects of the programs, accomplishments and plans of the Laboratory.
  4. A total of twenty milestones was achieved by twenty documents during the month. A listing of these documents and the milestones achieved is attached. The current status of all NILECJ/LESL documents is given in the attached status report and is tabulated in the statistical summary.
  5. The following documents were transmitted to NILECJ for printing, either as final drafts or as negatives: the NILECJ Standards for mechanical switches, mercury switches, mobile radio antennas, and walk-through metal weapon detectors; and the NILECJ Reports on NVD test methods, image quality criteria for NVDs, tests for NVD objective lenses, on image quality criterion for face identification, and voice scramblers.
  6. First drafts were prepared of a report on a digital communications experiment and the proposed standards for mobile radio connectors and cables, ballistic helmets and face shields.
  7. Laboratory work leading to a standard for handheld transceivers was completed, as was the work leading to a voice scrambler guideline and a report on an evaluation of voice scrambler techniques; laboratory work for a standard for audio recorders for courtroom use was initiated.
- D. Major Problems
- None.
- E. Funding Status
- See the attached charts and graphs, which are cumulative to March 16.
- F. Conformance With Plan
- The overall program is essentially in conformance with plan.

DOCUMENTS COMPLETED BY LESL

FY-74

1. Standard for Portable Ballistic Shields; NILECJ-STD-0103.00.
2. Standard for Mercury Switches for Burglar Alarm Systems;  
NILECJ-STD-0303.00.
3. Selection and Application Guide to Fixed Surveillance Cameras;  
NILECJ-GUIDE-0301.00.
4. LEAA Police Equipment Survey of 1972, Volume 1: The Need for  
Standards - Priorities for Police Equipment; LESP-RPT-0001.00.
5. LEAA Police Equipment Survey of 1972, Volume 7: Patrol Cars;  
LESP-RPT-0007.00.
6. Report on Voice Privacy Equipment for Law Enforcement  
Communication Systems; LESP-RPT-0204.00.
7. Automatic Vehicle Location Techniques for Law Enforcement Use;  
LESP-RPT-0205.00.
8. Repeaters for Law Enforcement Communication Systems;  
LESP-RPT-0206.00.
9. Digital Communication Equipment for Law Enforcement Use;  
LESP-RPT-0208.00.
10. Report on an Image Quality Criterion for the Identification of  
Faces; LESP-RPT-0303.00.
11. Report on Simplified Procedures for Evaluating the Image Quality  
of Objective Lenses for Night Vision Devices; LESP-RPT-0304.00.
12. Terms and Definitions for Police Patrol Cars; LESP-RPT-0401.00.
13. Comparative Life Cycle Cost Techniques Applicable to Law  
Enforcement Facilities; LESP-RPT-0701.00.

14. Assessment of Clothing for Law Enforcement Officers.
15. Law Enforcement Facilities: Literature Search.
16. NILECJ Transceiver Evaluation.

## MILESTONES ACHIEVED - MARCH 1974

### STANDARDS

Burglar Alarm Mechanical Switches	Document Prepared for Printing
Burglar Alarm Mercury Switches	" " " "
Mobile Radio Antennas	" " " "
Walk-Through Weapon Detectors	" " " "
Mobile Radio Connectors	First Draft Prepared
Ballistic Helmets	" " "
Face Shields	" " "
Handheld Transceivers	Laboratory Work Completed
Audio Recorders for Courts	Laboratory Work Initiated

### REPORTS

Night Vision Device (NVD) Test Methods	Document Prepared for Printing
Image Quality Criteria for NVDs	" " " "
Tests for NVD Objective Lenses	" " " "
Image Quality Criterion for Faces	" " " "
Voice Scramblers	" " " "
Communications Repeaters	Document Submitted to NILECJ
Building System Life Cycle Costing	" " " "
Police Equipment Survey, Volume 7	" " " "
Digital Communications Experiment	First Draft Prepared
Voice Scrambler Technique Evaluation	Laboratory Work Completed

### GUIDELINES

Voice Scramblers	Laboratory Work Completed
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## STATISTICAL SUMMARY

