NBSIR 73-212

LEAA Police Equipment Survey of 1972 Volume III: Sirens and Emergency Warning Lights

P. Klaus and E. Bunten

Technical Analysis Division
Institute for Applied Technology
National Bureau of Standards
Washington, D.C. 20234

Final July 1971 – September 1973

Prepared for
National Institute of Law Enforcement and Criminal Justice (NILECJ)
Law Enforcement Assistance Administration (LEAA)
Department of Justice
Washington, D.C. 20530

REPORTS FROM THE LEAA POLICE EQUIPMENT SURVEY:

The present report is one in a series of reports produced from data gathered by the LEAA Police Equipment Survey of 1972. Listed below are the seven reports of that survey.

National Bureau of Standards Report 73-212 (The present report). LEAA POLICE EQUIPMENT SURVEY OF 1972, Volume III: Sirens and Emergency Warning Lights.

National Bureau of Standards Report 73-210. LEAA POLICE EQUIPMENT SURVEY OF 1972, Volume I: The Need for Standards -- Priorities for Police Equipment.

National Bureau of Standards Report 73-211. LEAA POLICE EQUIPMENT SURVEY OF 1972, Volume II: Communications Equipment and Supplies.

National Bureau of Standards Report 73-213. LEAA POLICE EQUIPMENT SURVEY OF 1972, Volume IV: Alarm Displays, Security Equipment, and Surveillance Equipment.

National Bureau of Standards Report 73-214. LEAA POLICE EQUIPMENT SURVEY OF 1972, Volume V: Handguns and Handgun Ammunition.

National Bureau of Standards Report 73-215. LEAA POLICE EQUIPMENT SURVEY OF 1972, Volume VI: Body Armor and Confiscated Weapons.

National Bureau of Standards Report 73-216. LEAA POLICE EQUIPMENT SURVEY OF 1972, Volume VII: Patrolcars.

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LEAA POLICE EQUIPMENT SURVEY OF 1972 VOLUME III: SIRENS AND EMERGENCY WARNING LIGHTS

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U. S. DEPARTMENT OF COMMERCE, Frederick B. Dent, Secretary
NATIONAL BUREAU OF STANDARDS, Richard W. Roberts, Director

ACKNOWLEDGEMENTS

We are grateful to the 437 police departments throughout the United States who contributed their time and knowledge to make this report possible. Special thanks go to the more than 40 police departments whose officers and administrators helped the survey team during the developmental and testing phases of the work. In addition, we thank Avery Horton, Program Manager of the Law Enforcements Standards Laboratory of the National Bureau of Standards and E. Thomas Pierce and Kenneth L. Kelly of the Sensory Environment Section, Building Environment Division of the Center for Building Technology.

Although there are only two authors for this report, the work could not have been accomplished without the capable and conscientious efforts of many members of the Technical Analysis Division. Their help in the sometimes boring, sometimes stressful, always demanding tasks that were required to produce this document, are sincerely and gratefully acknowledged:

William L. O'Neal for his help in computerizing the sample selection and for helping design and programming interactive record-keeping system; Robert J. Cunitz, for his help in editing and reviewing the report; Jenny L. Eldreth for helping design and for maintaining the computerized record-keeping system; Sandra J. Mumford for supervising the coding/editing of the questionnaires; June R. Cornog, for her advice, support, and help with initial interviews; Diane R. Beall for the many typings of the various versions of the questionnaires; Suellen Helpin, Mary L. Friend, Susan E. Bergsman, and Dwight F. Doxey, for editing and coding data and for making follow-up telephone calls; Lorraine S. Freeman for her administrative support; Karen Jackson, Cassandra Streeter, and Janice Davis, summer employees, for their help with questionnaire coding and record-keeping; and Mary Hawkins for typing the report.

Michael R. Vogt receives special thanks for his help in carrying out the computerized edit and tabulation of the data.

TABLE OF CONTENTS

LIST OF TABLES

1.0 INTRODUCTION

2.0 QUESTION BY QUESTION DISCUSSION

EXECUTIVES' SUMMARY: *

I. SUMMARY OF BACKGROUND AND METHODOLOGY

A. Background (pp. 1-2)

- Law Enforcement Standards Laboratory (LESL) was established in 1970 and became part of the NILECJ Equipment Systems Improvement Program (ESIP).
- NILECJ asked the Behavioral Sciences Group of the National Bureau of Standards to develop and carry out a procedure to get information from the users of law enforcement equipment.
- "User" information would aid NILECJ in setting priorities for LESL programs and would provide some detailed information so that research to develop standards could begin.
- In addition, gathering information from the users would help to make police agencies aware of LESL and ESIP.
- A nationwide mail sample survey was selected as the best procedure to collect user information.
- An Equipment Priorities Questionnaire (EPQ) and six Detailed Questionnaires (DQs) were developed and administered. A separate report was prepared for each of these seven questionnaires.

B. Design of Questionnaires (p. 10)

- Questionnaires were developed in conjunction with NILECJ, LESL, and cooperating police departments. Questionnaires were pretested at various times with approximately 45 police departments.
- The EPQ was designed to provide information about priority needs for standards for various types of equipment.
- In addition, the EPQ asked for data about numbers of full- and part-time officers, activities performed in the department, budget, size of jurisdiction, etc.
- The six DQs (Alarms, Security and Surveillance Equipment; Communications Equipment and Supplies; Handguns and Handgun Ammunition; Sirens and Lights; Body Armor and Confiscated Weapons; and Patrolcars) were each developed separately.

* Explanation of terminology used in report is explained in section 2.1, pages 14-17.

- The DQs asked about kinds and quantities of equipment in use, problems with existing equipment, suggestions for improving equipment, needs for standards related to the equipment, etc. Although entitled Detailed Questionnaires, these questionnaires were designed to give an overview of the use of specific items of equipment.

C. Sample (pp. 2-6)

- The population sampled was made up of all police departments listed in a computerized file compiled and maintained by the LEAA Statistical Service.

- Courts, correctional institutions, forensic labs, special police agencies, etc., were excluded.

- The sample was stratified by LEAA Geographic Region (10 Regions) and by Department Type (7 Department Types: State Police; County Police and Sheriffs; City Departments with 1-9 officers; City Departments with 10-49 officers; City Departments with 50 or more officers, excluding the Fifty Largest Cities; the Fifty Largest U.S. Cities by population; and Township Departments).

- Overall, approximately 10% of the 12,836 departments in the population were selected as respondents (see Table 1.2-2).

- The Equipment Priorities Questionnaire was sent to every sample department (1386). Each Detailed Questionnaire was sent to all States, to all of the Fifty Largest Cities, and to a randomly selected subsample of the main sample (about 530 departments received each DQ).

- Thus, States and the Fifty Largest Cities were asked to fill in all seven questionnaires. Each of the remaining 1186 departments were asked to fill in the EPQ and two of the DQs.

- The sample for the Handguns and Handgun Ammunition DQ consisted of 528 departments (see Table 1.2-3).

D. Questionnaire Administration (pp. 6-9)

- Stringent control of administration was required.

- Introductory letters were sent to heads of departments asking cooperation.

- On June 1, 1972, questionnaire packages were mailed.

- In July 1972, follow-up by self-return postcard was begun.

- In August 1972, follow-up by telephone was begun. Departments which had not returned questionnaires were called. Also, calls were made to clear up ambiguities in the returned questionnaires. About 1300 calls were made. About 70% of the sample departments were called at least once.

- Each questionnaire was edited and coded by a specialized team to ensure consistency; the questionnaires were then keypunched and tabulated.

- Completed questionnaires were accepted for tabulation through January 7, 1973.

E. Rates of Return (pp. 8-9)

- 83% of the 1386 departments returned usable EPQs.

- 84% of the 528 departments returned usable Handguns DQs.

- 81-85% of the other DQ subsamples returned usable questionnaires.

- Highest rates of return (over 90%) were from States, the Fifty Largest Cities, and Cities with 50 or more officers.

- Lowest rates of return were from Counties and Townships (less than 75%).

F. Characteristics of Responding Departments (pp. 11-15)

- The activities most commonly carried out by the respondents (to the EPQ) were Serving Traffic and Criminal Warrants (88%), Traffic Safety and Traffic Control (87%), and Intra-departmental Communications (87%).

- All of the responding Fifty Largest Cities said they provided In-House Training and Criminal Investigations. This compared to 68% and 86%, respectively, of all responding departments.

- Only 13% of all respondents had Crime Laboratories. 73% of the Fifty Largest Cities and 55% of the States had Crime Laboratories.

- About three-fifths of the departments in all Department Types were providing Emergency Aid and Rescue, ranging from 60% of the Cities with 50 or More Officers to 67% of the Counties.

- Overall, the reported Equipment Budgets represented somewhat over 10% of the Total Budgets reported.

- Among Department Types there was a wide range of total equipment expenditures, from a mean of about $10,000 for Cities with 1-9 Officers to a mean of almost $2.6 million for the Fifty Largest Cities.

- One of the Fifty Largest Cities reported an Equipment Budget of $40 million.

- Overall, the Fifty Largest Cities reported a mean of 2491 Full-Time Sworn Officers. However, of all the Full-Time officers reported by that Department Type, one of the Fifty Largest Cities had 27% of such officers and another had about 12%.

II. SUMMARY OF RESULTS

A. Sound Sources on Patrolcars--General (pp. 20-22)

- About twice as many of the responding departments reported using Electronic Sirens than reported Electro-Mechanical Sirens; 81% and 40%, respectively.

- More than 60% of the Fifty Largest Cities, Cities (50+), Cities (10-49), and Townships had Public Address Systems on their patrolcars. Less than half of the States and Counties has such systems.

- Only 4% of the responding departments had Special Loud Horns.

B. Light Sources on Patrolcars--General (pp. 22-25)

- More than 90% of the departments in six of the seven Department Types had Revolving or Flashing Lights on the Roofs of their patrolcars. Only 83% of Counties has such systems.

- The next most commonly used light source was Hand-Controlled, Non-Colored Spotlights. 69% of the responding departments had such spotlights.

- More than one-third of the responding departments were using Special Turn Signal Lights which sometimes may also be used as "four-way" flashers.

- Grille Lights were used by slightly greater proportions of Counties, States, and Cities (1-9) than by the three largest City Department Types: 17-21% as compared to 9-11%.

- Special Reflectors were used by a higher percentage of the Fifty Largest City departments (30%) than the other Department Types (range = 7-21%).

- Much smaller percentages of the States (2%) and Townships (7%) were using Alley or Ambush Lights than the other Department Types (range = 17-20%).

- Less than 10% of the responding departments were using Automatic Headlight Flashers (9%), Fog or Auxiliary Driving Lights (3%), or Special Clearance Lights (2%).

C. Electronic Sirens and Electro-Mechanical Sirens (pp. 26-58)

- Higher percentages of the larger City Department Types had Electronic Sirens (83-86%) than did Counties and Cities (1-9), 62% and 66%, respectively.

- Slightly higher percentages of States (57%) and Counties (52%) had Electro-Mechanical Sirens than the Townships (21%), Cities (10-49) (32%) and the Fifty Largest Cities (33%).

- More manufacturers of Electronic Sirens were mentioned than were manufacturers of Electro-Mechanical Sirens.

- Approximately four-fifths of all the sirens described by the responding departments as their "Most Commonly Used" sirens were made by one manufacturer.

- The most common location for Electronic Sirens was On Top of the Patrolcar: 58% of the Electronic Siren users placed them On a Utility Bar above the roof, and 13% placed them Right On the Roof.*

- The most common location for Electro-Mechanical Sirens was Under the Hood of the patrolcar: 48% of the Electro-Mechanical Siren users placed them Behind the Grille, and 43% mounted them In the Engine Compartment.*

- Almost none of the users of either Electronic or Electro-Mechanical Sirens mounted these sirens in any other location.

- When asked about problems with their sirens, 36% of the users of Electronic Sirens cited at least one problem, while 60% of the Electro-Mechanical Siren users mentioned at least one problem.

- The most common problem cited by users of both types of sirens was "Sometimes Motorists Do Not Seem To Hear Them."

* These categories were not mutually exclusive. Departments may have been utilizing both locations.

- The users of the two types of sirens were remarkably similar in their reports of frequency of repair required: About one-third of the responding departments said the sirens needed repair about once a year or more often, about one third said repair was needed every 2-3 years, and about one-third said their "Most Commonly Used" siren had never needed repair.

- However, there were striking differences among the seven Department Types in their reports of frequency of repair required.

- Of those departments which had never needed to repair their sirens, only 15% of the departments with never-repaired Electronic Sirens had had those sirens more than 3 years while 37% of the departments with never-repaired Electro-Mechanical Sirens had had those sirens more than 3 years.

- The most common component/part causes of failures reported by Electronic Siren users were the Speaker and the Electronics.

- The most common component/part causes of failures reported by Electro-Mechanical Siren users were Brushes, Control Switch, and Bearings.

- Much higher percentages of Electro-Mechanical Siren users than Electronic Siren users had had their sirens for more than 10 years before needing to replace or rebuild them.

- Much higher percentages of Electronic Siren users had never needed to replace or rebuild their sirens.

D. Emergency Warning Lights (Beacons or Flashing Lights) (pp. 45-58)

- About three-fifths of the responding departments mounted their "most commonly used" beacons/flashing lights On a Utility Bar above the roof of the patrolcar.

- About two-fifths mounted them directly On the Roof of the patrolcar.

- The majorities of departments in all Department Types were using fewer than three lights per unit, but between one-fifth and one-fourth of them were using four lights per unit.

- About three-fourths of the responding departments were using only one emergency warning beacon or flashing light per patrolcar. 89% of the States had only one unit per vehicle as compared to 68-76% of the other six Department Types.

- Three-quarters of the responding departments used Red beacons/flashing lights (either red alone or in combination with other colors).

- 56% of the responding departments were using Only Red beacons or flashing lights.

- About one-third of the responding departments were using Blue beacons/flashing lights (either blue alone or in combination with other colors).

- 21% were using Only Blue beacons/flashing lights.

- There were slight, but not striking differences among the seven Department Types in their use of various colors for their "Most Commonly Used" beacons/flashing lights.

- Slightly more than half of the Fifty Largest Cities, Cities (50+) and States said they had to repair their beacons/flashing lights every three years or more often. Less than one-third of the Cities (1-9), Counties, Townships, and Cities (10-49) said they had to repair their lights that frequently.

- 40% of the responding departments said they had never needed to replace their "Most Commonly Used" beacons. Much lower percentages of the Fifty Largest Cities and the States indicated that to be so.

- About three-fourths of the departments which had never needed to replace their beacons had had those lights in use for four years or less.

- Only 10% of all of the responding departments said they could use their beacons/flashing lights for more than 10 years before replacement, but 15% of the States and 24% of the Fifty Largest Cities could use their lights that long.

E. Activities for Which Emergency Warning Equipment Used (pp. 58-62)

- Almost all of the responding departments used Flashing Lights to signal motorists to pull over; 90% during the daytime, and 99% at night.

- 64% of the departments used Sirens to signal motorists to pull over in the daytime and 62% used Sirens at night.

- States were the only Department Type in which more departments used the car Horn than the Siren to signal motorists to pull over during the day.

- The use of emergency warning signals was similar among the three largest City Department Types. States and Counties tended to differ from Cities and from each other in their use of this equipment.

- Over 90% of the responding departments used both Siren and Flashing Lights for Emergency Runs during the day and at night.

- Very few departments said they used their emergency warning lights for Routine Patrol. None of the Fifty Largest Cities or Cities (50+) did so, but between 4% and 8% of the departments in the other five Department Types did.

F. Purchasing and Testing Emergency Warning Equipment (pp. 63-68)

- The Chief/Unit Head was responsible for choosing and ordering emergency warning equipment in 90% of the Counties, Cities (10-49), and Townships. This was also the case in 84% of the Cities (1-9) and 57% of the Cities (50+).

- In State departments, choice and ordering of emergency warning equipment was the responsibility of some Administrative Staff member other than the Chief/Unit Head.

- In the Fifty Largest Cities also, about half of the departments reported purchase of emergency warning equipment was the responsibility of some "other" Administrative Staff member, and about one-fourth listed some member of the Maintenance Staff.

- Much higher percentages of State and Fifty Largest City departments said they Bought a Few Pieces of Equipment and Got Officers' Opinions on their use before purchase than did the other Department Types.

- In five of the seven Department Types, the most common method of training officers to use emergency warning equipment was to Have Experienced Officers Train new officers.

- In the States and Fifty Largest Cities, the most common training method was Training Classes in the Department.

G. Traffic Signal Control for Helping Emergency Vehicles (pp. 68-69)

- Ability to control traffic signals was not generally available in responding departments; about 15% of the departments had such a capability.

- About one-fourth of the Cities (50+) were able to control traffic signals, but only 9% of the Fifty Largest Cities had that capability.

- Although 15% of the responding departments said they were able to control traffic signals in emergencies, only 3% said that such control could be exercised by either a Bright Light from the Patrolcar or by a Radio Signal from the Patrolcar.

- Most departments that said they could control traffic signals in emergencies said that such control was exercised Manually at the Signal Itself.

identifiable equipment needs. No attempt was made to survey correctional institutions, courts, forensic laboratories, or special police agencies such as park police, harbor patrols or university police. The computerized directory of approximately 14,000 police agencies, compiled and maintained by LEAA's Statistical Division, provided the population from which the sample was drawn. Care was taken to exclude the double listings that existed for some agencies. (Details of the selection process are given in Appendix B of the Equipment Priorities Questionnaire.)

The final list of 12,842 departments was cross-stratified by LEAA geographic Region and Department Type by the mutual agreement of NBS and NILECJ. The assignment of states to Regions and the seven Department Types chosen for study are shown in Table 1.2-1.

Table 1.2-1. Stratification Categories

DEPARTMENT TYPES:	LEAA GEOGRAPHIC REGIONS:
State Police	1 = Conn., Maine, Mass., N.H., R.I., VT..
County Police & Sheriffs	2 = N.J., N.Y.
City with 1-9 Officers	3 = Del., Md., Penn., Va., W. Va., D.C.
City with 10-49 Officers	4 = Ala., Fla., Ga., Ky., Miss., N.C., S.C., Tenn.
*City with 50 or More Officers	5 = Ill., Ind., Mich., Ohio, Wis., Minn.
**The 50 Largest U.S. Cities	6 = Ark., La., N.M., Okla., Tex.
Township Departments	7 = Iowa, Kan., Mo., Neb.
	8 = Colo., Mont., N.D., S.D., Utah, Wyo.
	9 = Ariz., Calif., Nev., Hawaii
	10 = Alas., Idaho, Ore., Wash.

* Excluding the 50 Largest U.S. Cities.
** By population, U.S. 1970 census.

The breakdown of the population of police departments by cross-strata is exhibited in Table 1.2-2. As can be seen from the table, there were no

Table 1.2-2 Number of Police Departments by Region and Type

DEPARTMENT TYPE	LEAA REGION 1	2	3	4	5	6	7	8	9	10	TOTAL
State	6	2	5	8	6	5	4	6	4	4	50*
County	66	84	257	764	536	506	413	288	103	120	3137
City (1-9 Officers)	27	348	713	979	1470	703	611	283	135	217	5486
City (10-49 Officers)	40	237	166	344	508	230	142	71	168	79	1985
City (50 or More Officers	60	64	36	83	119	46	23	19	87	17	554
50 Largest Cities	1	4	5	8	10	8	3	1	8	2	50
Township	629	349	362	-	234	-	-	-	-	-	1574
TOTAL	829	1088	1544	2186	2883	1498	1196	668	505	439	12,836

* Questionnaires were actually sent to 56 State Police departments since there were 6 State Departments which listed two police agencies without reference to a common central agency. However, only one set of questionnaires was accepted from each of these 6 agencies as described in Volume I, Appendix B, page B-2.

Townships in Regions 4, 6, 7, 8, 9 and 10. Almost 63% of the departments were city police, 43% having 1-9 full-time officers. County Departments comprised about 24% of the population. By Region, the smallest (Region 10) contained only 3.4% of the police departments, while Region 5, the largest, had 22.5%. The variation in the number of departments in a cell (Region/Department Type combination) was even greater than that across the strata, i.e., the number of departments in each cell ranged from 0 to 1470.

The considerations discussed in the previous paragraph led to the sampling plan discussed briefly below. All of the State departments and the Fifty Largest City departments were included in the sample and were asked to complete all six DQs, i.e., they were sent the entire package of seven questionnaires. For the remaining cells the variation in cell size presented a problem: If the same fraction of the entire population was to be selected from the members of each cell, a constant sampling fraction large enough to allow a sufficient number of sample units (police departments) in small cells would yield an unmanageably large total sample; on the other hand, a constant sampling fraction small enough to make the total sample manageable would yield too few sample units in small cells. To solve this problem, a fixed sample of 30 police departments/cell was chosen, wherever possible, resulting in a different sampling fraction for each cell. A fixed sample size of thirty departments/cell was chosen to facilitate the equitable distribution of the six DQs. This plan resulted in sending the Sirens & Lights DQ to 528 departments.