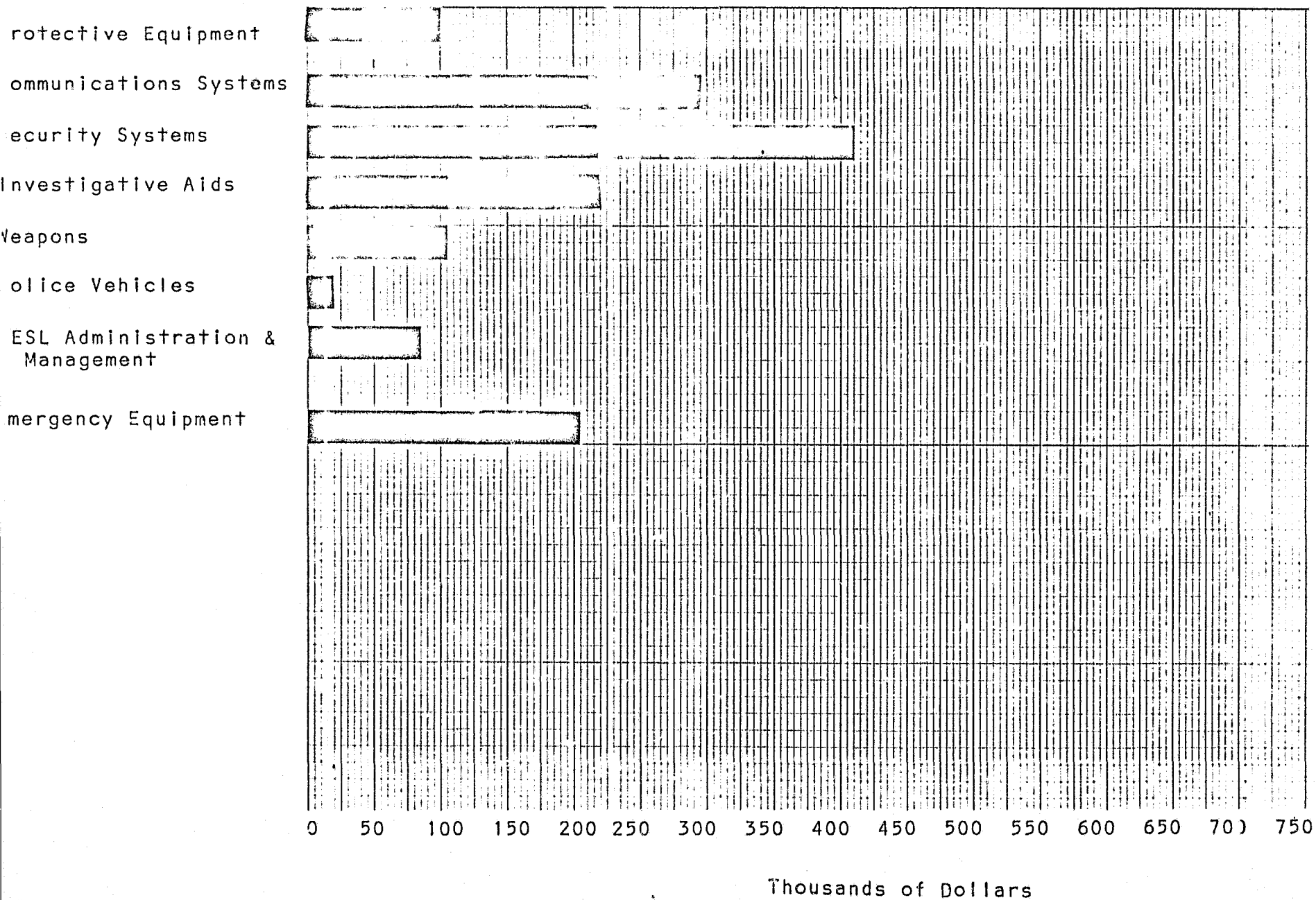
### LESL DOCUMENT STATUS

Milestone #	1	2	3	4	5	6	7	8	9	10	11	Totals
Standards				1	11	6	6	19			8	51
Guidelines	1			2	2	2	1	4	1			13
Reports				2	4	3	4	3	8	1	9	34
Glossaries				1				3			2	6
Materials					1							1
Totals	1	0	0	6	18	11	11	29	9	1	19	105

### LESL DOCUMENTS COMPLETED

Standards	=	8
Guidelines	=	1
Reports	=	18
Glossaries	=	<u>2</u>
Total		29

LAW ENFORCEMENT STANDARDS LABORATORY  
CUMULATIVE OBLIGATIONS BY PROGRAM AREAS  
FY-1974



# STATUS REPORT -- LESL/NILECJ PROJECTS/DOCUMENTS

Documents Under Development	M I L E S T O N E S										
	1	2	3	4	5	6	7	8	9	10	11
Guide - Surveillance Cameras	X	X	X	X	NA	NA	X	X	X		
Guide - Police Photographic Equipment	X	X	X	X	NA	NA	X	X			
Guide - Night Vision Equipment	X	X	X	X	X	X					
Guide - Commercial Alarm Systems	X	X	X	X	NA	NA					
Guide - Residential Alarm Systems	X	X	X	X	NA	NA					
Guide - Door and Window Security	X	X	X	X	X						
Guide - Video Tape Recorders for Courts	X	X	X	X	NA	NA	X	X			
Glossary - Police Photography	X	X	X	X	NA	NA	X	X			
Glossary - Alarm Systems	X	X	X	X	NA	NA	X	X			
Glossary - Physical Security	X	X	X	X	NA	NA					
Catalog - Security Equipment	X	X	X	X	NA	NA					
Directory - Security Resources	X	X	X	X	NA	NA					
Rpt - Test Methods for Night Vision Devices	X	X	X	X	X	X	X	X	X	X	0
Rpt - Image Quality Criteria for Passive NVDs	X	X	X	X	NA	NA	X	X	X	X	0
Rpt - Image Quality Criterion for Face Identification	X	X	X	X	X	X	X	X	X	X	0
Rpt - Test Procedures for Objective Lenses for NVDs	X	X	X	X	X	X	X	X	X	X	0
Std - Mechanical Switches	X	X	X	X	X	X	X	X	X	X	0
Std - Mercury Switches	X	X	X	X	X	X	X	X	X	X	0

## LEGEND

1. Project plan and funding approved by NILECJ.
2. Work description or RFP prepared and issued.
3. Contract negotiated; resources allocated.
4. Work started by project staff.
5. Laboratory work initiated.
6. Laboratory work completed.
7. First draft of document submitted to LESL.
8. Document review initiated by LESL.
9. Document transmitted to NILECJ.
10. NILECJ review completed.
11. Document prepared for printing.

0 Denotes milestones achieved last month.  
X Denotes milestones achieved in prior months.

# STATUS REPORT -- LESL/NILECJ PROJECTS/DOCUMENTS

Documents Under Development	M I L E S T O N E S										
	1	2	3	4	5	6	7	8	9	10	11
Std - Window Foil	X	X	X	X	X	X					
Std - Contact Vibration Sensors	X	X	X	X	X	X	X	X			
Std - Microphone Vibration Sensors	X	X	X	X	X	X					
Std - Audio Sensors	X	X	X	X	X	X					
Std - Motion Detection Sensors	X	X	X	X	X						
Std - Capacitance Proximity Sensors	X	X	X	X							
Std - Manual Alarm Actuators	X	X	X	X	X						
Std - Alarm Annunciators	X	X	X	X	X						
Std - Passive Portable Night Vision Devices	X	X	X	X	X	X	X	X			
Std - Active Portable Night Vision Devices	X	X	X	X	X	X	X	X			
Std (Interim) - Door Security	X	X	X	X	X	X	X	X			
Std (Interim) - Window Security	X	X	X	X	X	X					
Std - Door Security	X	X	X	X	X						
Std - Window Security	X	X	X	X	X						
Std - Handcuffs	X	X	X	X	X	X	X	X			

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	1	2	3	4	5	6	7	8	9	10	11
Guide - Audio Tape Recorders for Courts	X	X	X	X	NA	NA	X	X			
Guide - Voice Scramblers	X	X	X	X	X	0					
Glossary - Communications Equipment (Revision)	X	X	X	X	NA	NA	X	X			
Rpt - Voice Privacy Equipment	X	X	X	X	X	X	X	X	X	X	0
Rpt - Evaluation of Voice Privacy Techniques	X	X	X	X	X	0					
Rpt - Car Location Systems	X	X	X	X	NA	NA	X	X	X		
Rpt - Communications Repeaters	X	X	X	X	X	X	X	X	0		
Rpt - Mobile Digital Communications	X	X	X	X	NA	NA	X	X	X		
Rpt - Mobile Digital Communications Experiment	X	X	X	X	X	X	0				
Rpt - Undercover Communications	X	X	X	X	X	X	X	X			
Std - Base Station Transmitters	X	X	X	X	X	X	X	X			
Std - Mobile Transmitters	X	X	X	X	X	X	X	X			
Std - Personal Portable Transmitters	X	X	X	X	X	X	X	X			
Std - Base Station Antennas	X	X	X	X	X	X	X	X			
Std - Mobile Antennas	X	X	X	X	X	X	X	X	X	X	0
Std - Base Station Receivers	X	X	X	X	X	X	X				
Std - Mobile Receivers	X	X	X	X	X	X	X	X			
Std - Personal Portable Receivers	X	X	X	X	X	X	X				

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	1	2	3	4	5	6	7	8	9	10	11
Std - Handheld Transceivers	X	X	X	X	X	0					
Std - Batteries for Handheld Transceivers	X	X	X	X	X	X	X	X			
Std - Connectors and Cables	X	X	X	X	X	X	0				
Std - Fixed Communications Repeaters	X	X	X	X	X						
Std - Audio Tape Recorders For Courts	X	X	X	X	0						
Std - Body-Worn Transmitters	X	X	X	X	X						
Rpt - NILECJ Transceiver Evaluation	X	X	X	X	X	X	X	X	X		
Compendium - Headlight Glass Characteristics	X	X	X	X	X						
Compendium - Auto Paint Colors	X	X	X	X	X						
Rpt - Forensic Materials	X	X	X	X	NA	NA	X	X			
Std - Walk-Through Metal Weapon Detectors	X	X	X	X	X	X	X	X	X	X	0
Std - Handheld Metal Weapon Detectors	X	X	X	X	X	X	X	X			
Std - X-Ray Systems for Bomb Disarmament	X	X	X	X	X	X	X	X			
Std - Screening X-Ray Systems	X	X	X	X	X	X	X	X			
Std - Trace Vapor Detectors	X	X	X	X	X						
Std - Narcotic TLC Test Kits	X	X	X	X	X	X					

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	M I L E S T O N E S										
	1	2	3	4	5	6	7	8	9	10	11
Documents Under Development											
Std Method - Gunshot Residue Detection	X	X	X	X	X						
Std Samples - Refractive Index Glasses	X	X	X	X	X						
Std - Narcotic Spot Test Kits	X	X	X	X	X	X	X	X			
Laboratory Evaluation Criteria	X	X	X	X	NA	NA	X				
Guide - Hearing Protectors	X	X	X	X	X	X	X	X			
Std - Riot Helmets	X	X	X	X	X	X	X	X			
Std - Crash Helmets	X	X	X	X	X	X	X	X			
Std - Ballistic Helmets	X	X	X	X	X	X	0				
Std - Handheld Ballistic Shields	X	X	X	X	X	X	X	X	X	X	X
Std - Face Shields	X	X	X	X	X	X	0				
Std - Gas Masks	X	X	X	X	X	X	X				
Std - Hearing Protectors (Revision)	X	X	X	X	X						
Std - Police Body Armor (Revision)	X	X	X	X	X						
Guide - Police Handgun Ammunition	X	X	X	X	X						
Guide - Tear Gas Devices	X										

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	1	2	3	4	5	6	7	8	9	10	11
Guide - Flashing Lights and Sirens	X	X	X	X	NA	NA	X				
Rpt - Flashing Light State of the Art	X	X	X	X	X	X	X	X			
Rpt - Flashing Lights	X	X	X	X	X						
Rpt - Sirens	X	X	X	X	X	X	X				
Std - Flashing Lights	X	X	X	X	X	X	X	X			
Std - Sirens	X	X	X	X	X	X	X	X			
Rpt - Building System Life Cycle Costing	X	X	X	X	NA	NA	X	X	0		
Rpt - Building System Annotated Bibliography	X	X	X	X	NA	NA	X	X	X		
Rpt - Police Clothing	X	X	X	X	X	X	X	X	X		
Rpt - Anthropometry of Law Enforcement Officers	X	X	X	X	X						
Glossary - Police Patrol Cars	X	X	X	X	NA	NA	X	X	X	X	X
Rpt - Police Patrol Car Life Cycle Costing	X	X	X	X	X	X	X				
Rpt - Police Patrol Car State of the Art	X	X	X	X	X	X	X				

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March 1974 Progress Report  
Security Systems  
Lawrence K. Eliason, Program Manager

1. Intrusion Detection Sensors

a. Standard for Mechanical Switches

Negatives of the standard were submitted to NILECJ this month. This completes the project.

b. Standard for Contact Vibration Sensors

Project review of the preliminary draft continues. It is anticipated that the document will be submitted to LESL next month.

c. Standard for Window Foil

Preparation of the preliminary draft continues.

d. Standard for Audio Sensors

Minor changes to the preliminary draft resulting from project division review have been completed. Formal submission to LESL is expected next month.

e. Standard for Microphone Vibration Sensors

The preliminary draft has been completed and project division review initiated. Formal submission to LESL is expected next month.

f. Standard for Motion Detection Devices

A formal program review was held with the MERDC project staff. The testing phase continues, with bi-weekly progress meetings scheduled for the remainder of the program.

g. Standard for Manually Activated Silent Alarms

The testing phase continues.

h. Standard for Capacitance Proximity Sensors

The literature review and survey of existing standards and commercially available products continues.

2. Standard for Police Annunciators

The laboratory work continues.

3. Guides for Burglar Alarm Systems

a. Terms and Definitions

Typing of the revised draft for submission to the NBS Editorial Review Board continues.

b. Selection Guide for Commercial Alarm Systems

Preparation of the preliminary draft continues.

c. Selection Guide for Residential Alarm Systems

Review of the literature continues.

4. Catalog of Security Equipment and Directory of Security Resources

Preparation of preliminary draft product descriptions for the catalog continues. Product categories review, and product assignment within each category continues, to increase the selection utility when identifying product sources for specific applications. Preliminary product listing assignments were too general in some cases, too specific in others.