The departments were selected randomly within each cell, from the total cell population, each department (other than the States and the Fifty Largest Cities) receiving two DQs. Thus, in cells having 30 sample units, the Sirens & Lights DQ was mailed to 10 departments; cells having fewer sample units were allocated proportionally fewer Sirens & Lights DQs. Table 1.2-3 presents the total sample for the Sirens & Lights DQ by Region and Department Type.

Once the sample was selected, each sample unit was assigned a unique seven-digit identification number, coding Region, Department Type, and questionnaire assignment.

1.3 Questionnaire Administration

From the beginning of the project, it was evident that stringent control would be required in administering the questionnaires to ensure a high rate of response. Computer-stored daily status records were input via a teletype terminal for each sample department. In general, the following procedure was used:

(a) Each department in the sample was mailed a letter, signed by the director of NILECJ, addressed to the head of the department. This letter introduced the survey and requested cooperation.

(b) About one week later, the questionnaire packages were mailed.

(c) Departments not returning the questionnaires within a month were identified by the computer and were sent a self return postcard requesting information as to the status of the questionnaire. Departments not receiving the questionnaire

Table 1.2-3. Number of Departments Selected To Receive the Detailed Questionnaire: Lights & Sirens, by Region and Department Type.

DEPARTMENT TYPE:	LEAA GEOGRAPHIC REGION:											
	1	2	3	4	5	6	7	8	9	10	Total	% TOTAL POPULATION
State	6	2	5	8	6	5	4	6	4	4	50*	100
County	10	10	10	10	10	10	10	10	10	10	100	3
City 1-9 Officers	9	10	10	10	10	10	10	10	10	10	99	2
City 10-49 Officers	10	10	10	10	10	10	10	10	10	10	100	5
City 50+ Officers	10	10	10	10	10	10	7	6	10	6	89	16
50 Largest Cities	1	4	5	8	10	8	3	1	8	2	50	100
Townships**	10	10	10	-	10	-	-	-	-	-	40	3
Total	56	56	60	56	66	53	44	43	52	42	528*	4
PERCENT TOTAL POPULATION	7	5	4	3	2	4	4	7	11	10	4	

* Questionnaires were actually mailed to 56 State police departments since there were 6 states which listed two police agencies without references to a common central agency. However, only one set of questionnaires was accepted from each of these 6 states.

** Township departments exist only in Regions 1, 2, 3 and 5.

package were sent another; those not returning the postcard were placed on a list for telephone follow-up.

(d) About a month and a half later, departments with which no contact had been made were called by telephone.

(e) Returned questionnaires were reviewed for completeness and either coded for keypunching or filed for telephone call-back to supply missing data or to resolve ambiguities.

Considerable effort was expended to ensure a high rate of response, and this effort was rewarded with an 83% response for the Sirens & Lights DQ, and between 80% and 85% for each of the other questionnaires. In the course of the survey more than 70% of the sample departments were contacted at least once by telephone. More than 1300 phone calls were made by the survey team.

The distribution of respondents (departments which returned usable Sirens & Lights DQs) is exhibited in Table 1.3-1. The highest percentages of response were from the larger Cities and States, (over 90%), while Counties and Townships had the poorest response rates (under 75%).

1.4 Development and Design of the Sirens & Lights DQ

The survey plan and questionnaire design (of all seven questionnaires) evolved over a 12-month period. During this time, the survey team consulted at length with NILECJ equipment experts, LESL program managers, and equipment manufacturers. In addition, the officers and administrators of about 40 police departments served as consultants and/or as respondents for pretests of various versions of the questionnaires.

Table 1.3-1. Number of Sample of Departments Returning Acceptable Detailed Questionnaires: Sirens & Lights.

DEPARTMENT TYPE:	LEAA GEOGRAPHIC REGION:											
	1	2	3	4	5	6	7	8	9	10	Total	% TOTAL SAMPLE
State*	6	2	5	8	6	5	3	6	3	3	47	94
County	2	10	6	8	9	2	7	9	9	9	71	71
City 1-9 Officers	7	9	8	9	7	7	10	7	7	6	78	79
City 10-49 Officers	9	9	9	6	9	9	9	9	7	8	84	84
City 50+ Officers	9	7	10	10	10	10	6	6	10	5	83	93
50 Largest Cities	1	3	4	7	9	8	3	1	8	2	46	92
Townships**	5	8	9	-	7	-	-	-	-	-	29	72
Total	39	48	51	48	57	41	38	38	44	33	437	83
PERCENT TOTAL SAMPLE	70	86	85	86	86	77	86	88	85	79	83	

* Questionnaires were actually mailed to 56 State police departments since there were 6 states which listed two police agencies without references to a common central agency. However, only one set of questionnaires was accepted from each of these 6 states.

** Township departments exist only in Regions 1, 2, 3 and 5.

Note: The conventions used in displaying and reporting on the results of the questionnaires are presented on pages 16-17, Section G.

The Sirens & Lights DQ, in its final form, is reproduced in Appendix A. This DQ asked respondents to describe sirens, lights, and other emergency warning equipment used in their departments; to describe the "most commonly used" brands of sirens and emergency warning lights in use; to indicate procedures for choosing and testing emergency warning equipment; and to describe problems with that equipment. The questionnaire was limited to general topics because: (1) It was not possible, considering the scope of the present survey, to explore in a detailed manner all of the emergency warning devices used in police departments, and (2) It was felt that the general data gathered in the present effort would provide important direction for research in the development of standards, the main objective of the survey.

1.5 Characteristics of Subsample Groups

The EPQ of the LEAA Police Equipment Survey* requested data from each department about population served, physical size of jurisdiction served, type of jurisdiction, number of full- and part-time officers, approximate total, equipment, and personnel budgets during 1971, and activities handled by the department.

Table 1.5-1 presents a partial tabulation, by Department Type, of the responses to a check list of 30 typical police activities by the respondents to the EPQ. (The EPQ respondents include, but are not limited to, the respondents to the Sirens & Lights DQ. See Section 1.2.) The

* LEAA Police Equipment Survey of 1972, op. cit.

Table 1.5-1. Activities Handled by AT LEAST ONE-THIRD of That Department Type by Department Type, and Percent of Total Departments Having Each Activity

DESCRIPTION OF ACTIVITY:	State %	County %	City 1-9 %	City 10-49 %	City 50+ %	50 Largest %	Township %	Total %
Serve Traffic and Criminal Warrants	70	89	84	89	94	87	93	88
Traffic Safety and Traffic Control	92	56	94	96	96	98	94	87
Communications for Own Department	94	86	76	95	94	96	70	87
Criminal Investigation	66	86	71	95	97	100	79	86
Police Training for Own Department	98	55	48	77	87	100	42	68
Custody/Detention-Less than 1 Day	-	79	51	73	72	80	43	65
Breath-Alcohol Test	89	46	47	72	83	91	49	64
Emergency Aid and Rescue	62	67	62	63	60	67	62	63
Public Building Protection	-	40	63	60	58	44	68	54
Service Function	-	-	48	55	60	60	42	48
Animal Control (Dog Catcher)	-	-	58	63	42	-	37	44
Highway Patrol	96	38	48	36	-	-	88	43
Maintenance of Police Buildings	51	36	34	41	48	47		40
Custody/Detention-1 Week or Less	-	73		36	46	49		38
Communications for Other Agency	66	56		40	-	-		36
Serve Civil Process	-	88			-	-		32
Police Training for Other Agency	77	-			42	84		24
Custody/Detention-Up to 1 Year	-	78			-	-		22
Underwater Recovery	34	42			-	42		19
Bomb Disposal	45				-	82		17
Polygraph	62				36	90		17
Vehicle Inspection	55					-		17
Crime Laboratory	55					73		13
Narcotics Laboratory Analysis	43					62		11
Harbor Patrol	-					-		7
Lab Analysis for Blood Alcohol	34					53		7
Other	-							6
Coroner	-							5
Tests for Drivers License	34							3
Custody/Detention-More than 1 Year								3

activities most frequently checked by all departments were: (1) Serve Traffic and Criminal Warrants (88%), (2) Traffic Safety and Traffic Control (87%), and (3) Communications for Own Department (87%). The activity with the most consistent level across Department Types was that of Emergency Aid and Rescue; ranging from 60% (Cities with 50+ Officers) to 67% (Counties).

Higher percentages of State and Fifty Largest City departments were handling certain of these activities. For example, all of the 45 Fifty Largest City departments responding and 98% of the State departments said that their departments provided Police Training for Own Department. These compare to 68% for all responding departments. All of the responding Fifty Largest Cities said that they handled Criminal Investigation in their own departments. This compares to 86% of the total sample of departments. Although only 13% of the departments overall had Crime Laboratories, 73% of the Fifty Largest Cities and 55% of the States had them.

Counties appeared to be the only Department Type with significant responsibilities for Custody and Detention for More Than 1 Week. Seventy-eight percent of those departments had Custody/Detention - Up to 1 Year, as compared with 22% of all responding departments.

Tables 1.5-2 and 1.5-3 present summaries of descriptive data by Department Type and LEAA Region, respectively. As can be seen from the column for Annual Equipment Budget (Table 1.5-2), there was a wide range of expenditures among different Department Types: From a mean of about 10 thousand dollars for Cities (1-9) to almost 2.5 million dollars for the Fifty Largest Cities. Overall, equipment budgets represented somewhat over 10% of the Annual Total Budgets.

Table 1.5-2. Descriptive Data by Department Type (Means)

Department Type	Area (Sq. Miles)	Population	Number of Full-Time Officers	Number of Part-Time Officers	Annual Total Budget	Annual Equipment Budget	Annual Personnel Budget
50 Largest	187	851342	2491	1115	$43,268,865	$2,669,920	$34,712,818
State	62580	3936410	889	18	$16,377,358	$2,304,339	$12,020,572
County	1518	130254	60	25	$ 1,089,919	$ 58,539	$ 859,984
City (50+)	31	83344	132	26	$ 1,733,340	$ 173,099	$ 1,407,177
City (10-49)	12	15849	22	9	$ 257,927	$ 24,362	$ 206,187
Township	28	13228	14	8	$ 175,654	$ 20,854	$ 141,675
City (1-9)	9	5038	8	5	$ 82,381	$ 9,764	$ 60,061

Table 1.5-3. Descriptive Data by LEAA Region (Means)

LEAA Region	Area (Sq. Miles)	Population	Number of Full-Time Officers	Number of Part-Time Officers	Annual Total Budget	Annual Equipment Budget	Annual Personnel Budget
1	750	158112	96	18	$ 1,360,155	$ 135,130	$ 979,911
2	648	240781	365	97	$ 7,148,315	$ 148,172	$5,265,546
3	1096	245733	216	7	$ 3,412,567	$ 435,153	$2,879,293
4	3691	340996	151	11	$ 2,318,382	$ 248,600	$1,767,292
5	2652	448174	283	8	$ 4,916,607	$ 431,478	$3,879,374
6	5738	271386	160	17	$ 2,193,823	$ 160,363	$1,709,910
7	2379	112094	84	9	$ 1,220,385	$ 121,001	$ 983,696
8	6346	83023	54	9	$ 728,549	$ 77,081	$ 568,463
9	4218	372094	281	46	$ 5,743,553	$ 728,801	$4,528,692
10	3580	104877	69	9	$ 1,253,894	$ 82,198	$1,011,604

The mean Number of Part-time Officers was based on those respondents having part-time officers in their departments. Of the 45 responding from the Fifty Largest Cities, only six had part-time officers, including one city which had nearly 6000. Thus, the mean value of 1115 for this Department Type is somewhat misleading. It should be noted that the category Part-time Officers included officers described as auxiliary, volunteer, reserve, school-crossing guard, dispatcher, summer, special agent, traffic supervisor, posse, and cadet. All of these classifications were counted in the Part-time Officer category since it has different meanings for different departments.

Variations in these descriptive averages by LEAA Region (Table 1.5-3) were considerably smaller than variations by Department Type. Regions 1 and 8 had smaller budgets than the others, primarily because each had only one of the Fifty Largest Cities.

2.0 QUESTION BY QUESTION DISCUSSION

2.1 Advice to the Reader

In reading Section 2, certain points should be kept in mind:

(a) THIS REPORT IS NOT AN EVALUATION OF ANY OF THE EQUIPMENT DESCRIBED OR DISCUSSED WITHIN IT. IT IS A PRESENTATION OF INFORMATION AND OPINIONS OF A STRATIFIED RANDOM SAMPLE OF POLICE DEPARTMENTS GIVEN IN RESPONSE TO A SPECIFIC SET OF QUESTIONS. IT DOES NOT, IN ANY WAY, REFLECT OBJECTIVE TESTING OF ANY EQUIPMENT BY THE NATIONAL BUREAU OF STANDARDS.

(b) The report reflects only what police departments were willing and able to say in response to a specific set of

questions. In most cases, no attempt was made to verify the accuracy of the information given or the level of sophistication of the respondent.

(c) Each discussion begins with the presentation of the question that appeared in the questionnaire, and in most cases the choices supplied, if any, set off in a box. However, the reader is cautioned to become familiar with the questionnaire sent to sample departments (see Appendix A) and to evaluate the data in terms of the exact questions asked.

(d) The text tables that appear in Section 2 are almost never the complete tables that were tabulated for that question. Data categories for text tables may have been collapsed from the full table, or certain categories of interest may have been singled out for fuller discussion. Appendix B contains the complete tables from which the text tables were extracted. Text tables have been numbered after the question number (e.g., the text tables for Question 6A. would be numbered 6A-1, 6A-2, etc. Text tables which presented data from Question 1 and Question 6A would be numbered 1/6A-1, 1/6A-2, 1/6A-3, etc.) The tables in Appendix B are also numbered after the question number, in the same manner. In some cases, tables that appear in Appendix B will not have been discussed at all in the text.

(e) Data in the text of this report are usually presented by nearest whole percent of the group under consideration. In some cases because of rounding by the computer percentage totals do not equal exactly 100%.

In Appendix B, the data are usually presented by number of respondents and percent. Because of statistical limitations imposed by the sample sizes used in this study, the reader is cautioned to be wary of assigning importance to percentage differences of less than 5% when percentages are based on the total respondents, and to percentages differences of less than 10% when percentages are based on one of the subsample groups, (e.g., a particular Department Type or Region). No statistical tests of significance are reported.

(f) Data were always tabulated by each of the choices supplied, if any, in the questionnaire. Any "other" choices written in by the respondents were also tabulated and/or recorded verbatim. In most cases, the numbers of respondents giving a specific "other" response do not reflect the numbers of respondents who would have marked that choice if it had been one of those provided. Therefore, in most cases, this report lists or gives examples of "other" responses, but does not present numbers or percents of departments giving that response. For those questions for which choices were not provided in the questionnaire, coding categories were developed after approximately one-fourth of the questionnaires had been returned.

(g) The subsample groups (Department Types and Regions) are capitalized when they are discussed in the text. In

addition, the four Department Types which are composed of city departments are at times discussed as a group. In those cases, the word "city" is also capitalized. The following convention has been adopted in the report to designate the four City Department Types:

City with 1-9 Officers = City (1-9)
City with 10-49 Officers = City (10-49)
City with 50 or More Officers = City (50+)*
The Fifty Largest Cities = Fifty Largest**

In table headings this same convention has been used except that the parentheses have been removed, and the Fifty Largest Cities are designated "50 Largest".

The reader should keep in mind that when these subsample groups are discussed, (e.g., "Counties said..." or "Cities (1-9) said...") the reference is to that particular subsample group as selected in the sample.

2.2 Discussion

2.2.1 Characteristics of Respondents

RANK OF RESPONDENT

All of the questionnaires in the LEAA Police Equipment Survey were sent to the Chief or highest official of the department with a request that the questionnaires be directed to the person or persons within the department who were best qualified to answer the questions.

* Excluding the 50 largest U.S. cities
** By population, 1970 U.S. Census.

The Sirens and Lights Questionnaire was usually filled in by the Chief/Unit Head in smaller departments and by officers with the ranks of Captain, Lieutenant or Sergeant in the larger departments. In State departments and in the Fifty Largest Cities about one-fifth of the respondents had civilian titles. In County departments the questionnaire was usually filled in by the Sheriff or one of his deputies.

Table i. Title/Rank of Primary Respondent for the Sirens and Lights Questionnaire, by Department Type.

RANK:	DEPARTMENT TYPE:							
	% All Depts. (n=437)	% City 1-9 (n=77)	% City 10-49 (n=84)	% City 50+ (n=83)	% 50 Largest (n=46)	% State (n=47)	% County (n=71)	% Township (n=29)
Chief	32	78	60	20	2	0	3	38
Captain	13	1	6	27	11	38	7	3
Lieutenant	10	3	5	19	24	13	4	10
Sergeant	9	6	12	6	13	13	6	17
Sheriff	7	0	0	0	0	0	44	0
Deputy	3	1	0	0	0	0	20	0
"Non-Rank" Title	8	4	5	6	22	19	3	3

NUMBER OF YEARS OF LAW ENFORCEMENT EXPERIENCE

The Sirens and Lights Questionnaire was usually filled in by experienced officers. More than 80% of the questionnaires from States and larger City departments (Fifty Largest and 50+) were completed by officers with More Than 10 Years of law enforcement experience. Forty percent or more of the primary respondents in these Department Types had More Than 20 Years of law enforcement experience. About half of the officers who filled in the County, City (1-9), and Township questionnaires had More Than 10 Years of law enforcement experience.

Table ii. Years of Experience in Law Enforcement of Primary Respondent, by Department Type.

DEPARTMENT TYPE:	YEARS OF EXPERIENCE IN LAW ENFORCEMENT:		
	% More Than 10 Years	% More Than 20 Years	% More Than 25 Years
State	85	50	22
50 Largest	84	45	15
City (50+)	83	40	15
City (10-49)	70	36	18
Township	55	13	10
County	50	20	12
City (1-9)	48	18	4

34. How many standard patrolcars does your department have?

(NUMBER)_____

Question 34 was included in order to have a reference point for other questions concerning numbers of patrolcars equipped with various lights and sirens. The report of the Patrolcars Questionnaire* of this survey presents more detailed information about numbers and kinds of patrolcars in use in each Department Type.

* LEAA POLICE EQUIPMENT SURVEY OF 1972, Volume VII: Patrolcars.

Table 34. Percentages of Departments in Each Department Type Having Specified Numbers of Patrolcars.

DEPARTMENT TYPE:	NUMBER OF PATROLCARS:			
	% Less Than 5	% 5 - 50	% 51-500	% More Than 500
State	0	2	53	45
50 Largest	0	2	87	11
City (50+)	4	88	5	0
County	56	32	3	0
City (10-49)	82	14	0	0
Township	83	17	0	0
City (1-9)	90	4	0	0
All Departments	47	27	17	6

2.2.2 Use of Emergency Warning Equipment on Patrolcars

2.2.2.1 Sound Sources on Patrolcars

1. Which of the following sound sources do your patrolcars have in addition to, or instead of, what is found on an ordinary passenger car? (MARK X BY EACH ITEM THAT YOUR CARS HAVE.)

   Special loud horn
   Electronic siren and speaker
   Public address system
   Mechanical or electro-mechanical siren
   Other source of sound (describe briefly)_____

Over three-fourths (82%) of the 437 responding departments had Electronic Sirens on at least some of their patrolcars, and 41% had Mechanical or Electro-Mechanical Sirens so represented. Smaller percentages of County and City (1-9) departments had Electronic Sirens than did larger Cities. In every Department Type a higher percentage of departments were using Electronic Sirens than were using Mechanical or Electro-Mechanical Sirens. States and Counties were using Mechanical or Electro-Mechanical Sirens more than the other Department Types.

Assuming that nearly all departments had sirens of one kind or the other, about one-fourth of the responding departments were using both Electronic and Mechanical or Electro-Mechanical Sirens within the same department; and a slightly greater proportion of States and of the Fifty Largest Cities had both types represented.

Table 1-1. Percentages* of Departments in Each Department Type Reporting Use of Electronic Sirens and Mechanical or Electro-Mechanical Sirens.

DEPARTMENT TYPE:	% Depts. Having Electronic Sirens	% Depts. Having Mechanical/ Electro-Mechanical
50 Largest	96	41
City (50+)	92	42
City (10-49)	83	33
Townships	83	24
State	81	57
County	75	51
City (1-9)	73	36
All Departments	82	41

* The Categories are not mutually exclusive. Departments may have been using both types of sirens.