Preparation of rough drafts for security resources listings continues, and the document format development was initiated.

5. Night Vision Systems

a. Standards for Portable Night Vision Devices

Revision of the preliminary standard for passive night vision devices continues. The review of the preliminary draft of the standard for active night vision devices continues.

b. Image Quality Requirements Experiment

The final document was transmitted to NILECJ for publication. This completes the project.

c. Objective Lens Test Procedure

The final document was transmitted to NILECJ for publication. This completes the project.

6. User Guide for Night Vision Equipment

The investigation of law enforcement applications of night vision equipment, with emphasis on photographic applications, continues prior to preparation of the preliminary draft.

7. Police Photography

a. Terms and Definitions for Police Photography

Typing of the revised draft continues.

b. Selection Guide for Police Photographic Equipment

LESL review continues.

c. Selection Guide for Fixed Surveillance Cameras

NILECJ review was completed. The final draft is being typed for transmittal to NILECJ.

8. Physical Security Systems for Doors and Windows

a. Standards for Doors and Windows

LESL review of the preliminary draft interim standard for doors continues. Preparation of the preliminary draft of the interim standard for windows continues.

b. Selection Guide for Door and Window Systems

Preparation of the preliminary draft continues.

c. Physical Security Terms and Definitions

Collection and cataloging continues.

9. Restraint Devices

LESL review of the preliminary draft of the standard for metallic handcuffs continues.

10. Courtroom Video Equipment Selection Guide

The first draft of the user guide is being edited and reorganized.

THE UNITED STATES OF AMERICA  
DO hereby certify that

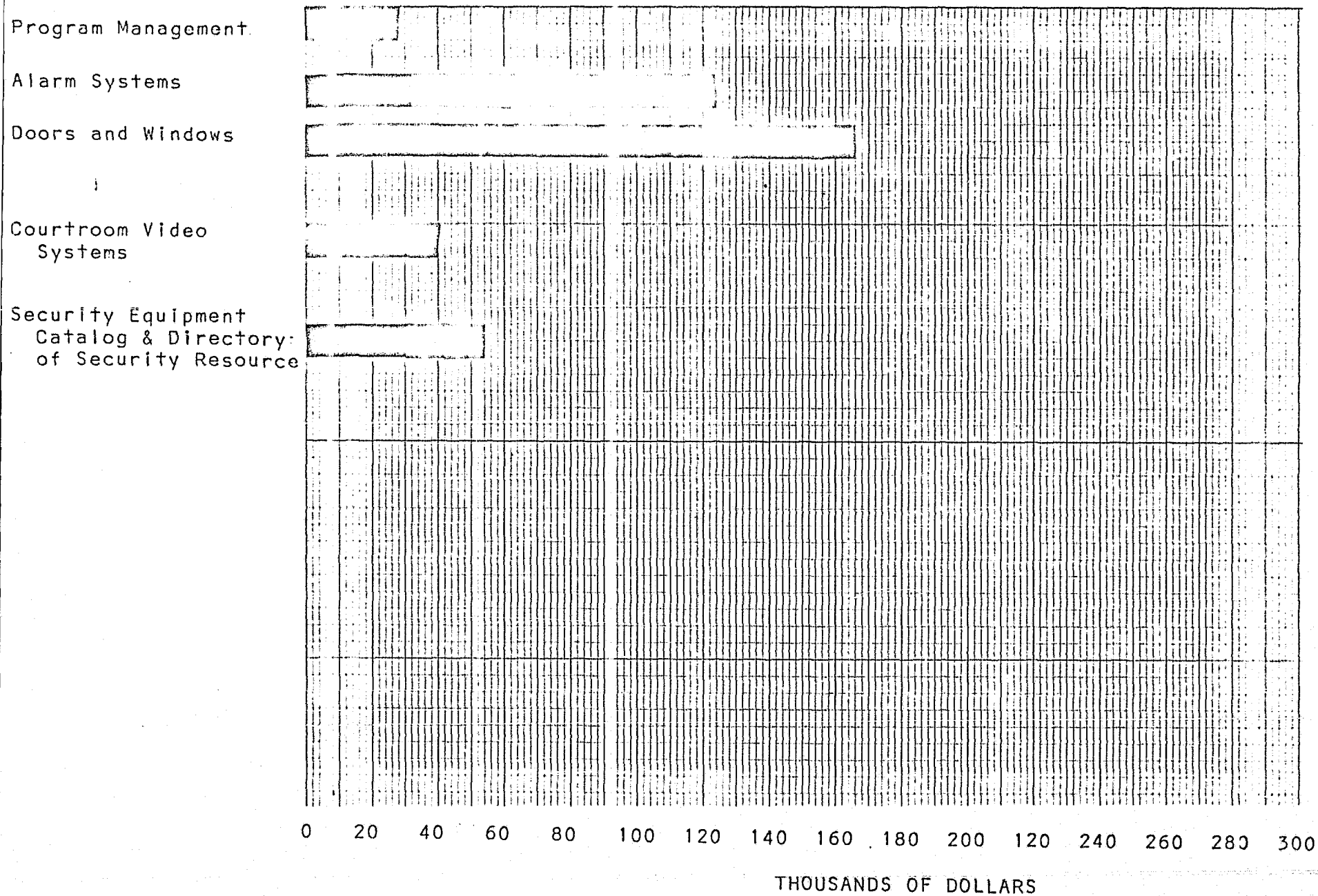
JOHN F. KENNEDY  
is the duly elected President of the United States

for the term of years beginning on January 20, 1961

and ending on January 20, 1965

and that

SECURITY SYSTEMS  
CUMULATIVE OBLIGATIONS--FY-1974



March 1974 Progress Report  
Communications Systems  
Marshall J. Treado, Program Manager

1. Base Stations and Transceivers

a. Standards for Transmitters

The NBS Editorial Review Board proposed a few minor changes to the mobile FM transmitter standard. These have been evaluated and two have been incorporated into the standard, which is being retyped. It is anticipated that this standard will be forwarded to NILECJ for acceptance in April. The fixed and base station FM transmitter standard is being typed prior to submission for editorial review. Government and industry comments are being incorporated into the personal/portable FM transmitter standard.

b. Standards for Antennas

The negatives for the mobile antenna standard were forwarded to NILECJ during March, completing the work on this task. Project personnel are evaluating other test methods for possible use in the fixed and base station antenna standard.

c. Standards for Receivers

The mobile FM receiver standard continues to undergo LESL review.

2. Batteries

The standard on batteries for personal/portable transceivers has been retyped and is being prepared for government and industry review.

3. Voice Scramblers

The report entitled, "Voice Privacy Equipment for Law Enforcement Communications Systems;" has been prepared for printing and was transmitted to NILECJ during March, thereby completing this task.

A second draft of the scrambler guideline was written during March and the test program in support of this guideline was completed. All borrowed and leased equipment has been returned to the manufacturers. Intelligibility and synchronization tests have been conducted on three scramblers. These scramblers were subjected to variations in SINAD, audio bandwidth, ignition noise, audio noise and 180° phase shift. During April, the scrambler guideline will be reviewed by the NBS Editorial Review Board.

4. Car Location Systems

The report on automatic vehicle location systems is being reviewed by NILECJ.

5. Repeaters

The report entitled, "Repeaters for Law Enforcement Communications Systems", was forwarded to NILECJ for review and acceptance during March.

Work on the repeater standard continues. Shielding covers for both transmitter and receiver, which were unavailable from the manufacturer, have been fabricated and installed. Desensitization receiver measurements have been performed at 162.475 MHz. Repeater testing is scheduled to be completed during April.

6. Transceiver Evaluation

All handheld transceiver testing has been completed, and a rough draft of a personal transceiver standard has been completed by project personnel.

7. Terms and Definitions

The document on standard terms and definitions for law enforcement communications continues to undergo LESL review.

8. Components

The draft standard on rf coaxial cable assemblies for mobile transceivers has completed internal review and has been forwarded to LESL.

9. Communications Equipment Used in Undercover Operations

The report on undercover communications equipment is undergoing LESL review.

Tests were conducted during March on a 25-50 MHz transmitter, as work on the standard continued. All tests were completed except for those involving antenna characteristics, which will be done in April. Completion of the standard is being delayed because the promised uhf transmitter has not yet arrived, although it was originally promised for February. However, each time the manufacturer is contacted, he reassures the caller that the transmitter will be sent momentarily. A rough draft of the standard (without the uhf test method) is being prepared.

10. Audio Tape Recorders for Courtroom Use

The guideline for audio tape recorders used in courtrooms is being reviewed by LESL personnel.

Laboratory testing of tape recorders was initiated in March using a modest array of test equipment such as might be found in an austere laboratory. Principal items included an oscilloscope, a sweep frequency generator and selective band-pass filters. Characteristics measured included frequency response, harmonic distortion and tape speed accuracy. Intelligibility testing to determine distortion levels will be initiated in April.

11. Mobile Digital Communications

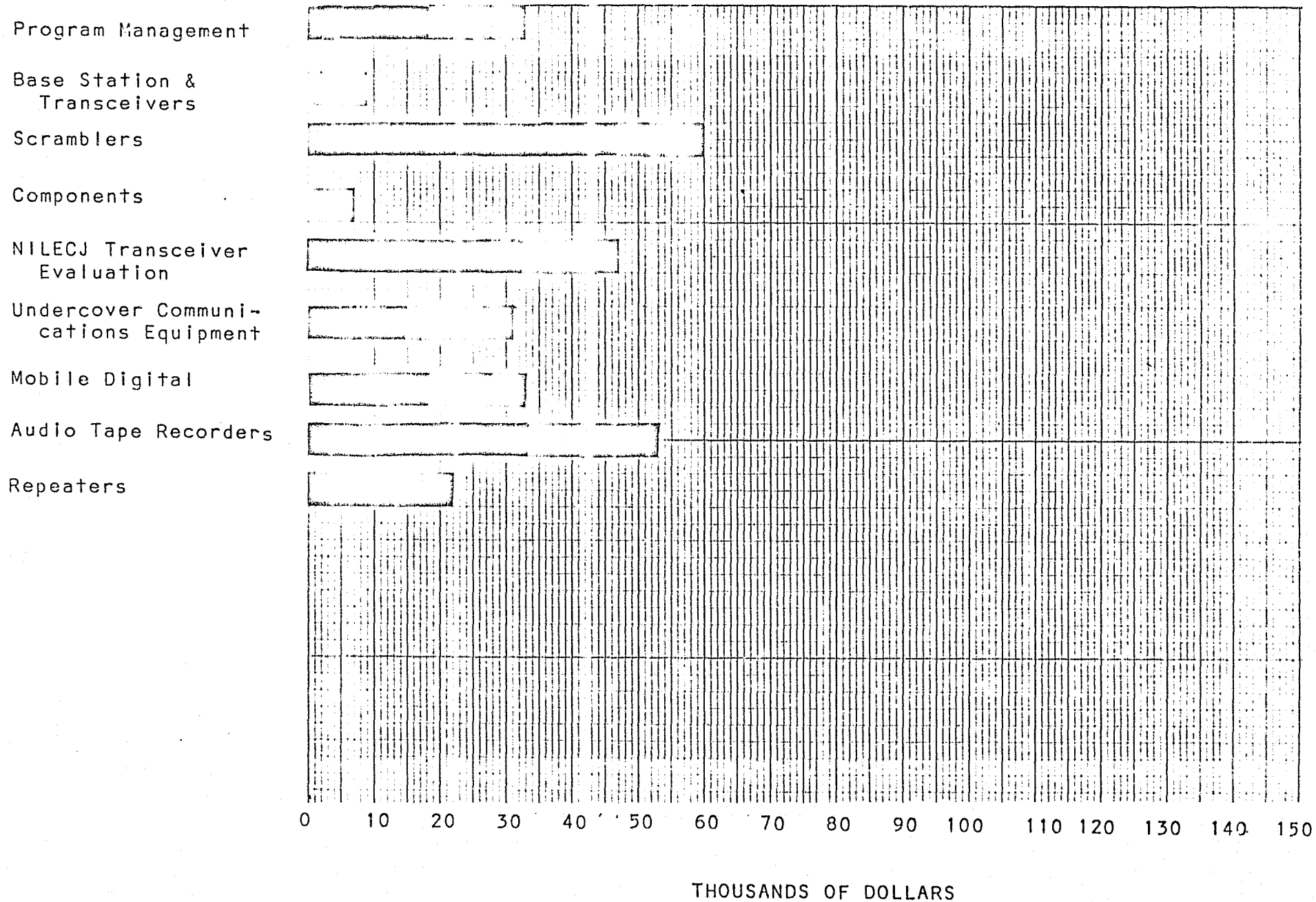
NILECJ requested a reorganization of the mobile digital communications report which will be done as soon as possible.