Fifty-nine percent of the responding departments had a Public Address System as part of their patrolcars' emergency warning system. More Townships and larger City departments (City (50+), City (10-49), and Fifty Largest) had PA Systems than did States and Counties. About half (53%) of the City (1-9) departments had PA Systems in comparison to about two-thirds (61%-72%) of the larger City departments.

Special Loud Horns were used by only about 4% of the responding departments.

Table 1-2. Percentages of Departments in Each Department Type Having Public Address Systems and Special Loud Horns On Their Patrolcars.

DEPARTMENT TYPE:	% Depts. Having PA System	% Depts. Having Loud Horn
City (50+)	72	4
City (10-49)	68	6
Township	66	0
50 Largest	61	0
City (1-9)	53	5
State	47	4
County	41	4
All Departments	59	4

2.2.2.2 Light Sources on Patrolcars

24. What lights or reflectors do your patrolcars usually have in addition to, or instead of, those found on an ordinary passenger car? (MARK X BY EACH ITEM THAT APPLIES.)

Special reflectors or areas of reflectorizing material
Special turn signal lights (sometimes may also be used as "four-way" flashers)
Special clearance or marker light (like those on trucks)
Hand controlled spotlights (not colored)
Fog lights or auxiliary driving lights
Alley or ambush lights (spotlights or floodlights mounted so they aim to the side; not colored)
Automatic flasher that can flash the headlights alternately
Colored flashing or steady burning lights in grille (other than standard parking lamps or turn signals)
Revolving or flashing lights on roof or roof-bar ("Gum-ball," "bubble," or "strobe" lights
Any other warning lights showing to the front? (Describe)
Any other warning lights showing to the rear? (Describe)

It was expected that almost all departments would have flashing lights of some sort on top of their patrolcars, and this was the case in every Department Type except Counties. More than 90% of the responding departments in all other Department Types had Revolving or Flashing Lights On the Roof; only 83% of Counties had such lights.

Grille Lights were used by slightly greater proportions of Counties (21%), States (19%), and Cities (1-9)(17%) than by the other three City Department Types (9-11%). Grille Lights may have been the emergency warning light source for those departments that were not using Revolving Or Flashing Lights On the Roof.

Sixty-nine percent of the responding departments were using Hand-Controlled (non-colored) Spotlights on their patrolcars. Higher percentages of the Fifty Largest Cities, Townships, and Cities (50+) were using Hand-Controlled Spotlights and lower percentages of States and Counties were using them.

Table 24-1. Percentages* of Departments Having Flashing Roof Lights, Grille Lights, and Spotlights, by Department Type.

DEPARTMENT TYPE:	% Depts. Using Revolving Or Flashing Lights On Roof	% Depts. Using Grille Lights	% Depts. Using Hand-Controlled Non-Colored Spotlights
50 Largest	98	9	80
Townships	97	14	79
City (50+)	95	11	75
City (10-49)	95	11	69
State	94	19	60
City (1-9)	91	17	66
County	83	21	61
All Departments	93	14	69

* Categories were not mutually exclusive. Any department may have been using any or all of these light sources on its patrolcars.

In addition to the more commonly expected light sources, (Flashing Lights On Roof, Grille Lights, Hand-Controlled Spotlights), Question 24 solicited responses concerning a number of other emergency warning light

sources on patrolcars. The most frequently reported of these additional light sources are presented in Table 24-2. Special Turn Signal Lights (which sometimes may be used as "four-way" flashers) were being used by more departments (36%) than the other additional light sources (16%).

Table 24-2. Percentages* of Departments Having Special Turn Signal Lights, Automatic Headlight Flashers, and Special Reflectors, by Department Type.

DEPARTMENT TYPE:	% Depts. Having Special Turn Signals	% Depts. Having Alley or Ambush Lights	% Depts. Having Special Reflectors
Township	59	7	7
City (1-9)	40	17	12
City (10-49)	39	21	11
County	34	17	15
City (50+)	33	20	18
50 Largest	33	17	30
State	26	2	21
All Departments	36	16	16

* Categories were not mutually exclusive.

Within the seven Department Types, the use of Special Turn Signals was fairly even except for Townships, where almost three-fifths of the departments reported using this light source. Special Reflectors were used by a higher percentage of the Fifty Largest Cities (30%) than the other Department Types. Only 7% of Townships were using Special Reflectors. Very few States (2%) and Townships (7%) were using Alley or Ambush Lights, but nearly equal percentages (17%-21%) of the other five Department Types were using them.

Three additional specific light sources (Automatic Headlight Flasher, Fog or Auxiliary Driving Lights, and Special Clearance Lights) were listed in the questionnaire for check-off. None of these was being used by as many as 10% of the responding departments.

Table 24-3. Percentages* of Responding Departments Using Each Light Source on Patrolcars.

EMERGENCY WARNING LIGHT SOURCE:	% All Respondents (n = 437)
Flashing Lights on Roof	93
Hand-Controlled Spotlight	69
Special Turn Signal Lights	36
Alley or Ambush Lights	16
Special Reflectors	16
Colored Lights in Grille	14
Automatic Headlight Flasher	9
Fog or Auxiliary Driving Lights	3
Special Clearance Light	2
Other Rear Flashing Lights	18
Other Front Flashing Lights	14
No Answer	1

* Percentages add to more than 100% since multiple answers were allowed.

Fourteen percent of the responding departments cited Other Warning Lights Showing to the Front. These were most often described as steady red lights mounted on the roof (as opposed to revolving or flashing lights on the roof) or red spotlights (as opposed to non-colored spotlights). The 18% which described Other Warning Lights Showing to the Rear most commonly reported flashing or deck lights in the rear window.

2.2.3 Characteristics of Electronic and Electro-Mechanical Sirens

INSTRUCTION: Answer questions #6-14 for the ELECTRONIC siren MOST COMMONLY USED in your department. If you are not certain whether your most commonly used siren is electronic or electro-mechanical, put an X in the box below and fill in the questions for electronic sirens on pages 4 to 7. Electro-mechanical sirens are asked about beginning on page 7.

☐ I am uncertain what type my most commonly used siren is.

INSTRUCTION: Answer questions #15-23 for the ELECTRO-MECHANICAL siren MOST COMMONLY USED in your department.

If your department does not use electro-mechanical sirens, skip to question #24, page 11.

6. The most commonly used electronic siren in your department is:

15. The most commonly used electro-mechanical siren in your department is:

a. Model or Trade Name
b. Manufacturer
c. Number of Patrolcars Having It

} FOR BOTH QUESTIONS

The questionnaire was designed so that the answers to the questions could be referenced to a particular type of siren. This method of questioning was necessary because pretest interviews revealed that most departments had several different sirens in use at the same time. Section 2.2.3 discusses the reported characteristics of these "most commonly used" electronic and electro-mechanical sirens together; i.e., Questions 6 and 15 are discussed, then Questions 7 and 16, and so on, through Questions 14 and 23.

A greater variety of different manufacturers was cited for electronic sirens than for electro-mechanical sirens. The majority of both of these types of sirens was made by Federal Sign and Signal Corp. Of the 18,911 electronic sirens reported to be "most commonly used" in the departments, 84% were made by Federal. Of the 20,278 "most commonly used" electro-mechanical sirens, 79% were made by Federal and 14% were made by Sireno. No other specific manufacturer made as many as 5% of the reported sirens of either type.

Models are not reported since this information was obtained only to facilitate coding manufacturer and type of siren.

Table 6/15-1. Of the 360 Departments Using Electronic Sirens, Percentages Citing Specified Brand as Most Commonly Used; and Percentages of All "Most Commonly Used" Sirens of Each Specified Brand.

MANUFACTURER:	% Depts. Naming Brand As Most Commonly Used (n = 360)	% All "Most Commonly Used" Sirens Reported (n = 18,911)
Federal	64	84
Motorola	5	*
General Electric	4	4
Stephenson/Smith & Wesson	4	2
Sominator (now Stephenson)	4	3
Dun-Bar Nunn (Unitrol)	3	1
Artisan Electronics	3	1
Sireno	2	1
Dietz	2	1
Denelcor	*	1
Other	3	*
No Manufacturer Given	7	1

* Less than 1%

Table 6/15-2. Of the 180 Departments Using Electro-Mechanical Sirens, Percentages Citing Specified Brand as Most Commonly Used; and Percentages of All "Most Commonly Used" Sirens of Each Specified Brand.

MANUFACTURER:	% Depts. Naming Brand as Most Commonly Used (n = 180)	% All "Most Commonly Used" Sirens Reported (n = 20,278)
Federal	61	79
Sireno	11	14
B & M Siren Co.	3	1
Other	5	*
No Manufacturer Given	20	5

* Less than 1%

Note that the 180 departments using electro-mechanical sirens, (42% of all respondents), reported slightly more "Most Commonly Used" Electro-Mechanical sirens than did the 360 (81% of all respondents) departments using electronic sirens. There are two possible reasons for this finding: (1) Many departments reported during follow-up telephone calls that their departments now purchased electronic sirens as replacements when their electro-mechanical sirens failed. If this was a relatively recent change in purchasing decisions, it is possible that the majority of a department's sirens were still electro-mechanical, even though they were using some electronic sirens. (2) More than half of the State departments and about one-third of the Fifty Largest Cities were using at least some electro-mechanical sirens. Both of these Department Types have, on the average, large fleets of patrolcars, and could have contributed disproportionately to the total numbers of sirens reported.

7. and 16. Where is this type electronic/electro-mechanical siren usually located?

On a utility bar above the roof
Right on the roof
On the right front fender
On the left front fender
Under the hood, right behind the grille & free from obstructions
Under the hood, in the engine compartment
Other (Specify)

The most common location for electronic sirens was on top of the patrolcar; 58% of the users of electronic sirens placed at least some of their sirens On a Utility Bar Above the Roof, and 13% placed at least some of them Right On the Roof. The larger City Department Types [Fifty Largest, Cities (50+), and Cities (10-49)] were most likely to place the electronic sirens On a Utility Bar. States were more likely than other Department Types to mount electronic sirens Under the Hood, Behind the Grille.

Electro-mechanical sirens were most often placed under the hood of the patrolcar; 48% of the users of electro-mechanical sirens placed at least some of those sirens Under the Hood, Behind the Grille; and 43% mounted at lease some Under the Hood, In the Engine Compartment. More of the Cities (10-49) and Cities (50+) mounted their electro-mechanical sirens In the Engine Compartment than Behind the Grille. Other Department Types were using these two locations in almost equal proportions. Only 14% of the users of electro-mechanical sirens mounted any of these sirens On the Utility Bar and only 6% of the 203 departments mounted them Right On the Roof.

Table 7/16-1. Of the Departments in Each Department Type Using Electronic and Electro-Mechanical Sirens, Percentages* Mounting Them On a Utility Bar or Right On the Roof of the Patrolcar.

DEPARTMENT TYPE:	ON UTILITY BAR:		RIGHT ON ROOF:	
	% Electronic	% Electro-mechanical	% Electronic	% Electro-mechanical
50 Largest	61	16	30	5
City (50+)	74	14	16	11
City (10-49)	71	29	4	4
City (1-9)	52	18	12	0
Township	54	**	4	**
State	37	0	16	7
County	38	11	11	6
All Departments	58	14	13	6

* Categories are not mutually exclusive. Departments may have utilized both locations.
** Fewer than 10 Township departments used electro-mechanical sirens.

Table 7/16-2. Of the Departments in Each Department Type Using Electronic and Electro-Mechanical Sirens, Percentages* Which Mounted Them Behind the Grille or In the Engine Compartment.

DEPARTMENT TYPE:	BEHIND THE GRILLE:		IN ENGINE COMPARTMENT:	
	% Electronic	% Electro-mechanical	% Electronic	% Electro-mechanical
50 Largest	25	42	5	42
City (50+)	24	54	5	23
City (10-49)	28	46	4	46
City (1-9)	39	57	4	29
Townships	33	**	17	**
State	45	48	18	59
County	58	39	11	58
All Departments	35	48	8	43

* Categories are not mutually exclusive.
** Fewer than 10 Township departments used electro-mechanical sirens.

Almost none of the departments mounted either of these two types of sirens in any other location.

Table 8/17-2. Of the Departments Citing Problems With Their Electronic or Electro-Mechanical Sirens, the Percentages* Citing Specified Problem.

PROBLEM:	ELECTRONIC SIRENS: % Depts. With Problem (n = 129)	ELECTRO-MECHANICAL: % Depts. With Problem (n = 106)
Sometimes motorists do not seem to hear them	64	88
Freeze up in winter	19	37
Relay or switch problems	19	25
Wiring problems	19	12
Officer cannot hear radio	14	8
Too loud for some uses	9	2
Delay from time siren turned on until it sounds	5	11
Other	30	27

* Percentages add to more than 100% since multiple answers were allowed.
** Percentages in text table differ from tables in appendix since text table is based only on respondents with problems, while tables in appendix include: All Respondents.

"Other" problems cited with electronic sirens included transistor problems, speaker failures, and equipment not durable enough. "Other" problems associated with electro-mechanical sirens included mounting problems, siren drains the battery, and siren takes too long to cease output when it is turned off.

9.and 18. Please rate the performance of this type electronic/ electro-mechanical siren in terms of how often it must be repaired:

Needs repair more often than every six months
Needs repair every 6-12 months
Needs repair about once a year
Needs repair about once every 2 to 3 years
Needs repair less often than every 3 years
Never needed repair; have had for ____ months
(no.)

Electronic sirens and electro-mechanical sirens appeared to have similar frequencies of repair. About one-third of the users of each of these two types of sirens said their Most Commonly Used electronic/electro-mechanical sirens needed repair once a year or more often, about one-third said their Most Commonly Used Siren had never needed repair. These answers were probably best estimates rather than data from records.

Table 9/18-1. Of the Departments Using Electronic and Electro-Mechanical Sirens, Percentages Citing Each Repair Category.

FREQUENCY OF REPAIR:	% Depts. Using Electronic Sirens (n = 360)	% Depts. Using Electro-Mechanical (n = 160)
More Than Every 6 Months	3	1
Every 6-12 Months	7	8
Once a Year	18	12
Once Every 2 or 3 Years	21	22
Less Than Every 3 Years	16	21
Never Needed Repair	34	35
No Answer	1	3

There were striking differences among the seven Department Types in their answers to this question. More than half (55%) of the Cities (1-9) which used electronic sirens said they had never had to repair them, and 64% of the Cities (1-9) which used electro-mechanical sirens had never had to repair them. This compares with 11% of the Fifty Largest City departments with electronic sirens, and 16% of the Fifty Largest City departments with electro-mechanical sirens.

Table 9/18-2. Of the Departments in Each Department Type Using Electronic and Electro-Mechanical Sirens, the Percentages Which Had Never Had to Repair Their Most Commonly Used Siren.

DEPARTMENT TYPE:	ELECTRONIC: % Depts. Never Having to Repair	ELECTRO-MECHANICAL: % Depts. Never Having to Repair
50 Largest	11	16
City (50+)	22	20
State	29	15
Township	37	*
County	38	50
City (10-49)	42	36
City (1-9)	55	64
All Departments	34	35

* Fewer than 10 Townships were using electro-mechanical sirens.

Departments which had never needed to repair their sirens were asked to indicate how long they had had those sirens. It appears that the electronic sirens which had never needed repair were considerably newer than the never-repaired electro-mechanical sirens. Only 15% of the departments with never-repaired electronic sirens had had those sirens in use more than 3 years. But, 37% of the departments with never-repaired electro-mechanical sirens had had them in use more than 3 years.

Table 9/18-3. Of the Departments Whose Most Commonly Used Sirens Had Never Needed Repair, Length of Time Those Sirens Had Been in Use.*

TIME IN USE:	ELECTRONIC SIRENS: % Depts. Never Having Had to Repair (n=122)	ELECTRO-MECHANICAL: % Depts. Never Having Had to Repair (n=63)
1 Year or Less	38	24
13 Months - 2 Years	26	17
25 Months - 3 Years	18	13
37 Months - 4 Years	6	10
More Than 4 Years	9	27
No Answer	3	10

* Percentages in text table differ from tables in appendix since text table is based only on respondents never needing repair while tables in appendix include all respondents.

10. and 19. What part or component is the most common cause of breakdowns in this type electronic/electro-mechanical siren?

(CHOICES SUPPLIED FOR ELECTRONIC SIREN)

Speaker fails
Electronics fail
Control Switch
Other (specify)
Other (specify)

(CHOICES SUPPLIED FOR ELECTRO-MECHANICAL SIREN)

Brushes
Bearings
Windings
Control Switch
Other (specify)
Other (specify)

As a result of pretest interviews with police departments and consultations with experts in this area, it was determined that the answer choices supplied for this question could not be identical for electronic and electro-mechanical sirens. Therefore, only the proportions of users of these two types that gave No Answer or said "No Failures" may be compared.

The percentages of departments which gave No Answer or said No Failures to this question were approximately equal for electronic and electro-mechanical siren users. In addition, No Answer/No Failure percentages for this question tended to parallel the "Never Needed Repair" percentages from Questions 9 and 18 (except for the electro-mechanical siren users in the Fifty Largest Cities).

Table 10/19 and 9/18. Of the Departments in Each Department Type Using Electronic and Electro-Mechanical Sirens, the Percentages Reporting "Never Needed to Repair" to Qs. 9 and 18, and Giving "No Answer" or Reporting "No Problems" to Qs. 10 and 19.

DEPARTMENT TYPE:	ELECTRONIC SIRENS:		ELECTRO-MECHANICAL:	
	% Depts. No Answer/No Failure(Q.10)	% Depts. "Never Repair"(Q.9)	% Depts. No Answer/No Failure(Q.19)	% Depts. "Never Repair"(Q.18)
50 Largest	7	11	0	16
City (50+)	22	22	20	20
State	29	29	7	15
Township	45	37	*	*
County	40	38	47	50
City (10-49)	37	42	36	36
City (1-9)	50	55	61	64
All Departments	33	34	31	35

* Fewer than 10 Townships used electro-mechanical sirens.

The most common component/part cause of failures reported by the 243 electronic siren users that cited any failure were Speaker (39%) and Electronics (35%).

Table 10. Of the 243 Electronic Siren Users That Cited a Cause of Failure, Percentages* Citing Specified Component.**

COMPONENT:	% Electronic Siren Users That Cited Any Cause of Failure (n = 243)
Speaker	39
Electronics	35
Control Switch	21
Other	21

* Percentages add to more than 100% since multiple answers were allowed.
** Percentages in text table differ from tables in appendix since text table is based only on respondents citing failure while tables in appendix include all electronic siren owners.

The 123 departments using electro-mechanical sirens that cited any component/part cause of failure most often said that failure was associated with the Brushes (38%), Control Switch (36%), or Bearings (31%).

Table 19. Of the 123 Electro-Mechanical Siren Users That Cited a Cause of Failure, Percentages Citing Specified Component. *

COMPONENT:	% Electro-Mechanical Users That Cited Any Cause of Failure (n = 123)
Brushes	38
Control Switch	36
Bearings	31
Windings	6
Other	19

* Percentage in text table differ from those appendix since text table percentages are based only on respondents who cited failure.

For both siren types, the "Other" causes of failure listed were, in almost all cases, not specifically related to a siren component. Rather, they were the kinds of problems mentioned in Questions 8 and 18: Motorists don't seem to hear siren, siren freezes in winter, equipment no durable etc. For electronic sirens, transistors were mentioned most frequently in the category "Other".

11. About how long do you use most of your sirens of this type before the electronic package or speaker must be replaced?

THE ELECTRONICS:	THE SPEAKER:
Less than one year	Less than one year
1 - 3 years	1 - 3 years
4 - 6 years	4 - 6 years
7 - 10 years	7 - 10 years
More than 10 years	More than 10 years
Never needed to replace: have had for ____ months.	Never needed to replace: have had for ____ months.

20. About how long do you use most electro-mechanical sirens of this type before they are replaced or rebuilt?

Less than one year
1 - 3 years
4 - 6 years
7 - 10 years
More than 10 years
Never needed to replace: have had for ____ months.

Although these two questions were slightly different, it is possible to make some limited comparisons of the lengths of time to replacement for electronic and electro-mechanical sirens. The most interesting aspect of these data is that a much higher percentage of electro-mechanical siren users had had their sirens in use for More Than 10 Years before needing to replace or rebuild them. And, much higher percentages of electronic siren users had Never Had to Replace the electronics or the speakers of their sirens.

Table 11/20-1. Of Those Departments Using Electronic and Electro-Mechanical Sirens, Percentages Citing Each Length of Time to Replacement.

LENGTH OF TIME TO REPLACEMENT:	ELECTRONIC SIRENS: SPEAKER: % All Depts. Using (n = 360)	*	ELECTRONIC SIRENS: ELECTRONICS: % All Depts. Using (n = 360)	*	ELECTRO-MECHANICAL: % All Depts. Using (n = 180)	*
Less Than 1 Year	2	2	1	1	0	0
1 - 3 Years	19	21	12	13	11	11
4 - 6 Years	16	37	17	30	18	29
7 - 10 Years	9	46	12	42	21	50
More Than 10 Years	5	--	5	--	20	--
Never Replaced/Rebuilt	42	--	49	--	26	--
No Answer	7	--	5	--	4	--
		*		*		*

* Cumulative percentages.

Since it is known that electro-mechanical sirens have been commonly available to police departments longer than electronic sirens, these data were broken down in two additional ways: (1) All users who had ever replaced or rebuilt their "Most Commonly Used" siren, and (2) All users who had never replaced/rebuilt that type of siren.

The data from only those departments which had ever replaced/rebuilt their sirens showed even more clearly that electro-mechanical sirens were in use longer before replacement than electronic sirens. Almost 60% of the electro-mechanical siren users (that had replaced sirens) had used the sirens at least 7 years before they had to be replaced or rebuilt. In contrast, 37% of the electronic users (that had replaced sirens) had been able to use their speakers that long, and only 27% had been able to use the electronic package as many as 6 years.

Table 11/20-2. Of the Departments Which Had Replaced (Rebuilt) Their Electronic (Speaker or Electronics) or Electro-Mechanical Sirens, Percentages Citing Each Length of Time to Replacement.

LENGTH OF TIME TO REPLACEMENT:	ELECTRONIC SIRENS: SPEAKER: % Depts. Replacing (n = 166)	ELECTRONIC SIRENS: ELECTRONICS: % Depts. Replacing (n = 180)	ELECTRO-MECHANICAL: % Depts. Replacing (n = 126)
Less Than 1 Year	2	4	0
1 - 3 Years	25	37	16
4 - 6 Years	37	32	25
7 - 10 Years	27	17	30
More Than 10 Years	10	10	29

* Percentages differ from those in appendix table, since text table percentages are based only on respondents who have replaced or rebuilt sirens.

The data from only those departments which had never replaced/rebuilt their sirens again showed that electro-mechanical sirens were in use longer without need for replacement than electronic sirens. Twenty-six percent of the electro-mechanical siren users that had never replaced/rebuilt them had had those sirens in use for more than 5 years. This compares with 10% of the electronic siren users that had not replaced their speakers and 7% of the electronic users that had not replaced the electronics.

Table 11/20-3. Of the Departments That Had Not Replaced (Rebuilt) Their Electronic or Electro-Mechanical Sirens, Percentages Citing Each "Time in Use" Category.

YEARS IN USE:	ELECTRONIC SIREN: SPEAKER: % Depts. Never Replacing (n = 153)	ELECTRONIC SIREN: ELECTRONICS: % Depts. Never Replacing (n = 177)	ELECTRO-MECHANICAL: % Depts. Never Replacing/Rebuilding (n = 46)
1 Year or Less	27	25	22
More Than 1, To 2 Yrs.	22	22	17
More Than 2, To 3 Yrs.	20	20	11
More Than 3, To 5 Yrs.	16	17	8
More Than 5, To 8 Yrs.	9	6	11
More Than 8 Years	1	1	15
No Answers	5	7	15

* Percentages differ from those in appendix table, since text table percentages are based only on respondents who have not replaced (rebuilt) sirens.

Although all of these data appear to support the idea that electro-mechanical sirens last longer than electronic sirens, it is possible that the data are simply showing that police departments have not had any electronic sirens in use for a long number of years. In addition, these data do not reflect the levels of use ("on time") of these two types of sirens, nor do they reflect the conditions (e.g., weather) under which they may have been operated.

12. and 21. What improvements could be made in this type electronic/electro-mechanical siren?

No choices were provided for this question. The respondents' narrative answers were used to develop categories and then each answer was coded. About two-thirds of the siren users left this question blank; Electronic siren users: 67% No Answer, and Electro-mechanical siren users: 64% No Answer.

Of the 138 users of electronic sirens that suggested improvements, 19% said their sirens needed more power/were not loud enough, and 19% suggested improvements for the electronic siren speaker. There were a great many miscellaneous suggestions: 15% Other. The two improvements suggested most frequently logically follow answers to Qs. 8 and 10: The most common problem reported for electronic sirens was that motorists seemed not to hear them, and the component reported to be the most likely to cause electronic siren breakdown was the speaker.

Table 12. Of the 138 Departments Using Electronic Sirens and Suggesting Improvements for Those Sirens, Percentages* Suggesting Specified Improvement.**

IMPROVEMENT:	% Electronic Siren Users Making Suggestions (n = 138)
Need more power/siren not loud enough	19%
Speaker improvements, such as improved voice coil, greater power capacity, improved durability	19
Better protection for speakers against weather	13
Switches/controls unsatisfactory, complicated, need greater flexibility	13
Need adjustable volume control (more flexible, greater output range)	9
More durable/better quality	9
Mounting (speaker and/or control) for audibility and convenience	8
Other	15

* Percentages add to more than 100% since multiple answers were allowed.

** Percentages differ from those in appendix since text table percentages are based only on respondents suggesting improvements.

For electro-mechanical siren users also, increasing the volume of the siren was the improvement suggested most frequently (by those who made suggestions). Almost one-fifth of those departments, however, said that the way to improve their electro-mechanical sirens was to replace them with electronic sirens.

Sixteen percent of the departments suggesting improvements in their electro-mechanical sirens said that their sirens should be made smaller and/or lighter, a suggestion rarely made by electronic siren users. In Q. 19, the components reported to be the most common cause of electro-mechanical siren breakdown were the brushes and bearings. These components were associated with 11% of the suggested improvements.

Table 21. Of the 77 Departments Using Electro-Mechanical Sirens and Suggesting Improvements for Those Sirens, Percentages* Suggesting Specified Improvement.**

IMPROVEMENT:	% Electro-Mechanical Siren Users Making Suggestions (n = 77)
Increase volume/make siren louder	33%
Replace with electronic sirens	16
Make smaller and lighter weight	16
Improve mounting	13
Improve brushes, bearings, lubrication system	11
Better braking system/faster motor stop	8
Other	8

* Percentages add to more than 100% since multiple answers were allowed.

** Percentages differ from those in appendix tables since text tables are based only on respondnets suggesting improvements.

It must again be emphasized that the great majorities of electronic and electro-mechanical siren users suggested no improvements for their sirens. Tables 12. and 21. are based on the answers of only about one-third of all departments using each of these two types of sirens.

13. and 22. Can you think of any other electronic/electro-mechanical siren currently on the market that might meet your needs better? (Please give model or trade name and manufacturer if known.)

Model:
Manufacturer:

14. and 23. What is there about this other type electronic/electro-mechanical siren that would make it better for your particular needs?

Almost no departments answered these questions: 93% of the electronic siren users gave No Answer, and 96% of the electro-mechanical siren users gave No Answer. These results do not necessarily mean that departments were satisfied with the equipment they had, they might be indicating lack of familiarity with other available equipment.

Since so few responses were elicited, they are not discussed here. See Tables 13, 14, 22 and 23 in Appendix B.

2.2.4 Emergency Warning Lights

INSTRUCTIONS: Please give the following information about the MOST COMMON type of emergency warning lights (beacons or flashers) used in your department.

MOST USED BEACON OR FLASHING LIGHT

27.a. Model No. or Trade Name

27.b. Manufacturer

27.g. Mounted:

Directly on Vehicle
On Utility Bar

27.h. Number of patrolcars having this model of emergency warning light:

As for the questions about sirens, the questions about emergency warning lights (beacons or flashers) were phrased so that they could be referenced to particular lights (Most Common). This was done because pretests showed that many departments had more than one kind of beacon/flasher in use, and the questions would have been difficult to answer meaningfully for those departments which had two or more dissimilar lights in use.

In 61% of the responding departments, their Most Common beacon/flashing lights were made by Federal Sign and Signal Corp. Ten percent of the departments said their Most Common lights were made by Dietz. No other specific manufacturer was reported by as many as 5% of the departments for their Most Common beacons/flashing lights. (Model number was requested only to improve the accuracy in determining manufacturer.)

The 437 responding departments reported a total of 26,618 patrolcars equipped with their Most Common beacons/flashing lights. The majority of these patrolcars were equipped with either Federal (67%) or Dietz (16%) emergency warning lights. Only 17% of the patrolcars equipped with the departments' Most Common lights were made by manufacturers other than Federal or Dietz.

If the numbers of patrolcars equipped with "Most Common" electronic or electro-mechanical sirens (Qs. 6C and 15C) are used as a minimum estimate of the numbers of patrolcars* in the responding departments, and if it is assumed that most of these patrolcars would be equipped with beacons/flashing lights as well as sirens; the answers to these questions about Most Common emergency warning lights probably represent no more than 68% of all the emergency warning beacons/flashing lights in the responding departments. Any conclusions based on these data should, therefore, explicitly recognize that the data are based on only a portion (albeit an assumed majority) of the lights in use in those departments.

* A different but comparable sample of departments received the Patrolcars Questionnaire of the LEAA Police Equipment Survey. The 449 respondents to that questionnaire reported about 46,000 patrolcars in use in their departments.

About three-fifths of the responding departments mounted their Most Common beacons/flashing lights on a Utility Bar above the roof of the vehicle and about two-fifths mounted them Right On the Vehicle. Only about 2% said they mounted these lights in both locations.

Table 27A./27B./27G./27H. Percentages of Departments Whose "Most Common" Emergency Warning Beacons/Flashing Lights Were Made by Each Manufacturer, and Where These Lights Were Mounted. Percentages of Patrolcars Equipped With Each Brand of Light.

MANUFACTURER:	% Depts. Using This Brand as "Most Common" (n=437)	% Total Patrolcars Reported (n=26,618)	% Depts. Using That Brand Mounting It: Directly on Vehicle	On Utility Bar
Federal	61	67	32	68
Dietz	10	16	48	52
Sireno	3	2	56	44
Unity	3	2	55	44
Whelen	2	3	38	63
Trippe Man. Co.	2	2	55	44
Other Manufacturer	7	7	39	71
No Manufacturer Given	12	1	51	49
TOTAL	100	100	38	62

INSTRUCTIONS: Please give the following information about the MOST COMMON type of emergency warning lights (beacons or flashers) used in your department.

MOST USED BEACON OR FLASHING LIGHT

:
:
27.c. Number of lights per unit _____
:
:

The majority of the responding departments were using less than three lights per unit for their Most Common beacons/flashing lights: 18% used One Light/Unit, 44% used Two Lights/Unit. A higher percentage of State departments

(34%) were using only One Light/Unit than were the other Department Types. A higher percentage of the Fifty Largest Cities (28%) were using Four Lights/Unit.

Table 27C. Percentages of Departments in Each Department Type Using Specified Number of Lights Per Unit in Their "Most Common" Beacons/Flashing Lights.

DEPARTMENT TYPE:	% Depts. One Light Per Unit	% Depts. Two Lights Per Unit	% Depts. Three Lights Per Unit	% Depts. Four Lights Per Unit	% No Answer
State	34	36	6	21	2
County	25	30	10	17	14
City (1-9)	21	40	16	12	8
50 Largest	15	46	4	28	2
City (50+)	14	52	10	20	2
City (10-49)	10	55	6	18	10
Township	7	48	7	21	17
All Departments	18	44	9	19	8

INSTRUCTIONS: Please give the following information about the MOST COMMON type of emergency warning lights (beacons or flashers) used in your department.

MOST USED BEACON OR FLASHING LIGHT

27.d. Number of units per vehicle _____

About three-fourths of the responding departments reported that they had only one of their Most Common emergency warning light units per vehicle. Almost 9 out of 10 (89%) of State departments had only One Unit/Vehicle compared to 68%-76% of the departments in the other six Department Types.

Thirteen percent of the departments reported Two Units/Vehicle and only 4% reported More Than Two Units/Vehicle.

Table 27D. Percentages of Departments in Each Department Type Using Specified Number of Units Per Vehicle.

DEPARTMENT TYPE:	% Depts. One Unit Per Vehicle	% Depts. Two Units Per Vehicle	% Depts. More Than Two Units Per Vehicle	% No Answer
State	89	6	4	0
50 Largest	76	17	4	2
City (10-49)	75	12	3	10
City(50+)	73	19	3	4
City (1-9)	69	12	9	10
Township	69	7	0	24
County	68	13	2	17
All Departments	74	13	4	9

INSTRUCTIONS: Please give the following information about the MOST COMMON type of emergency warning lights (beacons or flashers) used in your department.

MOST USED BEACON OR FLASHING LIGHT

:

27.e. Color(s) of warning signal:
- Red & Blue
- Red & Clear
- Blue & Clear
- Clear
- Red
- Blue
- Yellow (Amber)
- Other (specify)

27.f. Color of dome _____

:

Three-quarters of the responding departments used Red (either alone or in combination with other colors) for their Most Common emergency warning lights. One half (56%) used Only Red warning signals. Within each of the seven Department Types, the greatest proportions of departments were using red warning signals, but a slightly smaller percentage of States were using Red than the other Department Types.

About one-third (34%) of the departments were using Blue warning signals (either alone or in combination with other colors), but only 21% were using Only Blue warning signals. A slightly greater percentage of State departments (34%) were using Only Blue warning signals than the other Department Types (Range: 21% of Townships to 28% of the Fifty Largest Cities).

Table 27E-1. Percentages of Departments in Each Department Type Using Red or Blue Warning Signals in Their "Most Common" Beacons/Flashers.

DEPARTMENT TYPE:	RED:			BLUE:		
	% Depts. Red Only	% Depts. Red & Clear	% Depts. Any Red	% Depts. Red & Blue	% Depts. Any Blue	% Depts. Blue & Clear	% Depts. Blue Only
City(1-9)	64	8	70	8	35	4	23
State	57	4	63	2	36	0	34
County	56	11	75	8	32	0	24
City(10-49)	54	12	77	11	34	2	21
City(50+)	54	10	72	8	33	2	23
50 Largest	52	13	74	9	39	2	28
Township	45	21	73	7	28	0	21
All Depts.	56	11	75	8	34	2	24

Very few of the responding departments were using Only Clear (6%) or Only Yellow (7%) warning signals in their Most Common beacons/flashing lights. However, 19% of State departments reported that they were using Only Yellow warning signals.

Table 27E-2. Percentages of Departments in Each Department Type Using Clear or Yellow Warning Signals In Their "Most Common" Beacons/Flashers.

DEPARTMENT TYPE:	CLEAR:				YELLOW/AMBER:
	% Depts. Clear & Red	% Depts. Clear & Blue	% Depts. Any Clear	% Depts. Clear Only	% Depts. Yellow Only
City (1-9)	8	4	13	1	9
State	4	0	6	2	19
County	11	0	14	3	11
City (10-49)	12	2	20	6	7
City (50+)	10	2	17	5	12
50 Largest	13	2	19	4	11
Township	21	0	28	7	7
All Departments	11	2	17	4	11

Differences among Department Types in their use of various colors and color combinations were not striking. A few slight differences are noted above. Since developmental and pretest interviews with police departments revealed a high degree of interest in this question, a word of caution is warranted. These data cannot be used to evaluate the effectiveness of the different colors/color combinations as warning signals; they simply reflect what departments were using at the time of the survey. The Law Enforcement Standards Laboratory of the National Bureau of Standards is conducting tests to determine the efficacy of various colors of warning signals.

The percentages of departments using each color of dome for their Most Common beacons/flashing lights were similar to those for the various colors of warning signals: About half (51%) of the departments had red domes, one-fourth had blue domes, and 14% had clear domes. The unusually high percentage of No Answers to this question (compared to Q. 27E) can probably be attributed to the fact that no choices were supplied for Question 27F as they were for 27E.

Table 27F. Percentages of Responding Departments Using Specified Color of Dome With Their "Most Common" Beacons/Flashing Lights.

COLOR OF DOME:	% Depts. Using That Color (n = 437)
Red	51
Blue	25
Clear	14
Yellow	1
Chrome*	1
No Answer	14

* These departments probably confused the base of the dome with the dome itself.

INSTRUCTIONS: Please give the following information about the MOST COMMON type of emergency warning lights (beacons or flashers) used in your department.

MOST USED BEACON OR FLASHING LIGHT

28. About how long does this model of beacon or flashing light work before it needs repair or service? (other than lamp replacement)

Less than 1 year
1 - 3 years
4 - 6 years
7 - 10 years
More than 10 years
Never needed to repair; have had for ____ months

Thirty-eight percent of the responding departments reported that they had to repair their beacons/flashing lights every three years or oftener. In contrast, over half of the States (51%), Cities 50+ (53%), and the Fifty Largest Cities (55%), said they had to repair these lights every three years or oftener. As was the case for sirens, smaller Cities and Townships were

much more likely than larger Cities and States to say they had Never Needed to Repair their beacons/flashing lights. About one-third of all responding departments said Never Needed to Repair, but 59% of Townships and 52% of Cities (1-9) gave that answer.

Of the 149 departments that had Never Needed to Repair their beacons/flashing lights, 30% had had them for a year or less. Only 21% had had those lights more than three years.

Table 28. Percentages of Departments in Each Department Type Reporting Specified Length of Time Before Repair for Their "Most Common" Beacons/Flashing Lights.

DEPARTMENT TYPE:	LENGTH OF TIME BEFORE REPAIR:				
	% Depts. Less Than 1 Year	% Depts. 1-3 Years	% Depts. 4-6 Years	% Depts. 7 Years Or More	% Depts. Never Needed To Repair
State	11	40	17	19	9
City (50+)	10	43	17	6	23
50 Largest	9	46	26	11	9
City (1-9)	5	25	13	5	52
County	3	20	14	18	39
City (10-49)	2	26	23	3	44
Township	0	24	14	3	59
All Depts.	6	32	18	9	34

INSTRUCTIONS: Please give the following information about the MOST COMMON type of emergency warning lights (beacons or flashers) used in your department.

MOST USED BEACON OR FLASHING LIGHT

:

29. What are the most common causes of breakdown or malfunction in this model beacon or flasher?
    Bulb failure
    Mechanical failure
    Failure caused by weather
:   Other

Bulb failure was the most frequently cited cause of breakdown or malfunction of the departments' Most Common beacons/flashing lights: Over 40% of all responding departments chose this answer, and about one-third or more of the departments in every Department Type chose this answer. "No Answers," which most probably meant that the department had had no failures (see Q. 28), were much more common for Counties and Smaller Cities than for States, Cities (50+), and the Fifty Largest Cities.

Table 29. Percentages* of Departments in Each Department Type Reporting Specified Common Cause of Breakdown Or Malfunction for Their "Most Common" Beacons/Flashers.

DEPARTMENT TYPE:	CAUSE OF FAILURE OR MALFUNCTION:				
	% Depts. Bulb Failure	% Depts. Mechanical Failure	% Depts. Weather Caused Failure	% Depts. Other Cause of Failure	% Depts. No Failure/ No Answer
50 Largest	61	30.	11	15	4
City (50+)	55	24	12	10	12
Township	45	14	7	7	35
State	40	40	15	15	6
County	39	17	4	1	42
City (1-9)	34	17	8	10	33
City (10-49)	32	21	5	11	37
All Depts.	43	23	8	10	26

* Percentages add to slightly more than 100% since multiple answers were allowed.

Much higher percentages of States, Cities (50+), and the Fifty Largest Cities answered this question. As many of the State departments cited Mechanical Failure as the most common cause of light malfunction as cited Bulb Failure. In contrast, about twice as many of the City (50+) and Fifty Largest City departments cited Bulb Failure as cited Mechanical Failure.

"Other" causes of malfunction mentioned were damage caused by car wash, domes/glass breaking, and poor grounding.

INSTRUCTIONS: Please give the following information about the MOST COMMON type of emergency warning lights (beacons or flashers) used in your department.

MOST USED BEACON OR FLASHING LIGHT

:
:

30. About how long can this model of emergency warning light be used before it must be replaced?
   Less than 1 year
   1 - 3 years
   4 - 6 years
   7 - 10 years
   11 - 15 years
   More than 15 years
   Never needed to replace; have had for ____ months

:
:

A slightly higher percentage of the responding departments said they had Never Needed to Replace their beacons/flashing lights (40%) than said they had Never Needed to Repair them (34%, Question 28). As was the case with repair, lower percentages of the Fifty Largest Cities and States had Never Needed to Replace those lights than the other five Department Types.

Table 28/30. Percentages of Departments in Each Department Type Which Had Never Needed to Repair (Q. 28) or Never Needed to Replace (Q. 30) Their "Most Common" Beacons/Flashing Lights.