A draft report on the experimental digital data transmission and reception study conducted in Allegheny County has been received by LESL and is being reviewed. LESL comments will be provided to the contractor in April.



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COMMUNICATIONS SYSTEMS  
CUMULATIVE OBLIGATIONS--FY-1974



March 1974 Progress Report  
Investigative Aids  
Robert Mills, Program Manager

1. Handheld Metal Weapon Detectors

The draft standard for handheld metal weapon detectors has been revised in accordance with suggestions from outside reviewers.

2. Detectors Utilizing X-Rays

a. Bomb Disarmament Equipment

The Bureau of Radiological Health's comments concerning our proposed leakage radiation requirements for bomb disarmament equipment have not yet been received. They promise a letter in a few days.

b. Screening Equipment

The draft standard for screening x-ray systems will be reviewed by LESL after revision of the bomb disarmament standard is complete.

3. Field Narcotic Test Kits

a. Spot Test Type

Revisions are being made in the draft standard for the spot test type of field narcotic kit.

b. Thin Layer Chromatography Type

The first draft of the standard for TLC test kits has been written by the originating division.

4. Gunshot Residue Detection

Gunshot residue wipes are being taken from people who have fired weapons and the results are being compared with data collected earlier from people who had not fired a weapon. A report is being drafted describing the aerosol spray collection technique and the neutron activation analysis method of analysis.

5. Standard Reference Collections of Forensic Materials

The report, "Standard Reference Collections of Forensic Materials" is being reviewed and revised by LESL.

6. Trace Vapor Detectors

Calibration tests for the trace vapor generator for dinitrotoluene should be completed in April.

7. Analytical Techniques in Forensic Science

a. Standard Samples of Refractive Index Glasses

The first 75 sets of glass refractive index standard reference materials will be available in the near future from the NBS Office of Standard Reference Materials at a cost of \$50.00 per set. Another 75 sets are now being calibrated.

b. Compendium of Auto Headlight Characteristics

Refractive index and trace element measurements of auto headlight glasses are being made to obtain population distribution statistics. There is evidence that headlight glass made by Corning prior to 1971 has a refractive index about 0.003 higher than their glass of current manufacturer.

c. Compendium of Auto Paint Colors

Auto paint color chips are being cut for insertion in 2" x 2" slide frames. Plans have been made to make 200 sets of approximately 150 chips per set.

8. Directory of Testing Laboratories

A draft set of criteria for evaluating laboratories interested in testing walk-through metal weapon detectors has been submitted to LESL. A set of criteria is now being developed for laboratories interested in testing mercury switches for burglar alarm systems.

An announcement was sent to three trade magazines and the "Commerce Business Daily" inviting testing laboratories to notify LESL of their interest in compliance testing equipment used in the criminal justice system.

Reports have been received from two consultants (Hank Collins, Assistant to the President of Underwriters' Laboratories, Inc., and Ray Wynne, L. A. Police Department) who have studied the utility of a compliance testing system for NILECJ standards.