DEPARTMENT TYPE:	NEVER NEEDED TO:	
	REPLACE: % Depts.	REPAIR: % Depts.
50 Largest	15	9
State	28	9
City (50+)	35	23
County	39	39
City (10-49)	44	44
City (1-9)	55	52
Township	62	59
All Departments	40	34

Of the 174 departments which had Never Needed to Replace their lights, about two-thirds had had those emergency warning lights in use for three years or less; about three-fourths had had them in use for four years or less. There is reason to suggest, therefore, that the States and Fifty Largest Cities may have had different purchasing practices than the smaller Department Types.

The most frequent time period to replacement was between four and ten years after purchase (35% of all responding departments). Only 10% of all the responding departments said they could use these beacons/flashers more than ten years before replacing them; but 15% of States and 24% of the Fifty Largest Cities said they could use their lights more than ten years.

Table 30. Percentages of Departments in Each Department Type Which Cited Specified Time to Replacement Interval For Their "Most Common" Beacons/Flashing Lights.

DEPARTMENT TYPE:	TIME INTERVAL TO REPLACEMENT:				
	% Depts. 0-3 Years	% Depts. 4-6 Years	% Depts. 7-10 Years	% Depts. 11+ Years	% Depts. No Answer/ Never
50 Largest	13	20	26	24	17
State	9	13	30	15	34
City (50+)	10	18	23	9	40
County	1	15	21	8	53
City (10-49)	11	15	18	5	52
City (1-9)	9	13	6	9	63
Township	7	14	14	0	65
All Departments	8	16	19	10	47

INSTRUCTIONS: Please give the following information about the MOST COMMON type of emergency warning lights (beacons or flashers) used in your department.

MOST USED BEACON OR FLASHING LIGHT

31. What improvements can you suggest for this model of emergency warning lights?

32. Can you think of any other emergency warning light currently on the market that might meet your needs better? (Please give model, manufacturer, type, color, if known.)
    Model:
    Manufacturer:
    Type:
    Color:

33. What is there about this other light that would make it meet your needs better?

Eighty-eight percent of the responding departments left Questions 32 and 33 blank. Those data will not be presented here. However, about one-fourth of the departments did suggest improvements for their Most Common emergency warning lights. The respondents' narrative answers were coded and tabulated. The most frequent improvements mentioned were Make More Visible, Make More Weatherproof, and Improve Motor/Bearings/Gears.

Table 31. Of the 115 Departments Suggesting Improvements for Their "Most Common" Emergency Warning Lights, Percentages* Citing Specified Improvement.**

IMPROVEMENT:	% Depts. Suggesting Any Improvement (n = 115)
Make lights brighter/more intense/more visible, etc.	21
Make unit more weatherproof/sealing	19
Improve motors/bearings/gears	16
Better quality/more durable	9
Improve mounting	8
More theftproof/vandalproof	6
Change to blue lights	6
Increase flash speed/turning rate	5
Improve Domes	5

* This is not the entire list of categories; see Appendix B for complete listing.

** Percentages differ from those in appendix since text table is based on only those who cited improvements.

2.2.5 Activities for Which Emergency Warning Equipment Is Used

2. Which of the following do your officers usually use when signalling a motorist to pull over during the daytime? (MARK X BY EACH ITEM THAT APPLIES)
   - Siren
   - Horn
   - Public Address System
   - Flashing Lights

3. Which of the following do your officers usually use when signalling a motorist to pull over at night? (MARK X BY EACH ITEM THAT APPLIES)
   (Same Choices Supplied)

Almost all of the responding departments said they used Flashing Lights to signal motorists to pull over: 90% for daytime signals and 99% for nighttime signals. In addition, nearly two-thirds of the departments used Sirens to signal pull over: 64% for daytime and 62% at night. Forty-four percent said they used their patrolcar Horns during the daytime, less than one-third (30%) used the Horn at night. The relatively small percentages of departments using the Public Address System to signal pull over were probably at least partially a result of the fact that fewer departments had PA Systems (41% of all respondents) while virtually all had Sirens, Emergency Warning Lights, and Horns.

Table 2/3-1. Percentages* of Departments Using Specified Emergency Warning Devices to Signal Motorists to Pull Over During the Daytime and at Night.

WARNING SIGNAL:	% Depts. Using During DAYTIME (n = 437)	% Depts. Using At NIGHT (n = 437)
Flashing lights	90	99
Siren	64	62
Horn	44	30
Public Address System	11	10

* Percentages add to more than 100% since more than one device could be used at the same time.

The three largest City Department Types [(10-49), (50+), and 50 Largest] were roughly similar in their use of these emergency warning signals both in the daytime and at night, except that slightly more of the Fifty Largest Cities were using their PA System to signal. State and County use of these signals, however, was different from Cities and from each other. A higher proportion of Counties used Sirens for daytime signalling, whereas a higher

proportion of States used the car Horn. States were the only Department Type in which more departments reported using the car Horn than the Siren for signalling motorists to pull over during the day.

Table 2 -2. Percentages* of Departments in Each Department Type Using Specified Emergency Warning Device To Signal Motorists To Pull Over During the Daytime.

DEPARTMENT TYPE:	EMERGENCY WARNING DEVICE:			
	% Depts. Flashing Lights	% Depts. Siren	% Depts. Horn	% Depts. PA System
Township	100	69	34	3
County	96	72	25	11
City (1-9)	91	58	34	5
City (10-49)	90	69	50	15
50 Largest	87	61	46	24
State	87	49	57	13
City (50+)	84	65	59	7
All Departments	90	64	44	**

* Percentages add to more than 100%.
** Less than 1%.

4. Which of the following do your officers usually use for emergency runs during the daytime? (MARK X BY EACH ITEM THAT APPLIES)

5. Which of the following do your officers usually use for emergency runs at night? (MARK X BY EACH ITEM THAT APPLIES)

Siren
Horn
Public Address System
Flashing Lights

Over 90% of the responding departments reported using both Siren and Flashing Lights for emergency runs. Very few used the patrolcar Horn or the Public Address System. There was almost no difference in the departments'

use of these devices during the day and at night. Sirens were much more commonly used for emergency runs than for signalling motorists to pull over. Approximately the same percentages of departments in all seven Department Types were using these emergency warning devices for emergency runs.

Table 4/5. Percentages* of Departments Using Specified Emergency Warning Devices for Daytime and Nighttime Emergency Runs.

EMERGENCY WARNING DEVICE:	DAYTIME: % Depts. (n = 437)	NIGHTTIME: % Depts. (n = 437)
Flashing Lights	98	99
Siren	94	92
Horn	6	5
Public Address System	2	2

* Percentages add to more than 100%.

25. For which of the following activities do your officers ROUTINELY use their emergency warning lights during the daytime. (MARK X BY EACH ITEM THAT APPLIES)

26. For which of the following activities do your officers ROUTINELY use their emergency warning lights at night. (CHECK EACH ITEM THAT APPLIES)

Routine Patrol
Parking Off the Road
Parking On the Road
Signalling Motorists to Pull Over
Emergency Calls
Pursuing Another Car
Other (specify)

This question corroborated the data from Questions 2, 3, 4 and 5. Almost all of the responding departments used their emergency warning lights routinely for Emergency Calls (92% during daytime and 94% at night). Similar percentages of departments used their flashing lights for Pursuit of Vehicle and

Signalling Motorists To Pull Over. Parking On Road was the only other routine use for flashing lights by as many as one-third of the respondents.

There were slight differences in the percentages of departments which reported using flashing lights for each activity in Qs. 25 and 26 and those that reported using flashing lights in Qs. 2, 3, 4 and 5. These small differences were partially a result of the addition of the word "routinely" in Qs. 25 and 26, and partially a result of respondent error or inconsistency.

Very few departments used their emergency warning lights for Routine Patrol. None of the Fifty Largest Cities or Cities (50+) used their lights for this purpose (either during the day or at night). Eight percent of Counties, 6% of States, and 4% of each of the smaller City Department Types did use their emergency warning lights for Routine Patrol.

Table 25/26. Percentages* of Departments Which Used Emergency Warning Lights Routinely for Specified Activity During the Daytime and at Night.

ACTIVITY:	DAYTIME: % Depts. (n = 437)	NIGHT: % Depts. (n = 437)
Emergency Calls	92	94
Pursuing Another Car	91	92
Signalling Motorists Over	88	94
Parking On the Road	67	76
Parking Off the Road	16	26
Routine Patrol	3	3
Other	13	12

* Percentages add to more than 100% since multiple answers were allowed.

"Other" activities for which emergency warning lights were routinely used were for funeral escorts, escorts in general, blocking traffic, directing traffic, at accident sites, and at hazards in general.

2.2.6 Purchasing and Testing Emergency Warning Equipment

37. Who in your department is responsible for choosing and ordering emergency warning equipment? (Please give title and/or position rather than name.)

Title/Position:_____
Title/Position:_____

A wide range of title/positions were elicited by this question. Coding categories were developed to organize these responses:

- Head of Unit. Included the Chief, Assistant to Chief, Director, Commissioner of Public Works/Safety. Assistant was included in this category since assistants may share many of the daily responsibilities of operating a department.

- Users of the equipment. Included patrolman, trooper, patrol division/patrol officer.

- Maintenance staff. Included maintenance division, mechanic, garage mechanic, garage superintendent, garage foreman, communications technician, service department.

- Other. Included city official, town council, town board, staff services division, transportation division, communications division and officers (except technicians), administrative division and officers, planning and research, technical services, logistics, supply, business officer, and operations officer.

These codes are somewhat arbitrary, and were not offered as choices on the questionnaire.

The Chief/Unit Head was responsible for choosing and ordering emergency warning equipment in 90% or more of the Counties, Cities (10-49), and Townships, and in 84% of the Cities (1-9). This was also the case in more than half (57%) of the Cities (50+). In the two largest Department Types, however, much smaller percentages of the departments listed the Chief/Unit Head as responsible for choosing and ordering emergency warning equipment.

Every State department listed at least one person or group that was categorized as "Other". No pattern was identified from these "Others"; almost all of the examples given in the preceding definition appeared among the State department responses.

In the Fifty Largest City departments, as in State departments, the emergency warning equipment purchasing decisions were most often made by administrative personnel "Other" than the Chief/Unit Head. However, more than one-fourth of the Fifty Largest Cities listed members of the departments' Maintenance Staff.

Only 5% of the responding departments said that Users (of emergency warning equipment) were responsible for choosing and ordering that equipment.

Table 37. Percentages* of Departments in Each Department Type in Which The Person/Group Responsible for Choosing/Ordering Emergency Warning Equipment Held Specified Title/Position.

DEPARTMENT TYPE:	TITLE/POSITION:			
	% Depts. Chief/ Unit Head	% Depts. Equip. User	% Depts. Maintenance Staff	% Depts. Other Administrative
County	93	6	3	15
City (10-49)	93	2	1	18
Township	90	3	7	21
City (1-9)	84	1	0	31
City (50+)	57	7	19	40
50 Largest	30	11	28	50
State	13	4	11	100
All Departments	69	5	9	36

* Percentages add to more than 100% since multiple answers were allowed.

38. What test methods do you use for new emergency warning equipment?

Buy a few pieces of equipment; have some officers use them and give opinions.

Use standard tests before buying (What tests?)_____

Tests after delivery but before installing on the patrolcar (What tests?)_____

Test after installation on the patrolcar (What tests?)

Emergency warning equipment is not tested except in use

Other (Specify) _____

The data reported for this question may be misleading. The reader should be careful in interpreting the results. Discussions with departments during follow-up showed that many departments considered such actions as a salesman's demonstration or turning on the equipment to see if it worked, to be testing. It appears that many departments which made the "turn on to see if it works" test marked several of the choices. Table 38 in Appendix B presents the data from this question. However, text Table 38, below, presents only two of the categories. The departments' interpretations even of these two categories might be suspect.

Much higher percentages of the States and Fifty Largest Cities said they Bought a Few Pieces of Equipment and Had Officers Use Them than did the other Department Types. This practice probably resulted from the fact that these large departments make larger bulk purchases of equipment and, therefore, spend more time and money prior to purchasing to be sure of their investment. Only 4% of the States said they Don't Test Except in Use, but about one-third (34%) of the Fifty Largest Cities marked this choice. More

than half of the Counties, Cities (1-9), and Cities (10-49) said they did no testing of emergency warning equipment except in use.

Table 38. Percentages of Departments in Each Department Type Having Specified Testing Policy for New Emergency Warning Equipment.

DEPARTMENT TYPE:	TESTING POLICY:	
	% Depts. Buy Some and Get Opinions	% Depts. Don't Test Except In Use
State	68	4
50 Largest	57	24
City (50+)	29	37
City (10-49)	19	52
County	15	61
Township	14	48
City (1-9)	4	55
All Departments	27	43

2.2.7 Training Officers to Use Emergency Warning Equipment

36. Officers may be trained in various ways to use emergency warning equipment. Put a 1 by the method used MOST OFTEN in your department and a 2 by the method SECOND most commonly used in your department.

Officers read training manuals (on their own, rather than in training classes)

Use of emergency warning equipment is one part of the regular training classes given by our own department

Experienced officers show new officers how to use equipment

Officers attend school outside the department for this training

Other (Specify)

Although the question instructed the respondents to rank two of the training methods, many departments apparently overlooked these instructions and simply checked two choices. Therefore, the data were tabulated as though each choice were equal rather than as ranked data.

In five of the seven Department Types, the most common method of training officers to use emergency warning equipment was Experienced Officers Train New Officers. For States and the Fifty Largest Cities, however, the highest percentages of departments said Training Classes In Department was one of the methods used. Counties, Townships, and the two smallest City Department Types had relatively higher percentages of departments saying Training Classes Outside Department, while no States and almost none of the Fifty Largest Cities marked this choice. This result is consistent with the activities described in Section 1.5: Fewer of the departments in these Department Types carried out any training for their own departments.

Table 36. Percentages* of Departments in Each Department Type Using Specified Method of Training Officers to Use Emergency Warning Equipment.

DEPARTMENT TYPE:	TRAINING METHOD:			
	% Depts. Train Classes In Dept.	% Depts. Train Classes Outside Dept.	% Depts. Experienced Officers Train New Officers	% Depts. Officers Read Training Manuals
State	89	0	77	4
50 Largest . .	85	2	76	13
City (50+)	67	16	87	7
City (10-49)	42	38	82	25
Township	41	28	97	24
City (1-9)	25	43	74	30
County	24	41	83	23
All Departments	50	27	81	19

* Percentages add to more than 100% since multiple answers allowed.

Although it appears from these data that most departments conducted both training classes (either within the department or outside the department) and had experienced officers demonstrate equipment to newer officers; discussions with departments led to the conclusion that many officers received only very general instructions about emergency warning equipment in training classes, and that on-the-job training was by far the most common training method.

2.2.8 Availability of Traffic Control Signals for Helping Emergency Vehicles

35.a. Can official traffic control signals in your jurisdiction be operated so as to help the patrolcar during an emergency?
- Yes
- No

b. IF YES, How are the traffic signals controlled?
- By a bright light from the patrolcar?
- By a radio signal from the patrolcar?
- Other (Describe)

Ability to control traffic signals was not generally available in responding police departments. About 15% of all responding departments reported such a capability.

Table 35. Percentages of Departments in Each Department Type Capable of Controlling Traffic Signals During an Emergency.

DEPARTMENT TYPE:	% Departments (n = 437)
City (50+)	24
City (1-9)	18
Township	14
City (10-49)	13
County	13
50 Largest	9
State	4
All Departments	15

Of the 64 departments that said they could control traffic signals in their jurisdictions, only 12 departments (3% of all responding departments) said that this control could be exercised by using either a Bright Light From Patrolcar or a Radio Signal From Patrolcar. Almost all of the remaining 52 departments said that traffic signals could be manually controlled by adjusting a switch at the traffic light. A few departments said that traffic signals could be controlled from police headquarters.

Table 35B. Of the 64 Departments Able to Control Traffic Signals, Percentages Controlling in Specified Manner.

HOW CONTROL:	% Depts. Capable of Controlling Traffic Lights (n = 64)
Bright light from patrolcar	11
Radio signal from patrolcar	8
Manual control/Other	83

2.2.9 Suggestions for Improving Emergency Warning Equipment

39. If new emergency warning equipment were developed, how should it be different from what you now have?

A page was provided in the questionnaire so that departments could express opinions and ideas which might not have been covered in the questions. These narrative responses were not tabulated, but have been retained verbatim for use in research.

Many departments mentioned a need for lights with better visibility and for louder sirens, two subjects that were covered in the questionnaire. To give the reader a feeling for the kinds of comments contributed, some examples are presented below:

"We recommend that a light be installed in all new vehicles that could be activated by any emergency vehicle. New cars today are so quiet that operators cannot hear emergency sirens even though sirens are very loud."

"Emergency equipment within police vehicles should have switch controls readily accessible to operator of vehicles. Not all patrols have two men."

"That an audible signal device, distinct to police only should be developed. I also believe that a colored light distinct only to police should be adopted nationwide."

"The current warning equipment in use in this department is generally satisfactory, but if a directional siren can be developed, it would be a great improvement..."

"Should be based on proven scientific research rather than opinion. Human perception key factor. Future vehicle design should be considered. Should consider varying needs of user -- example: State vs. City."

"...Also, more usage of high intensity lights and less noise pollution by audible alarm devices. Audible alarm devices should be phased out of emergency vehicle usage in congested areas at the earliest possible time."

"Sirens should be designed to be put on roof without drilling holes or using magnets. In using crossbars, it should be conventional to be used on cars that have rain gutters as well as cars without rain gutters."

"New equipment should be designed with lighter weight. Due to the constant vibration they damage the roof of the car."

"All equipment on a single control panel."

"A high beam would be added to light the sky as well as straight on. This would allow motorists to see the flashing lights in spite of the fact that the car is over a hill."

"Most of the equipment on the market today is good. Rather than seeing much time wasted setting standards, I would prefer to see more things developed."

"We feel it should be installed by manufacturers; therefore, being a part of the vehicle, it could be more versatile."

"Utility bar emergency lights of aerodynamic design to reduce wind resistance and of a quality to be maintenance free for a period of 30 - 36 months."

"A master switch which could turn on and turn off all emergency equipment with one switch (master switch would override all other switches to separate controls.)"

"Some type of warning light, possibly in dashboard or on unit head, similar to the 'bright light' indicator for headlights. This would alleviate the possibility of leaving warning (emergency) lights on inadvertantly."

"Standard nationwide special built police vehicle with all emergency equipment customized and built in. Vehicle would not be sold to general public and would incorporate all modern safety developments."

"Wind resistance is always a problem."

"Make easier to change from one vehicle to another."

"The siren as an emergency item is useless in today's traffic:..."

Appendix A

NBS-887
May 1972

OMB 41-F72030
Approval Expires June 30, 1973

U.S. Department of Commerce
National Bureau of Standards

DETAILED QUESTIONNAIRE: SIRENS AND EMERGENCY WARNING LIGHTS

POLICE EQUIPMENT SURVEY

Sponsored By:

National Institute of Law Enforcement and Criminal Justice
Law Enforcement Assistance Administration
U. S. Department of Justice

Directed and Conducted By:

Behavioral Sciences Group
National Bureau of Standards
Washington, D.C. 20234
Phone: 301-921-3558

INTRODUCTION: Many different sirens and emergency warning lights are sold for use by police departments. We have been told by some departments that it is hard for them to decide which sirens and emergency warning lights are best for their use. The Law Enforcement Standards Laboratory will develop voluntary performance standards for this equipment. We need your answers from this questionnaire to help in writing these standards.

PURPOSE OF THIS QUESTIONNAIRE: The purpose of this questionnaire is to find out how well the sirens and emergency warning lights you use now perform and how you need them to perform in order to do your job. ALL OF THE QUESTIONS IN THIS QUESTIONNAIRE REFER TO THE SIRENS AND EMERGENCY WARNING LIGHTS USED ON A STANDARD PATROL CAR (USUALLY A MARKED FOUR-DOOR OR TWO-DOOR SEDAN), NOT TO ANY USED ON UNMARKED VEHICLES.

GENERAL INSTRUCTIONS:

1. Fill in the questionnaire completely. Even if you do not have all the information you need "at your fingertips", please make your best effort to supply every answer AS ACCURATELY AS POSSIBLE.

2. Answer all questions for YOUR OWN DEPARTMENT. Do not attempt to supply information that might exist in some other department.

3. The results of this questionnaire will be at least partially compiled by computer. It is important that you follow directions and answer every question legibly and in the boxes and spaces provided.

4. No individual department will be identified in the report of this survey; the results will be published in tabulated form.

5. Additional instructions for filling in your answers appear after some questions. Follow the directions given.

6. Please PRINT all answers and comments CLEARLY.

7. When this questionnaire has been completely filled in; place it, with the other questionnaires sent to your department, in the stamped, addressed envelope supplied. Return all of them to:

   Technology Building, A110
   National Bureau of Standards
   Washington, D.C. 20234

8. If you have any questions, write to the above address, or call collect:

   E. Bunten, or P. Klaus
   Phone (301) 921-3558

A. USE OF SIRENS AND LIGHTS

1. Which of the following sound sources do your patrol cars usually have in addition to, or instead of, what is found on an ordinary passenger car? (MARK X BY EACH ITEM THAT YOUR CARS HAVE)

***(10-14) ___Special loud horn

___Electronic siren and speaker

___Public address system

___Mechanical or electro-mechanical siren

___Other source of sound (describe briefly)_____

_____

2. Which of the following do your officers usually use when signalling a motorist to pull over during the daytime? (MARK X BY EACH ITEM THAT APPLIES)

(15-18) ___Siren

___Horn

___Public address system

___Flashing lights

3. Which of the following do your officers usually use when signalling a motorist to pull over at night? (MARK X BY EACH ITEM THAT APPLIES)

(19-22) ___Siren

___Horn

___Public address system

___Flashing lights

4. Which of the following do your officers usually use for emergency runs during the daytime? (MARK X BY EACH ITEM THAT APPLIES)

(23-26) ___Siren

___Horn

___Public address system

___Flashing lights

*** Numbers in parentheses are for computer use only.

5. Which of the following do your officers usually use for emergency runs at night? (MARK X BY EACH ITEM THAT APPLIES)

(27-30) _____Siren

_____Horn

_____Public address system

_____Flashing lights

B. ELECTRONIC SIRENS

INSTRUCTION: Answer questions #6-14 for the ELECTRONIC siren MOST COMMONLY USED in your department. If you are not certain whether your most commonly used siren is electronic or electro-mechanical, put an X in the box below and fill in the questions for electronic sirens on pages 4 to 7. Electro-mechanical sirens are asked about beginning on page 7.

(31) ☐ I am uncertain what type my most commonly used siren is.

6. The most commonly used electronic siren in your department is:

(32-33) a. Model or Trade Name_____

(34-35) b. Manufacturer_____

(36-40) c. Number of Patrolcars Having It_____

7. Where is this type electronic siren usually located?

(41-47) _____On a utility bar above the roof

_____Right on the roof

_____On the right front fender

_____On the left front fender

_____Under the hood, right behind the grille & free from obstructions

_____Under the hood, in the engine compartment

_____Other (Specify)_____

8. What problems have you encountered with this type electronic siren? (MARK X BY EACH ITEM THAT APPLIES)

(48-57) _____ They are too loud for some uses

_____ They sometimes freeze up in winter

_____ Sometimes motorists do not seem to hear them

_____ The officers cannot hear the radio

_____ There is a delay from the time the siren is turned on until it will actually make the sound

_____ Wiring problems

_____ Relay or switch problems

_____ We have had no problems because the equipment is new

_____ We have had no problems even though equipment has been in use for sometime

_____ Other (Specify) _____

_____

_____

9. Please rate the performance of this type electronic siren in terms of how often it must be repaired:

(58-65) _____ Needs repair more often than every six months

_____ Needs repair every 6 to 12 months

_____ Needs repair about once a year

_____ Needs repair about once every 2 or 3 years

_____ Needs repair less often than every 3 years

_____ Never needed repair: have had for _____ months
(no.)

10. What part or component is the most common cause of breakdowns in this type electronic siren?

(66-69) _____ Speaker fails

_____ Electronics fail

_____ Control Switch

_____ Other (Specify)_____

_____

_____ Other (Specify)_____

_____

11. About how long do you use most of your sirens of this type before the electronic package or speaker must be replaced?

The Electronics:

(70-77) _____ Less than one year

_____ 1 - 3 years

_____ 4 - 6 years

_____ 7 - 10 years

_____ More than 10 years

_____ Never needed to replace: have had for _____ months (no.)

The Speaker:

(10-17) _____ Less than one year

_____ 1 - 3 years

_____ 4 - 6 years

_____ 7 - 10 years

_____ More than 10 years

_____ Never needed to replace: have had for _____ months (no.)

12. What improvements could be made in this type electronic siren?

(18-19) _____

_____

_____

13. Can you think of any other electronic siren currently on the market that might meet your needs better? (Please give model or trade name and manufacturer if known)

(20-21) Model: _____

(22-23) Manufacturer: _____

14. What is there about this other type electronic siren that would make it better for your particular needs?

(24-25) _____

_____

_____

_____

_____

C. ELECTRO-MECHANICAL SIRENS

INSTRUCTION:	Answer questions #15-23 for the ELECTRO-MECHANICAL siren MOST COMMONLY USED in your department. If your department does not use electro-mechanical sirens, skip to question #24, page 11.

15. The most commonly used <u>electro-mechanical</u> siren in our department is:

(26-27) a. Model or Trade Name _____

(28-29) b. Manufacturer _____

(30-34) c. Number of Patrolcars Having It _____

16. Where is this type electro-mechanical siren usually located?

(35-41) _____ On a utility bar above the roof

_____ Right on the roof

_____ On the right front fender

_____ On the left front fender

_____ Under the hood, right behind the grille & free from obstructions

_____ Under the hood, in the engine department

_____ Other (Specify)_____

17. What problems have you encountered with this type electro-mechanical siren? (MARK X BY EACH ITEM THAT APPLIES)

(42-51) _____ They are too loud for some uses

_____ They sometimes freeze up in winter

_____ Sometimes motorists do not seem to hear them

_____ The officers cannot hear the radio

_____ There is a delay from the time the siren is turned on until it will actually make the sound

_____ Wiring problems

_____ Relay or switch problems

_____ We have had no problems because equipment is new

_____ We have had no problems even though this equipment has been in use for some time.

_____ Other (Specify)_____

_____

_____

18. Please rate the performance of this type electro-mechanical siren in terms of how often it must be repaired:

(52-59) _____ Needs repair more often than every six months

_____ Needs repair every 6 to 12 months

_____ Needs repair about once a year

_____ Needs repair about once every 2 or 3 years

_____ Needs repair less often than every 3 years

_____ Never needed repair: have had for _____ months (no.)

19. What part or component is the most common cause of breakdowns in this type electro-mechanical siren?

(60-64) _____ Brushes

_____ Bearings

_____ Windings

_____ Control switch

_____ Other (Specify)_____

_____

_____ Other (Specify)_____

_____

20. About how long do you use most electro-mechanical sirens of this type before they are replaced or rebuilt?

(65-72) _____ Less than one year

_____ 1 - 3 years

_____ 4 - 6 years

_____ 7 - 10 years

_____ More than 10 years

_____ Never needed to replace: have had for _____ months (no.)

21. What improvements could be made in this type electro-mechanical siren? _____

(73-74) _____

_____

22. Can you think of any other <u>electro-mechanical siren</u> now on the market that might meet your needs better? (Please give model or trade name and manufacturer if known)

(75-76) Model: _____

(77-78) Manufacturer: _____

23. What is there about this other type electro-mechanical siren that would make it better for your particular needs?

(79-80) _____

_____

_____

_____

_____

D. EMERGENCY WARNING LIGHTS

24. What lights or reflectors do your patrol cars usually have in addition to, or instead of, those found on an ordinary passenger car? (MARK X BY EACH ITEM THAT APPLIES)

(10-20) ___Special reflectors or areas of reflectorizing material

___Special turn signal lights (sometimes may also be used as "four-way" flashers)

___Special clearance or marker light (like those on trucks)

___Hand controlled spotlights (not colored)

___Fog lights or auxiliary driving lights

___Alley or ambush lights (spotlights or floodlights mounted so they aim to the side; not colored)

___Automatic flasher that can flash the headlights alternately

___Colored flashing or steady burning lights in grille (other than standard parking lamps or turn signals)

___Revolving or flashing lights on roof or roof-bar ("Gumball", "bubble" or "strobe" lights)

___Any other warning lights showing to the front? (Describe briefly)

_____

___Any other warning lights showing to the rear? (Describe briefly)

_____

25. For which of the following activities do your officers ROUTINELY use their emergency warning lights during the daytime. (MARK X BY EACH ITEM THAT APPLIES)

(21-27) ___Routine patrol

___Parking off the road

___Parking on the road

___Signalling motorist to pull over

___Emergency calls

___Pursuing another car

___Other (specify)_____

26. For which of the following activities do your officers ROUTINELY use their emergency warning lights at night. (CHECK EACH ITEM THAT APPLIES)

(28-34) ___Routine patrol

___Parking off the road

___Parking on the road

___Signalling motorist to pull over

___Emergency calls

___Pursuing another car

___Other (specify)_____

INSTRUCTIONS: Please give the following information about the MOST COMMON type of emergency warning lights (beacons or flashers) used in your department.

MOST USED BEACON OR FLASHING LIGHT

(35-36) 27. a. Model No. or Trade Name _____

(37-38) b. Manufacturer _____

(39) c. Number of lights per unit _____

(40) d. Number of units per vehicle _____

(41-48) e. Color(s) of warning signal:

___ Red & Blue

___ Red & Clear

___ Blue & Clear

___ Clear

___ Red

___ Blue

___ Yellow (amber)

___ Other (Specify) _____

_____

(49-50) f. Color of dome _____

g. Mounted:

(51-52) ___ Directly on Vehicle

___ On Utility Bar

(53-57) h. Number of patrolcars having this model of emergency warning light: _____

28. About how long does this model of beacon or flashing light work before it needs repair or service? (Other than lamp replacement)

(58-65)

_____ Less than 1 year

_____ 1 - 3 years

_____ 4 - 6 years

_____ 7 - 10 years

_____ More than 10 years

_____ Never needed to repair: have had for _____ months (no.)

29. What are the most common causes of breakdown or malfunction in this model beacon or flasher?

(66-69)

_____ Bulb failure

_____ Mechanical failure

_____ Failure caused by weather

_____ Other (Specify)_____

_____

30. About how long can this model of emergency warning lights be used before it must be REPLACED?

(70-78)

_____ Less than 1 year

_____ 1 - 3 years

_____ 4 - 6 years

_____ 7 - 10 years

_____ 11 - 15 years

_____ More than 15 years

_____ Never needed to replace: have had for _____ months (no.)

MOST USED BEACON OR FLASHING LIGHT

31. What improvements can you suggest for this model of emergency warning lights?

(79-80) _____

_____

_____

32. Can you think of any other emergency warning light currently on the market that might meet your needs better? (Please give model, manufacturer, type, color, if known).

(10-11) Model: _____

(12-13) Manufacturer: _____

(14-15) Type: _____

(16-17) Color: _____

33. What is there about this other light that would make it meet your needs better?

(18-19) _____

_____

_____

E. GENERAL INFORMATION

34. How many standard patrol cars does your department have?

(20-24) (NUMBER) _____

35. a. Can official traffic control signals in your jurisdiction be operated so as to help the patrol car during an emergency?

(25) _____ Yes _____ No

b. IF YES, how are the traffic signals controlled?

(26-28) _____ By a bright light from the patrol car?

_____ By a radio signal from the patrol car?

_____ Other (Describe) _____

_____

36. Officers may be trained in various ways to use emergency warning equipment.

Put a 1 by the method used MOST OFTEN in your department and a 2 by the method SECOND most commonly used in your department.

(29-33) _____ Officers read training manuals (on their own, rather than in training classes)

_____ Use of emergency warning equipment is one part of the regular training classes given by our own department

_____ Experienced officers show new officers how to use equipment

_____ Officers attend school outside the department for this training

_____ Other (Specify) _____

_____

37. Who in your department is responsible for choosing and ordering emergency warning equipment? (Please give title and/or position rather than name).

(34-37) Title/Position _____

(38-41) Title/Position _____

38. What test methods do you use for new emergency warning equipment?

(42) ___Buy a few pieces of equipment; have some officers use them and give opinions

(43-45) ___Use standard tests before buying (what tests?)_____

_____

(46-48) ___Tests after delivery but before installing on the patrol car (what tests?)

_____

(49-51) ___Test after installation on the patrolcar (what tests?)_____

_____

(52-54) ___Emergency warning equipment is not tested except in use

(55-57) ___Other (specify)_____

_____

39. If new emergency warning equipment were developed, how should it be different from what you now have?

IDENTIFYING INFORMATION: (All identifying information will be kept confidential)

Name of Department: _____

Address: _____

Name of persons who answered this questionnaire:

_____
Name

Title: _____ Rank: _____

No. of years experience in law enforcement: _____

Telephone Number: _____

Others who helped: 1. _____
Name

Title: _____ Rank: _____

No. of years experience in law enforcement: _____

Telephone Number: _____

2. _____
Name

Title: _____ Rank: _____

No. of years experience in law enforcement: _____

Telephone Number: _____

NOTES

APPENDIX B

DATA TABLES

B.1 Advice to the Reader

(a) The data presented in the following tables resulted from the responses of a stratified random sample (see Section 1.2) of police departments in response to a specific set of questions (see Appendix A). These data do not, in any way, reflect objective testing of any of the equipment by the National Bureau of Standards. The reader is cautioned to become familiar with the questionnaire and to evaluate the data in terms of the exact questions asked.

(b) Tables have been numbered after the question number (e.g., the tables for Question 6A. would be numbered 6A-1, 6A-2, etc.). The data are usually presented by number of respondents and nearest whole percentage. Because of the statistical limitations imposed by the sample sizes used in this study, the reader is cautioned to be wary of assigning importance to percentage differences of less than 5% when percentages are based on all respondents, and to percentage differences of less than 10% when percentages are based on one of the subsample groups, (e.g., a particular Department Type or Region). No statistical tests of significance are reported.

(c) These tables are based on the responding departments from the specific sample selected for this questionnaire. This sample was not proportional to the total population of police departments, and although it is possible to do so, the data in these tables have not been weighted to allow direct extrapolation to the total population.

(d) In order to extrapolate to the total population from the respondent data presented in this report, use the following procedure: For each Department Type, multiply the percentage of respondents of a particular Department Type giving the answer of interest (See B.2 Data Tables, Appendix B) by the total number of departments of that Department Type in the population (See Table 1.2-2, Section 1.2); add those seven subtotals, and divide the total by the total number of police departments in the population (Table 1.2-2. The quotient of this division will be an estimate of the percentage of all U.S. police departments that would choose the answer of interest.

B.2 Data Tables

Table i-1

RANK OF PERSON WHO FILLED IN QUESTIONNAIRE:

RESPONSE	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
CHIEF	141	32	0	0	2	3	60	78	50	60	17	20	1	2	11	38
CAPTAIN	57	13	18	38	5	7	1	1	5	6	22	27	5	11	1	3
COMMISSIONER	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
COLONEL	3	1	2	4	0	0	0	0	0	0	0	0	1	2	0	0
ACTING CHIEF	2	0	0	0	0	0	0	0	1	1	0	0	0	0	1	3
ASSISTANT CHIEF	17	4	1	2	0	0	2	3	6	7	6	7	1	2	1	3
MAJOR	6	1	3	6	1	1	0	0	0	0	0	0	2	4	0	0
LIEUTENANT	45	10	6	13	3	4	2	3	4	5	16	19	11	24	3	10
CORPORAL	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
PRIVATE	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
DEPUTY	15	3	0	0	14	20	1	1	0	0	0	0	0	0	0	0
INSPECTOR	7	2	1	2	1	1	0	0	0	0	2	2	3	7	0	0
SHERIFF	31	7	0	0	31	44	0	0	0	0	0	0	0	0	0	0
SARGEANT	41	9	6	13	4	6	5	6	10	12	5	6	6	13	5	17
PATROLMAN	20	5	0	0	0	0	2	3	3	4	5	6	4	9	6	21
OTHER TITLE	34	8	9	19	2	3	3	4	4	5	5	6	10	22	1	3
UNDERSHERIFF	6	1	0	0	6	8	0	0	0	0	0	0	0	0	0	0
SPECIALIST	4	1	0	0	0	0	0	0	0	0	2	2	2	4	0	0
NO ANSWER	5	1	1	2	2	3	0	0	1	1	1	1	0	0	0	0
TOTAL	437	98	47	99	71	100	77	100	84	101	83	98	46	100	29	98
NUMBER OF RESPONDENTS	437		47		71		77		84		83		46		29	

Table i-2

YEARS OF EXPERIENCE OF PERSON WHO FILLED IN QUESTIONNAIRE:

RESPONSE	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
2 OR LESS	18	4	0	0	5	7	5	6	5	6	0	0	0	0	3	10
3-5 YEARS	31	7	1	2	8	11	9	12	6	7	2	2	3	7	2	7
6-10 YEARS	68	16	3	6	17	24	26	34	11	13	5	6	0	0	6	21
11-15 YEARS	70	16	4	9	14	20	11	14	11	13	19	23	7	15	4	14
16-20 YEARS	84	19	12	26	7	10	12	16	18	21	16	19	11	24	8	28
21-25 YEARS	76	17	13	28	6	8	11	14	15	18	16	19	14	30	1	3
26-30 YEARS	36	8	6	13	3	4	1	1	7	8	12	14	5	11	2	7
31 OR MORE	30	7	4	9	6	8	2	3	8	10	7	8	2	4	1	3
NO ANSWER	24	5	4	9	5	7	0	0	3	4	6	7	4	9	2	7
TOTAL	437	99	47	102	71	99	77	100	84	100	83	98	46	100	29	100
NUMBER OF RESPONDENTS	437		47		71		77		84		83		46		29	

Table 1

1. WHICH OF THE FOLLOWING SOUND SOURCES DO YOUR PATROLCARS HAVE IN ADDITION TO, OR INSTEAD OF, WHAT IS FOUND ON AN ORDINARY PASSENGER CAR?