INVESTIGATIVE AIDS  
CUMULATIVE OBLIGATIONS--FY-1974

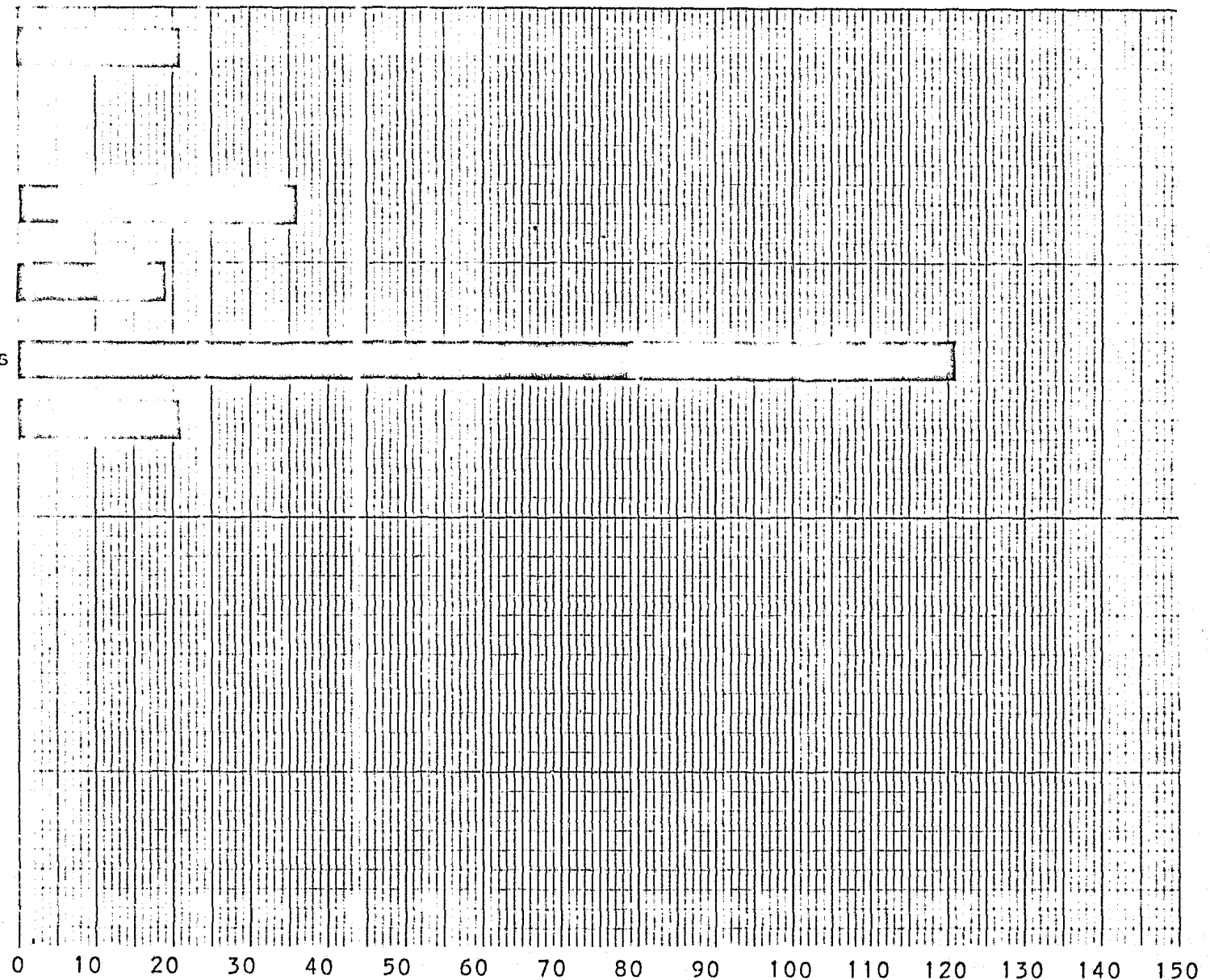
Program Management

Gunshot Residue  
Detectors

Trace Vapor Detectors

Analytical Techniques  
in Forensic Sciences

Directory of Testing  
Laboratories



THOUSANDS OF DOLLARS

March 1974 Progress Report  
Protective Equipment  
Ronald C. Dobbyn, Acting Program Manager

1. Police Helmets

a. Riot Helmets

The standard for police riot helmets is being prepared for submission to the NBS Editorial Review Board; transmittal to NILECJ is expected in April.

b. Crash Helmets

The draft standard for police crash helmets was revised during March and is being readied for outside review; this review will begin in April.

c. Ballistic Helmets

A first draft of the standard for ballistic helmets has been completed. The draft will be submitted for division review in April.

2. Face Shields

A draft standard has been completed and has entered division review. This review should be completed by mid-April; receipt within LESL is expected by the end of April.

3. Police Body Armor

Testing of armors for resistance to knife penetration began in March. Additional experimentation is underway to determine the most realistic method of simulating a knife thrust; although the pneumatic gun/dart scheme and the spring-loaded thruster are operational, we are exploring the possibility of using a hydraulic ram. This work will continue in April.

Tests have also begun to determine the effects on ballistic resistance of different methods of suspending or backing the armor; flexible, soft armors are of primary concern in this investigation.

The LESL ballistic test facility has been moved from Washington, D. C. to the Gaithersburg site. In addition to ballistic testing, the new facility will be equipped with conditioning chambers which will permit environmental conditioning of ballistic protective equipment prior to testing. Completion of the facility is

scheduled for April. Tests to determine the degradation of the ballistic resistance of armors due to moisture will begin immediately thereafter.

4. Tear Gas Masks

The draft standard for police tear gas masks is being retyped. This document should enter the LESL review process in April.

5. Hearing Protectors

a. Guideline

Revision of this document was essentially completed in March and it is being typed. The guideline will continue in LESL review during April. Initial discussions were held with several potential sources for final graphics and text layout.

b. Standard (Revised)

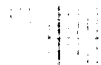
Completion of the test apparatus has been delayed pending delivery of special materials, and is expected in April.

PROTECTIVE EQUIPMENT  
CUMULATIVE OBLIGATIONS--FY-1974

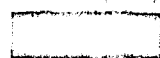
Program Management



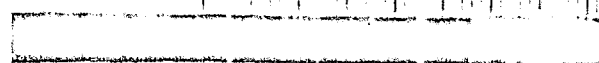
Body Armor Sizing



Hearing Protectors



Impact Protectors



0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

THOUSANDS OF DOLLARS



March 1974 Progress Report  
Weapons  
Ronald C. Dobbyn, Acting Program Manager

1. Handgun Ammunition

The laboratory testing phase of this project continued in March. Wound channel data have been obtained for a new Smith and Wesson hemi-nosed bullet in caliber .38, several .38 and .357 varieties from Zero Bullets, Inc., and Sierra's line of caliber .38 Special rounds.

Ricochet susceptibility studies were extended to include other materials (slag block, concrete, asphalt, drywall). Penetration testing is being conducted simultaneously, since one is a limiting case of the other.

The project leader, W. J. Bruchey, Jr., attended a symposium on Wound Ballistics held at the Chemical Defense Establishment, Salisbury, G. B., during March. He delivered a paper discussing the scope and the methods of calculation used in this project.

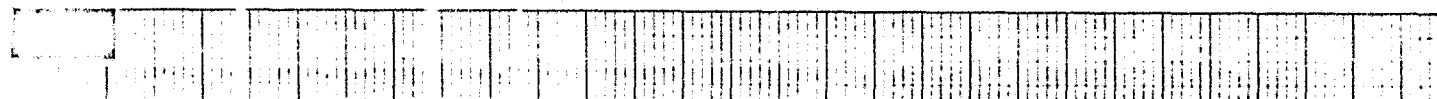
2. Tear Gas Devices

An R.F.P. was prepared in March; following review by the LESL Chief and appropriate NBS authorities, it will be distributed and advertised. Responses should be received in May.

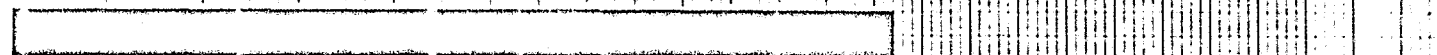


WEAPONS  
CUMULATIVE OBLIGATIONS--FY-1974

Program Management



Handgun Ammunition



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THOUSANDS OF DOLLARS

March 1974 Progress Report  
Police Vehicles  
Jared J. Collard, Acting Program Manager

1. Patrolcar State-of-the-Art Survey

Review and revision of the report are continuing.

2. Patrolcar Life-Cycle Costing Study

Preparation and review of the main report are continuing.  
An executive summary of the report, intended for separate publication, has been completed and is being reviewed.