RESPONSE	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
SPECIAL LOUD HORN	17	4	2	4	3	4	4	5	5	6	3	4	0	0	0	0
ELECTRONIC SIREN & SPEAKER	360	82	38	81	53	75	56	73	69	83	76	92	44	96	24	83
PUBLIC ADDRESS SYSTEM	256	59	22	47	29	41	41	53	57	68	60	72	28	61	19	66
MECHANICL/ELCTRO-MECH SIREN	180	41	27	57	36	51	28	36	28	33	35	42	19	41	7	24
OTHER SOURCE OF SOUND	8	2	0	0	3	4	1	1	2	2	0	0	2	4	0	0
NO ANSWER	5	1	0	0	3	4	2	3	0	0	0	0	0	0	0	0
TOTAL	803	184	86	182	119	167	133	172	161	191	171	207	84	183	49	170
NUMBER OF RESPONDENTS	437		47		71		77		84		83		46		29	

Table 2

2. WHICH OF THE FOLLOWING DO YOUR OFFICERS USUALLY USE WHEN SIGNALLING A MOTORIST TO PULL OVER DURING THE DAYTIME?

RESPONSE	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
SIREN	279	64	23	49	51	72	45	58	58	69	54	65	28	61	20	69
HORN	193	44	27	57	18	25	20	34	42	50	49	59	21	46	10	34
PUBLIC ADDRESS SYSTEM	49	11	6	13	8	11	4	5	13	15	6	7	11	24	1	3
FLASHING LIGHTS	394	90	41	87	68	96	70	91	76	90	70	84	40	87	29	100
NO ANSWER	2	0	0	0	1	1	0	0	0	0	0	0	1	2	0	0
TOTAL	917	209	97	206	146	205	145	188	189	224	179	215	101	220	60	206
NUMBER OF RESPONDENTS	437		47		71		77		84		83		46		29	

Table 3

3. WHICH OF THE FOLLOWING DO YOUR OFFICERS USUALLY USE WHEN SIGNALLING A MOTORIST TO PULL OVER DURING THE NIGHT?

RESPONSE	DEPARTMENT TYPE															
	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
SIREN	270	62	24	51	44	62	42	55	57	68	60	72	26	57	17	59
HORN	129	30	16	34	10	14	14	18	30	36	35	42	17	37	7	24
PUBLIC ADDRESS SYSTEM	42	10	5	11	6	8	4	5	11	13	5	6	9	20	2	7
FLASHING LIGHTS	433	99	47	100	70	99	77	100	84	100	81	98	45	98	29	100
NO ANSWER	2	0	0	0	1	1	0	0	0	0	0	0	1	2	0	0
TOTAL	876	201	92	196	131	184	137	178	182	217	181	218	98	214	55	190
NUMBER OF RESPONDENTS	437		47		71		77		84		83		46		29	

Table 4

4. WHICH OF THE FOLLOWING DO YOUR OFFICERS USUALLY USE FOR EMERGENCY RUNS DURING THE DAYTIME?

RESPONSE	DEPARTMENT TYPE															
	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
SIREN	412	94	42	89	62	87	70	91	82	98	83	100	46	100	27	93
HORN	27	6	2	4	3	4	5	6	7	8	7	8	2	4	1	3
PUBLIC ADDRESS SYSTEM	9	2	0	0	3	4	1	1	2	2	1	1	1	2	1	3
FLASHING LIGHTS	429	98	46	98	70	99	77	100	82	98	80	96	45	98	29	100
NO ANSWER	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
TOTAL	878	200	90	191	139	195	153	198	173	206	171	205	94	204	58	199
NUMBER OF RESPONDENTS	437		47		71		77		84		83		46		29	

Table 5

5. WHICH OF THE FOLLOWING DO YOUR OFFICERS USUALLY USE FOR EMERGENCY RUNS AT NIGHT?

RESPONSE	DEPARTMENT TYPE															
	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
SIREN	400	92	40	85	60	85	66	86	80	95	82	99	45	98	27	93
HORN	24	5	2	4	2	3	4	5	7	8	5	6	3	7	1	3
PUBLIC ADDRESS SYSTEM	8	2	1	2	2	3	0	0	2	2	2	2	1	2	0	0
FLASHING LIGHTS	434	99	46	98	71	100	76	99	84	100	82	99	46	100	29	100
NO ANSWER	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
TOTAL	867	198	89	189	135	191	147	191	173	205	171	206	95	207	57	196
NUMBER OF RESPONDENTS	437		47		71		77		84		83		46		29	

Table 6

6. THE MOST COMMONLY USED ELECTRONIC SIREN IN YOUR DEPARTMENT IS:
(MANUFACTURER, MODEL OR TRADE NAME, NO. OF PATROLCARS HAVING IT)

RESPONSE	DEPARTMENTS HAVING IT		PATROLCARS HAVING IT	
MANUFACTURER CODE	NO.	%	NO.	%
1	230	64	15,978	84
2	17	5	91	0
3	13	4	772	4
4	13	4	377	2
5	13	4	527	3
6	12	3	209	1
7	10	3	261	1
8	8	2	186	1
9	6	2	115	1
10	1	0	202	1
MISCELLANEOUS	13	3	66	0
BLANK(NO MANUFACTURER GIVEN)	24	7	127	1
TOTAL	360	101	18,911	99

Table 7

7. WHERE IS THIS TYPE ELECTRONIC SIREN USUALLY LOCATED?

RESPONSE	DEPARTMENT TYPE															
	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
ON A UTILITY BAR ABOVE ROOF	208	58	14	37	20	38	29	52	49	71	56	74	27	61	13	54
RIGHT ON THE ROOF	48	13	6	16	6	11	7	12	3	4	12	16	13	30	1	4
ON THE RIGHT FRONT FENDER	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
UNDER HOOD, BEHIND GRILLE	126	35	17	45	31	58	22	39	19	28	18	24	11	25	8	33
UNDER HOOD, IN ENGINE COMP.	28	8	7	18	6	11	2	4	3	4	4	5	2	5	4	17
OTHER	3	1	0	0	0	0	1	2	0	0	1	1	0	0	1	4
NO ANSWER	1	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0
TOTAL*	415	115	44	116	63	118	62	111	74	107	92	121	53	121	27	112
NUMBER OF RESPONDENTS	360		38		53		56		69		76		44		24	

* Total equals more than 360 since some respondents selected more than one choice.

Table 8

8. WHAT PROBLEMS HAVE YOU ENCOUNTERED WITH THIS TYPE ELECTRONIC SIREN?

RESPONSE	DEPARTMENT TYPE															
	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
TOO LOUD	12	3	0	0	0	0	2	4	4	6	3	4	2	5	1	4
FREEZE UP IN WINTER	25	7	6	16	7	13	2	4	5	7	4	5	0	0	1	4
MOTORISTS DONT HEAR THEM	82	23	9	24	14	26	13	23	13	19	15	20	12	27	6	25
OFFICERS CANT HEAR RADIO	18	5	0	0	5	9	2	4	1	1	6	8	3	7	1	4
DELAY TIME UNTIL IT SOUNDS	7	2	0	0	2	4	1	2	1	1	2	3	0	0	1	4
WIRING PROBLEMS	24	7	0	0	1	2	3	5	7	10	4	5	7	16	2	8
RELAY OR SWITCH PROBLEMS	24	7	2	5	1	2	4	7	4	6	4	5	8	18	1	4
NO PROBLEMS/NEW EQUIPMENT	76	21	8	21	16	30	11	20	17	25	12	16	7	16	5	21
NO PROBLEMS/USED EQUIPMENT	152	42	16	42	19	36	32	57	29	42	32	42	16	36	8	33
OTHER	39	11	6	16	5	9	1	2	3	4	13	17	9	20	2	8
NO ANSWER	3	1	1	3	0	0	0	0	0	0	2	3	0	0	0	0
TOTAL*	462	129	48	127	70	131	71	128	84	121	97	128	64	145	28	115
NUMBER OF RESPONDENTS	360		38		53		56		69		76		44		24	

*Total equals more than 360 since some respondents selected more than one choice.

Table 9

9. PLEASE RATE THE PERFORMANCE OF THIS TYPE ELECTONIC SIREN IN TERMS OF HOW OFTEN IT MUST BE REPAIRED:

RESPONSE	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
MORE THAN EVERY 6 MONTHS	12	3	0	0	1	2	0	0	2	3	4	5	4	9	1	4
EVERY 6 TO 12 MONTHS	27	7	2	5	2	4	1	2	6	9	7	9	8	18	1	4
ONCE A YEAR	64	18	5	13	8	15	9	16	9	13	17	22	14	32	2	8
ONCE EVERY 2 OR 3 YEARS	77	21	8	21	9	17	9	16	13	19	23	30	10	23	5	21
LESS THAN EVERY 3 YEARS	59	16	13	34	12	23	6	11	10	14	9	12	3	7	6	25
NEVER NEEDED REPAIR	122	34	11	29	20	38	31	55	29	42	17	22	5	11	9	37
NO ANSWER	3	1	0	0	1	2	1	2	0	0	0	0	0	0	1	4
TOTAL*	364	100	39	102	53	101	57	102	69	100	77	100	44	100	25	103
NUMBER OF RESPONDENTS	360		38		53		56		69		76		44		24	

*Total equals more than 360 since some respondents selected more than one choice.

Table 9 A

9.A. OF THOSE DEPARTMENTS WHICH HAVE NEVER NEEDED TO REPAIR THEIR ELECTRONIC SIRENS, HOW LONG HAS THE DEPARTMENT HAD THESIRENS:

RESPONSE	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
12 MONTHS OR LESS	46	38	8	73	6	30	8	26	12	41	7	41	2	40	3	33
13 - 24 MONTHS	32	26	0	0	10	50	10	32	7	24	3	18	1	20	1	11
25 - 36 MONTHS	22	18	1	9	2	10	9	29	3	10	4	24	0	0	3	33
37 - 48 MONTHS	7	6	0	0	0	0	2	6	2	7	2	12	0	0	1	11
49 - 60 MONTHS	5	4	1	9	1	5	0	0	2	7	1	6	0	0	0	0
61 - 72 MONTHS	3	2	0	0	1	5	1	3	0	0	0	0	1	20	0	0
73 - 84 MONTHS	1	1	0	0	0	0	0	0	1	3	0	0	0	0	0	0
85 - 96 MONTHS	2	2	0	0	0	0	1	3	0	0	0	0	0	0	1	11
NO ANSWER	4	3	1	9	0	0	0	0	2	7	0	0	1	20	0	0
TOTAL	122	100	11	100	20	100	31	99	29	99	17	101	5	100	9	99
NUMBER OF RESPONDENTS	122		11		20		31		29		17		5		9	

Table 10

10. WHAT PART OR COMPONENT IS THE MOST COMMON CAUSE OF BREAKDOWNS IN THIS TYPE ELECTRONIC SIREN?

RESPONSE	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
NO FAILURES	24	7	2	5	1	2	5	9	10	14	4	5	0	0	2	8
SPEAKER FAILS	96	27	15	39	13	25	9	16	15	22	24	32	19	43	1	4
ELECTRONICS FAIL	86	24	10	26	15	28	8	14	12	17	20	26	14	32	7	29
CONTROL SWITCH	53	15	5	13	5	9	9	16	13	19	9	12	9	20	3	12
OTHER	51	14	3	8	3	6	5	9	7	10	16	21	14	32	3	12
NO ANSWER	93	26	9	24	20	38	23	41	16	23	13	17	3	7	9	37
TOTAL*	403	113	44	115	57	108	59	105	73	105	86	113	59	134	25	102
NUMBER OF RESPONDENTS	360		38		53		56		69		76		44		24	

*Total equals more than 360 since some respondents selected more than one choice.

Table 11 A-1

11.A. ABOUT HOW LONG DO YOU USE MOST OF YOUR SIRENS OF THIS TYPE BEFORE THE ELECTRONIC PACKAGE OR SPEAKER MUST BE REPLACED?

THE ELECTRONICS

RESPONSE	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
LESS THAN 1 YEAR	3	1	0	0	0	0	0	0	0	0	1	1	2	5	0	0
1 - 3 YEARS	42	12	2	5	12	23	5	9	8	12	8	11	5	11	2	8
4 - 6 YEARS	61	17	6	16	9	17	5	9	13	19	14	18	11	25	3	12
7 - 10 YEARS	44	12	8	21	0	0	3	5	6	9	14	18	10	23	3	12
MORE THAN 10 YEARS	17	5	2	5	4	8	1	2	3	4	3	4	2	5	2	8
NEVER NEEDED TO REPLACE	177	49	18	47	27	51	35	62	36	52	36	47	14	32	11	46
NO ANSWER	17	5	2	5	1	2	7	12	3	4	1	1	0	0	3	12
TOTAL*	361	101	38	99	53	101	56	99	69	100	77	100	44	101	24	98
NUMBER OF RESPONDENTS	360		38		53		56		69		76		44		24	

*Total equals 361 since one respondent selected more than one choice.

Table 11 A-2

11.A. OF THOSE RESPONDENTS WHICH HAVE NEVER NEEDED TO REPLACE THE ELECTRONIC PACKAGE, HOW LONG HAS THE DEPARTMENT HAD THOSE SIRENS?

RESPONSE	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
LESS THAN 1 YEAR	8	2	1	3	1	2	1	2	0	0	1	1	4	9	0	0
1 - 3 YEARS	67	19	5	13	15	28	5	9	11	16	15	20	14	32	2	8
4 - 6 YEARS	57	16	7	18	8	15	4	7	12	17	14	18	10	23	2	8
7 - 10 YEARS	31	9	4	11	0	0	2	4	5	7	10	13	8	18	2	8
MORE THAN 10 YEARS	18	5	5	13	3	6	2	4	2	3	3	4	1	2	2	8
NEVER NEEDED TO REPLACE	153	42	13	34	22	42	34	61	34	49	30	39	7	16	13	54
NO ANSWER	27	7	3	8	4	8	9	16	5	7	3	4	0	0	3	12
TOTAL *	361	100	38	100	53	101	57	103	69	99	76	99	44	100	24	98
NUMBER OF RESPONDENTS	360		38		53		56		69		76		44		24	

*Total equals 361 since one respondent selected more than one choice.

Table 11 B-1

11.B. ABOUT HOW LONG DO YOU USE MOST OF YOUR SIRENS OF THIS TYPE BEFORE THE ELECTRONIC PACKAGE OR SPEAKER MUST BE REPLACED?

THE SPEAKER

RESPONSE	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
12 MONTHS OR LESS	45	25	8	44	5	19	7	20	13	36	7	19	2	14	3	27
13 - 24 MONTHS	39	22	1	6	9	33	9	26	7	19	7	19	4	29	2	18
25 - 36 MONTHS	36	20	4	22	3	11	10	29	4	11	8	22	2	14	5	45
37 - 48 MONTHS	18	10	0	0	2	7	4	11	4	11	5	14	2	14	1	9
49 - 60 MONTHS	13	7	1	6	3	11	3	9	3	8	2	6	1	7	0	0
61 - 72 MONTHS	4	2	0	0	1	4	0	0	1	3	1	3	1	7	0	0
73 - 84 MONTHS	4	2	0	0	0	0	1	3	2	6	1	3	0	0	0	0
85 - 96 MONTHS	4	2	0	0	1	4	1	3	0	0	2	6	0	0	0	0
MORE THAN 96 MONTHS	2	1	0	0	0	0	0	0	0	0	1	3	1	7	0	0
NO ANSWER	12	7	4	22	3	11	0	0	2	6	2	6	1	7	0	0
TOTAL	177	98	18	100	27	100	35	101	36	100	36	101	14	99	11	99
NUMBER OF RESPONDENTS	177		18		27		35		36		36		14		11	

Table 11 B-2

11.B. OF THOSE RESPONDENTS WHICH HAVE NEVER NEEDED TO REPLACE THE SPEAKER, HOW LONG HAS THE DEPARTMENT HAD THOSE SIRENS?

RESPONSE	DEPARTMENT TYPE													
	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
12 MONTHS OR LESS	42	27	6	46	5	23	6	18	13	38	7	23	2	29	3	23
13 - 24 MONTHS	33	22	0	0	8	36	10	29	6	18	6	20	2	29	1	8
25 - 36 MONTHS	31	20	3	23	3	14	9	26	3	9	7	23	1	14	5	38
37 - 48 MONTHS	13	8	0	0	1	5	4	12	3	9	4	13	0	0	1	8
49 - 60 MONTHS	12	8	1	8	3	14	2	6	3	9	2	7	1	14	0	0
61 - 72 MONTHS	3	2	0	0	0	0	1	3	1	3	0	0	1	14	0	0
73 - 84 MONTHS	4	3	0	0	0	0	1	3	2	6	1	3	0	0	0	0
85 - 96 MONTHS	6	4	0	0	1	5	1	3	2	6	1	3	0	0	1	8
MORE THAN 96 MONTHS	1	1	0	0	0	0	0	0	0	0	1	3	0	0	0	0
NO ANSWER	8	5	3	23	1	5	0	0	1	3	1	3	0	0	2	15
TOTAL	153	100	13	100	22	102	34	100	34	101	30	98	7	100	13	100
NUMBER OF RESPONDENTS	153		13		22		34		34		30		7		13	

Table 12

12. WHAT IMPROVEMENTS COULD BE MADE IN THIS TYPE ELECTRONIC SIREN?

RESPONSE	TIMES MENTIONED	
	NO.	%
BETTER PROTECTION FOR SPEAKERS AGAINST WEATHER	15	4
OTHER SPEAKR IMPROVEMNTS/VOICE COIL, DURABILITY, GREATER POWER CAPACITY	22	6
SWITCHES/CONTROLS--UNSATISFACTORY, COMPLICATED, GREATER FLEXIBILITY	16	4
NEED ADJUSTABLE VOLUME CONTROL (MORE FLEXIBLE, GREATER OUTPUT RANGE)	14	4
NEED MORE POWER/VOLUME (NOT LOUD ENOUGH)	22	6
MOUNTING (SPEAKER AND/OR CONTROL) FOR AUDIBILITY, CONVENIENCE	9	2
WIRING PROBLEMS/IMPROVEMENTS	3	1
QUALITY CONTROL/MORE DURABLE/BETTER QUALITY	11	3
ELIMINATE NOISE/ELECTRICAL INTERFERENCE	3	1
OTHER	18	5
REDUCE SIZE/MAKE MORE COMPACT	3	1
HIGHER WATTAGE FUSES/OVERLOAD PROTECTION	2	1
NO ANSWER	241	67
TOTAL *	379	105
NUMBER OF RESPONDENTS	360	

*Total equals more than 360 since some respondents selected more than one choice.

Table 13

13. CAN YOU THINK OF ANY OTHER ELECTRONIC SIREN CURRENTLY ON THE MARKET THAT MIGHT MEET YOUR NEEDS BETTER?

RESPONSE

	TIMES MENTIONED	
MANUFACTURER CODE	NO.	%
1	15	4
2	7	2
3	2	1
MISCELLANEOUS	2	1
NO RESPONSE	334	93
TOTAL	360	100

Table 14

14. WHAT IS THERE ABOUT THIS OTHER TYPE ELECTRONIC SIREN THAT WOULD MAKE IT BETTER FOR YOUR PARTICULAR NEEDS?

RESPONSE

	TOTAL	
	NO.	%
BETTER VOLUME CONTROL	4	1
MORE POWER/VOLUME OUTPUT	11	3
GENERALLY A BETTER SYSTEM	3	1
HEARD FAVORABLE REPORTS	1	0
LESS MAINTENANCE/TROUBLE	3	1
BETTER MOUNTING METHODS	4	1
SWITCHS/CONTRLS-CONVENIENT	4	1
LOWER COST	1	0
BETTER SPEAKER SYSTEM	1	0
OTHER	4	1
NO ANSWER	333	92
TOTAL*	369	101
NUMBER OF RESPONDENTS	360	

*Total equals more than 360 since some respondents selected more than one choice.

Table 15

15. THE MOST COMMONLY USED ELECTRO-MECHANICAL SIREN IN YOUR DEPARTMENT IS:
(MANUFACTURER, MODEL OR TRADE NAME, NUMBER OF PATROLCARS HAVING IT)

	DEPARTMENTS HAVING IT		PATROLCARS HAVING IT	
MANUFACTURER CODE	NO.	%	NO.	%
1	109	61	16,105	79
2	20	11	2,791	14
3	6	3	276	1
MISCELLANEOUS	7	5	30	0
BLANK (NO MANUFACTURER GIVEN)	36	20	1,076	5
TOTAL	178	100	20,278	99

Table 16

16. WHERE IS THIS TYPE ELECTRO-MECHANICAL SIREN USUALLY LOCATED?

RESPONSE	DEPARTMENT TYPE															
	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
ON A UTILITY BAR ABOVE ROOF	26	14	0	0	4	11	5	18	8	29	5	14	3	16	1	14
RIGHT ON THE ROOF	10	6	2	7	2	6	0	0	1	4	4	11	1	5	0	0
ON THE LEFT FRONT FENDER	1	1	0	0	0	0	0	0	0	0	1	3	0	0	0	0
UNDER HOOD, BEHIND GRILLE	86	48	13	48	14	39	16	57	13	46	19	54	8	42	3	43
UNDER HOOD, IN ENGINE COMP.	78	43	16	59	21	58	8	29	13	46	8	23	8	42	4	57
NO ANSWER	2	1	0	0	0	0	1	4	0	0	1	3	0	0	0	0
TOTAL	203	113	31	114	41	114	30	108	35	125	38	108	20	105	8	114
NUMBER OF RESPONDENTS	180		27		36		28		28		35		19		7	

Table 17

17. WHAT PROBLEMS HAVE YOU ENCOUNTERED WITH THIS TYPE ELECTRO-MECHANICAL SIREN?

RESPONSE	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
TOO LOUD	2	1	0	0	0	0	2	7	0	0	0	0	0	0	0	0
FREEZE UP IN WINTER	39	22	4	15	9	25	6	21	4	14	9	26	5	26	2	29
MOTORISTS DONT HEAR THEM	93	52	20	74	16	44	10	36	12	43	20	57	11	58	4	57
OFFICERS CANT HEAR RADIO	8	4	1	4	2	6	1	4	1	4	2	6	1	5	0	0
DELAY TIME UNTIL IT SOUNDS	12	7	3	11	3	8	0	0	2	7	3	9	0	0	1	14
WIRING PROBLEMS	13	7	4	15	2	6	1	4	4	14	1	3	1	5	0	0
RELAY OR SWITCH PROBLEMS	26	14	3	11	5	14	2	7	6	21	6	17	4	21	0	0
NO PROBLEMS/NEW EQUIPMENT	17	9	1	4	4	11	5	18	3	11	1	3	3	16	0	0
NO PROBLEMS/USED EQUIPMENT	53	29	5	19	12	33	10	36	13	46	8	23	2	11	3	43
OTHER	29	16	7	26	5	14	5	18	1	4	5	14	6	32	0	0
NO ANSWER	4	2	0	0	1	3	0	0	0	0	2	6	0	0	1	14
TOTAL *	296	163	48	179	59	164	42	151	46	164	57	164	33	174	11	157
NUMBER OF RESPONDENTS	180		27		36		28		28		35		19		7	

*Total equals more than 180 since some respondents selected more than one choice,

Table 18

18. PLEASE RATE THE PERFORMANCE OF THIS TYPE ELECTRO-MECHANICAL SIREN IN TERMS OF HOW OFTEN IT MUST BE REPAIRED:

RESPONSE	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
MORE THAN EVERY 6 MONTHS	1	1	1	4	0	0	0	0	0	0	0	0	0	0	0	0
EVERY 6 TO 12 MONTHS	14	8	3	11	3	8	0	0	4	14	4	11	0	0	0	0
ONCE A YEAR	22	12	3	11	2	6	3	11	3	11	6	17	5	26	0	0
ONCE EVERY 2 OR 3 YEARS	40	22	8	30	7	19	4	14	4	14	5	14	10	53	2	29
LESS THAN EVERY 3 YEARS	38	21	8	30	5	14	2	7	7	25	12	34	2	11	2	29
NEVER NEEDED REPAIR	63	35	4	15	18	50	16	64	10	36	7	20	3	16	3	43
NO ANSWER	5	3	0	0	1	3	1	4	0	0	3	9	0	0	0	0
TOTAL	183	102	27	101	36	100	28	100	28	100	37	105	20	106	7	101
NUMBER OF RESPONDENTS	180		27		36		28		28		35		19		7	

Table 18 A

18.A. OF THOSE RESPONDENTS WHO HAVE NEVER HAD TO REPAIR SIRENS, HOW LONG HAS THE DEPARTMENT HAD THOSE SIRENS?