THE UNITED STATES OF AMERICA  
DO hereby certify that

the following is a true and correct copy

of the original as the same appears on the records of the

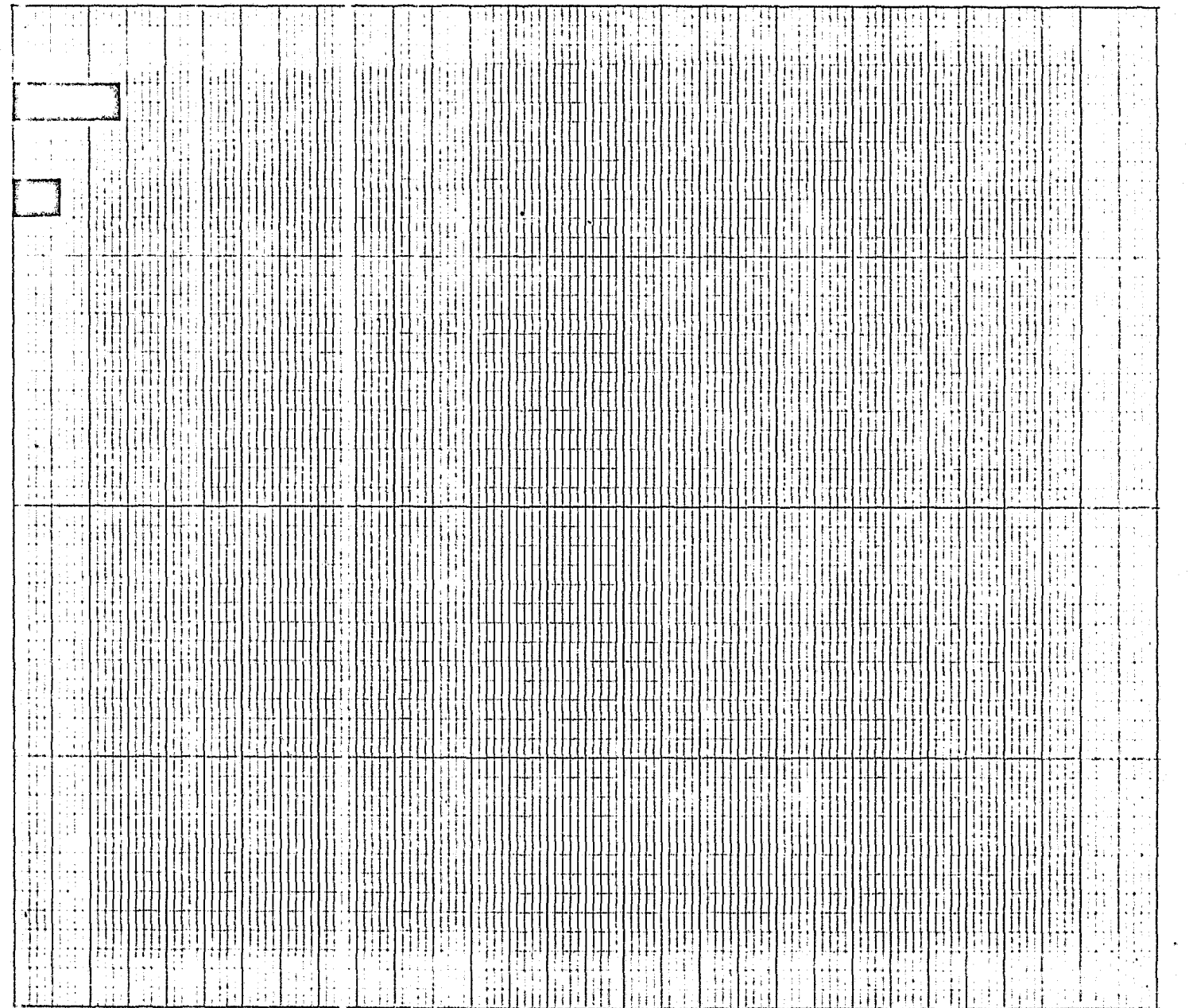
DEPARTMENT OF THE INTERIOR  
WASHINGTON, D. C.

POLICE VEHICLES  
CUMULATIVE OBLIGATIONS--FY-1974

Program Management

State-of-the-Art  
Survey

Life Cycle Costing



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THOUSANDS OF DOLLARS

March 1974 Progress Report  
Emergency Equipment  
Avery T. Horton, Program Manager

1. Warning Lights

- a. A revised draft of the report, "Emergency-Vehicle Warning Lights: State-of-the-Art," continues in LESL review. It's submission to WERB is anticipated by the next reporting period.
- b. The draft standard for emergency vehicle warning lights continues in review in the NBS Center for Building Technology.
- c. Writing of the report on the perceptual experiments and their relationship to the physical measurements is continuing.

2. Sirens

- a. The draft standard for emergency vehicle sirens continues in review in the NBS Mechanics Division.
- b. The siren report continues in review in the NBS Mechanics Division.

3. User Guide to Lights and Sirens

The first draft of the User Guideline is being revised, and more material on sirens is being added.

March 1974 Progress Report  
Clothing  
Avery T. Horton, Program Manager

Anthropometric Study of Law Enforcement Officers

Approximately 1,000 law enforcement officers from San Diego, Los Angeles, Denver, Dallas and Atlanta have been measured. Height, weight and age information has been collected on an additional 600 law enforcement officers. Measurements of officers in Miami and Washington, D. C. are scheduled during April. Consultations have been held at the Texas Rehabilitation Biostereometrics Laboratory among R. Herron, R. Sabeh of NELC, and A. Horton of LESL, regarding the prospective use of the biostereometric technique for data gathering.

Detailed measurements of over 800 officers have been entered on punch cards for computer processing. Computer programs for analyzing the data are being obtained currently. A program for preliminary analysis has been run on data for 300 officers.

Additional anthropometric benches have been constructed to revised specifications. With the increased capability, four teams have been obtaining measurements simultaneously at different locations.

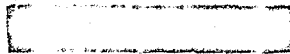


EMERGENCY EQUIPMENT AND CLOTHING  
CUMULATIVE OBLIGATIONS--FY-1974

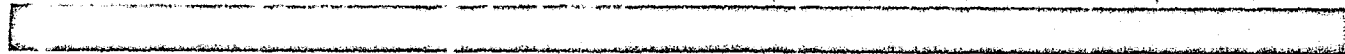
Program Management



Emergency Lights  
and Sirens



Anthropometric  
Study



Clothing Survey



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THOUSANDS OF DOLLARS



**END**