RESPONSE	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
12 MONTHS OR LESS	15	24	1	25	2	11	5	28	5	50	0	0	1	33	1	33
13 - 24 MONTHS	11	17	0	0	5	28	2	11	1	10	3	43	0	0	0	0
25 - 36 MONTHS	8	13	0	0	2	11	4	22	0	0	0	0	1	33	1	33
37 - 48 MONTHS	6	10	1	25	1	6	1	6	1	10	0	0	1	33	1	33
49 - 60 MONTHS	4	6	0	0	2	11	1	6	1	10	0	0	0	0	0	0
61 - 72 MONTHS	4	6	1	25	1	6	1	6	0	0	1	14	0	0	0	0
73 - 84 MONTHS	1	2	0	0	0	0	1	6	0	0	0	0	0	0	0	0
85 - 96 MONTHS	1	2	0	0	0	0	1	6	0	0	0	0	0	0	0	0
MORE THAN 96 MONTHS	7	11	0	0	4	22	2	11	1	10	0	0	0	0	0	0
NO ANSWER	6	10	1	25	1	6	0	0	1	10	3	43	0	0	0	0
TOTAL	63	101	4	100	18	101	18	102	10	100	7	100	3	99	3	99
NUMBER OF RESPONDENTS	63		4		18		18		10		7		3		3	

Table 19

19. WHAT PART OR COMPONENT IS THE MOST COMMON CAUSE OF BREAKDOWNS IN THIS TYPE ELECTRO-MECHANICAL SIREN?

RESPONSE	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
NONE	3	2	0	0	0	0	0	0	1	4	2	6	0	0	0	0
BRUSHES	48	27	10	37	7	19	2	7	6	21	13	37	7	37	3	43
BEARINGS	39	22	13	48	4	11	2	7	3	11	7	20	9	47	1	14
WINDINGS	8	4	3	11	1	3	0	0	0	0	4	11	0	0	0	0
CONTROL SWITCH	45	25	3	11	9	25	8	29	9	32	9	26	6	32	1	14
OTHER	24	13	4	15	5	14	2	7	4	14	4	11	5	26	0	0
NO ANSWER	52	29	2	7	17	47	17	61	9	32	5	14	0	0	2	29
TOTAL	219	122	35	129	43	119	31	111	32	114	44	125	27	142	7	100
NUMBER OF RESPONDENTS	180		27		36		28		28		35		19		7	

Table 20

20. ABOUT HOW LONG DO YOU USE MOST ELECTRO-MECHANICAL SIRENS OF THIS TYPE BEFORE THEY ARE REPLACED OR REBUILT?

RESPONSE	DEPARTMENT TYPE													
	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
1 - 3 YEARS	20	11	5	19	1	3	2	7	1	4	6	17	4	21	1	14
4 - 6 YEARS	32	18	3	11	6	17	4	14	9	32	3	9	7	37	0	0
7 - 10 YEARS	38	21	6	22	9	25	3	11	7	25	10	29	2	11	1	14
MORE THAN 10 YEARS	36	20	10	37	5	14	3	11	2	7	10	29	5	26	1	14
NEVER NEEDED TO REPAIR	46	26	3	11	14	39	12	43	9	32	3	9	1	5	4	57
NO ANSWER	8	4	0	0	1	3	4	14	0	0	3	9	0	0	0	0
TOTAL	180	100	27	100	36	101	28	100	28	100	35	102	19	100	7	99
NUMBER OF RESPONDENTS	180		27		36		28		28		35		19		7	

Table 20 A

20.A. OF THOSE RESPONDENTS WHO HAVE NEVER NEEDED TO REPLACE OR REBUILD SIRENS, HOW LONG HAS RESPONDENT HAD THOSE SIRENS?

RESPONSE	DEPARTMENT TYPE													
	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
12 MONTHS OR LESS	10	22	0	0	2	14	1	8	5	56	0	0	1	100	1	25
13 - 24 MONTHS	8	17	0	0	4	29	2	17	1	11	1	33	0	0	0	0
25 - 36 MONTHS	5	11	0	0	2	14	1	8	0	0	0	0	0	0	2	50
37 - 48 MONTHS	2	4	1	33	1	7	0	0	0	0	0	0	0	0	0	0
49 - 60 MONTHS	2	4	0	0	0	0	1	8	1	11	0	0	0	0	0	0
61 - 72 MONTHS	3	7	0	0	1	7	1	8	0	0	1	33	0	0	0	0
73 - 84 MONTHS	1	2	0	0	0	0	1	8	0	0	0	0	0	0	0	0
85 - 96 MONTHS	1	2	0	0	0	0	1	8	0	0	0	0	0	0	0	0
MORE THAN 96 MONTHS	7	15	1	33	2	14	2	17	1	11	0	0	0	0	1	25
NO ANSWER	7	15	1	33	2	14	2	17	1	11	1	33	0	0	0	0
TOTAL	46	99	3	99	14	99	12	99	9	100	3	99	1	100	4	100
NUMBER OF RESPONDENTS	46		3		14		12		9		3		1		4	

Table 21

21. WHAT IMPROVEMENTS COULD BE MADE IN THIS TYPE ELECTRO-MECHANICAL SIREN?

RESPONSE	TIMES MENTIONED	
	NO.	%
INCREASE VOLUME/MAKE LOUDER	21	12
NEED DISTINCT SOUND/TONE CONTROL	2	1
REPLACE WITH ELECTRONIC SIRENS	10	6
MAKE MORE DURABLE/LESS MALFUNCTIONING	2	1
MAKE SMALLER/LIGHTER WEIGHT	10	6
IMPROVE BRUSHES, BEARINGS, LUBRICATION SYSTEM	7	4
BETTER BRAKING SYSTEM/FASTER MOTOR STOP	6	3
SIREN TAKES TOO MUCH CURRENT TO OPERATE/BATTERY DRAIN	3	2
NEED UNIVERSAL MOUNTING SYSTEM/BASE PLATE	8	4
OTHER	5	3
NEED PROTECTION FROM DUST, SNOW, RAIN, ETC.	3	2
NO ANSWER	116	64
TOTAL*	193	108
NUMBER OF RESPONDENTS	180	

*Total equals more than 180 since some respondents gave more than one response.

Table 22

22. CAN YOU THINK OF ANY OTHER ELECTRO-MECHANICAL SIREN NOW ON THE MARKET THAT MIGHT MEET YOUR NEEDS BETTER?

RESPONSE	TIMES MENTIONED	
MANUFACTURER	NO.	%
1	4	2
2	1	1
3	2	1
4	1	1
BLANK	172	96
TOTAL	180	100

Table 23

23. WHAT IS THERE ABOUT THIS OTHER TYPE ELECTRO-MECHANICAL SIREN THAT WOULD MAKE IT BETTER FOR YOUR PARTICULAR NEEDS?

RESPONSE	TOTAL NO.	TOTAL %
MISCELLANEOUS OTHERS	2	1
SOUND LOUDER/MORE PENETRATN	5	3
MOUNTING DIFFERENT/BETTER	1	1
WILL NOT FREEZE UP	1	1
NO ANSWER	173	96
TOTAL*	182	102
NUMBER OF RESPONDENTS	180	

*Total equals more than 180 since some respondents selected more than one choice.

Table 24

24. WHAT LIGHTS OR REFLECTORS DO YOUR PATROL CARS USUALLY HAVE IN ADDITION TO, OR INSTEAD OF, THOSE FOUND ON AN ORDINARY PASSENGER CAR?

RESPONSE	DEPARTMENT TYPE: ALL DEPARTMENT TYPES NO.	%	STATE NO.	%	COUNTY NO.	%	CITY (1-9 OFFICERS) NO.	%	CITY (10-49 OFFICERS) NO.	%	CITY (50 OR MORE OFFICERS) NO.	%	FIFTY LARGEST CITIES NO.	%	TOWNSHIP NO.	%
SPECIAL REFLECTORS	70	16	10	21	11	15	9	12	9	11	15	18	14	30	2	7
SPECIAL TURN SIGNAL LIGHTS	159	36	12	26	24	34	31	40	33	39	27	33	15	33	17	59
SPECIAL CLEARANCE LIGHT	7	2	0	0	1	1	1	1	1	1	2	2	1	2	1	3
HAND CONTROLLED SPOTLIGHTS	302	69	28	60	43	61	51	66	58	69	62	75	37	80	23	79
FOG OR AUX DRIVING LIGHTS	15	3	1	2	4	6	4	5	2	2	1	1	2	4	1	3
ALLEY OR AMBUSH LIGHTS	71	16	1	2	12	17	13	17	18	21	17	20	8	17	2	7
AUTOMATIC HEADLIGHT FLASHER	40	9	2	4	7	10	4	5	6	7	13	16	6	13	2	7
COLORED LIGHTS IN GRILLE	63	14	9	19	15	21	13	17	9	11	9	11	4	9	4	14
FLASHING LIGHTS ON ROOF	405	93	44	94	59	83	70	91	80	95	79	95	45	98	28	97
OTHER FRONT WARNING LIGHTS	59	14	7	15	10	14	8	10	13	15	10	12	11	24	0	0
OTHER REAR WARNING LIGHTS	80	18	14	30	14	20	14	18	13	15	11	13	11	24	3	10
NO ANSWER	5	1	0	0	2	3	0	0	2	2	1	1	0	0	0	0
TOTAL	1276	291	128	273	202	285	218	282	244	288	247	297	154	334	83	286
NUMBER OF RESPONDENTS	437		47		71		77		84		83		46		29	

Table 24 A

24.A. OF THOSE RESPONDENTS WHO INDICATED OTHER FRONT WARNING LIGHTS, WHAT OTHER TYPES OF LIGHTS WERE INDICATED?

RESPONSE	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
MISCELLANEOUS OTHERS	17	29	0	0	4	40	4	50	3	23	3	30	3	27	0	0
RED, SPOTLIGHT	9	15	4	57	2	20	1	12	1	8	1	10	0	0	0	0
RED, STEADY (ROOF)	12	20	1	14	3	30	1	12	3	23	1	10	3	27	0	0
RED, STEADY	7	12	0	0	0	0	0	0	2	15	3	30	2	18	0	0
FLASHING RED LIGHTS	2	3	1	14	0	0	0	0	0	0	0	0	1	9	0	0
FLASHING AMBER LIGHTS	3	5	0	0	0	0	0	0	3	23	0	0	0	0	0	0
FLASHING LIGHTS	5	8	1	14	1	10	1	12	0	0	1	10	1	9	0	0
BLUE	4	7	0	0	0	0	1	12	1	8	1	10	1	9	0	0
TOTAL	59	99	7	99	10	100	8	98	13	100	10	100	11	99	0	0
NUMBER OF RESPONDENTS	59		7		10		8		13		10		11		0	

Table 24 B

24.B. OF THOSE RESPONDENTS WHO INDICATED OTHER REAR WARNING LIGHTS, WHAT OTHER TYPES OF LIGHTS WERE INDICATED?

RESPONSE	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
MISCELLANEOUS OTHERS	9	11	1	7	1	7	1	7	3	23	1	9	2	18	0	0
RED, SPOTLIGHT	1	1	1	7	0	0	0	0	0	0	0	0	0	0	0	0
FLASHING RED, REAR WINDOW	8	10	1	7	1	7	2	14	0	0	0	0	4	36	0	0
FALSHING AMBER, REAR WINDOW	7	9	2	14	3	21	0	0	0	0	2	18	0	0	0	0
FLASHING AMBER	12	15	2	14	3	21	1	7	3	23	3	27	0	0	0	0
FLASHING RED	6	7	0	0	3	21	0	0	2	15	0	0	1	9	0	0
FLASHING	3	4	0	0	1	7	0	0	0	0	1	9	1	9	0	0
DECK, RED, REAR WINDOW	15	19	2	14	1	7	6	43	2	15	1	9	1	9	2	67
DECK, AMBER, REAR WINDOW	6	7	2	14	0	0	1	7	1	8	1	9	1	9	0	0
FLASHING, REAR WINDOW	4	5	2	14	0	0	2	14	0	0	0	0	0	0	0	0
DECK, REAR WINDOW	7	9	1	7	1	7	0	0	1	8	2	18	1	9	1	33
BLUE	2	2	0	0	0	0	1	7	1	8	0	0	0	0	0	0
TOTAL	80	99	14	98	14	98	14	99	13	100	11	99	11	99	3	100
NUMBER OF RESPONDENTS	80		14		14		14		13		11		11		3	

Table 25

25. FOR WHICH OF THE FOLLOWING ACTIVITIES DO YOUR OFFICERS ROUTINELY USE THEIR EMERGENCY WARNING LIGHTS DURING THE DAYTIME?

RESPONSE	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
ROUTINE PATROL	15	3	3	6	6	8	3	4	3	4	0	0	0	0	0	0
PARKING OFF THE ROAD	71	16	11	23	18	25	10	13	10	12	14	17	6	13	2	7
PARKING ON THE ROAD	294	67	38	81	47	66	42	55	56	67	59	71	36	78	16	55
SIGNALLING MOTORISTS OVER	383	88	38	81	63	89	68	88	72	86	74	89	42	91	26	90
EMERGENCY CALLS	401	92	41	87	63	89	65	84	79	94	80	96	45	98	28	97
PURSUING ANOTHER CAR	398	91	36	77	61	86	72	94	79	94	79	95	45	98	26	90
OTHER	55	13	5	11	6	8	10	13	11	13	11	13	8	17	4	14
NO ANSWER	5	1	1	2	2	3	0	0	1	1	1	1	0	0	0	0
TOTAL	1622	371	173	368	266	374	270	351	311	371	318	382	182	395	102	353
NUMBER OF RESPONDENTS	437		47		71		77		84		83		46		29	

Table 25 A

25.A. OF THOSE RESPONDENTS WHO INDICATED OTHER ACTIVITIES, WHAT OTHER ACTIVITIES WERE INDICATED?

RESPONSE	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
MISCELLANEOUS OTHERS	4	7	0	0	0	0	0	0	3	27	0	0	1	12	0	0
ACCIDENTS	17	31	4	80	0	0	3	30	3	27	2	18	3	37	2	50
FUNERALS/FUNERAL ESCORTS	4	7	0	0	1	17	2	20	1	9	0	0	0	0	0	0
ESCORTS	17	31	0	0	2	33	2	20	3	27	7	64	1	12	2	50
DIRECTING TRAFFIC	3	5	0	0	2	33	1	10	0	0	0	0	0	0	0	0
BLOCKING TRAFFIC	6	11	0	0	1	17	2	20	0	0	1	9	2	25	0	0
HAZARDOUS/UNUSUAL SITUATION	4	7	1	20	0	0	0	0	1	9	1	9	1	12	0	0
TOTAL	55	99	5	100	6	100	10	100	11	99	11	100	8	98	4	100
NUMBER OF RESPONDENTS	55		5		6		10		11		11		8		4	

Table 26-1

26. FOR WHICH OF THE FOLLOWING ACTIVITIES DO YOUR OFFICERS ROUTINELY USE THEIR EMERGENCY WARNING LIGHTS AT NIGHT?

RESPONSE	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
ROUTINE PATROL	14	3	2	4	4	6	4	5	3	4	0	0	0	0	1	3
PARKING OFF THE ROAD	115	26	15	32	20	28	21	27	22	26	22	27	10	22	5	17
PARKING ON THE ROAD	332	76	39	83	55	77	53	69	61	73	67	81	38	83	19	66
SIGNALLING MOTORISTS OVER	410	94	44	94	65	92	72	94	80	95	78	94	42	91	29	100
EMERGENCY CALLS	410	94	41	87	64	90	71	92	82	98	79	95	45	98	28	97
PURSUING ANOTHER CAR	400	92	36	77	61	86	72	94	81	96	77	93	46	100	27	93
OTHER	54	12	7	15	5	7	8	10	9	11	12	14	8	17	5	17
NO ANSWER	5	1	0	0	2	3	0	0	1	1	2	2	0	0	0	0
TOTAL	1740	398	184	392	276	389	301	391	339	404	337	406	189	411	114	393
NUMBER OF RESPONDENTS	437		47		71		77		84		83		46		29	

Table 26 A-1

26.A. OF THOSE RESPONDENTS WHO INDICATED OTHER ACTIVITIES, WHAT OTHER ACTIVITIES WERE INDICATED?

RESPONSE	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
MISCELLANEOUS OTHERS	9	17	0	0	1	20	2	25	3	33	2	17	1	12	0	0
ACCIDENTS	21	39	5	71	0	0	3	37	4	44	3	25	3	37	3	60
ESCORTS	9	17	0	0	1	20	2	25	1	11	4	33	1	12	0	0
DIRECTING TRAFFIC	4	7	0	0	3	60	0	0	0	0	0	0	0	0	1	20
ROAD BLOCKS	6	11	1	14	0	0	1	12	0	0	2	17	2	25	0	0
HAZARDOUS/UNUSUAL SITUATION	5	9	1	14	0	0	0	0	1	11	1	8	1	12	1	20
TOTAL	54	100	7	99	5	100	8	99	9	99	12	100	8	98	5	100
NUMBER OF RESPONDENTS	54		7		5		8		9		12		8		5	

Table 27

27. PLEASE GIVE THE FOLLOWING INFORMATION ABOUT THE MOST COMMON TYPE OF EMERGENCY WARNING LIGHTS (BEACONS OR FLASHERS) USED IN YOUR DEPARTMENT.
(MANUFACTURER, NUMBER OF PATROLCARS HAVING IT, MOUNTED DIRECTLY ON VEHICLE OR ON UTILITY BAR)

RESPONSE

	DEPARTMENTS HAVING IT		PATROLCARS HAVING IT		NUMBER OF DEPARTMENTS MOUNTING ON	
					VEHICLE	UTILITY BAR
MANUFACTURER CODE	NO.	%	NO.	%	NO.	NO.
1	266	61	19,880	67	90	188
2	43	10	4,705	16	23	25
3	15	3	600	2	9	7
4	13	3	591	2	4	10
5	8	2	893	3	3	5
6	7	2	661	2	5	4
MISCELLANEOUS	31	7	1,846	7	12	19
BLANK (NO MANUFACTURER GIVEN)	54	12	442	1	23	22
TOTAL	437	100	26,618	100	169	280

Table 27 C

27.C. NUMBER OF LIGHTS PER UNIT FOR THE BEACON OR FLASHING LIGHT WHICH DEPARTMENT INDICATES IS THE MOST COMMONLY USED:

RESPONSE

	DEPARTMENT TYPE															
	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
1	79	18	16	34	18	25	16	21	8	10	12	14	7	15	2	7
2	193	44	17	36	21	30	31	40	46	55	43	52	21	46	14	48
3	39	9	3	6	7	10	12	16	5	6	8	10	2	4	2	7
4	82	19	10	21	12	17	9	12	15	18	17	20	13	28	6	21
5	6	1	0	0	2	3	3	4	1	1	0	0	0	0	0	0
6	2	0	0	0	0	0	0	0	0	0	0	0	2	4	0	0
7	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
8	2	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0
NO ANSWER	33	8	1	2	10	14	6	8	8	10	2	2	1	2	5	17
TOTAL	437	99	47	99	71	100	77	101	84	101	83	99	46	99	29	100
NUMBER OF RESPONDENTS	437		47		71		77		84		83		46		29	

Table 27 D

27.D. NUMBER OF UNITS PER VEHICLE FOR THE BEACON OR FLASHING LIGHT WHICH DEPARTMENT INDICATES IS THE MOST COMMONLY USED:

RESPONSE	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
1	322	74	42	89	48	68	53	69	63	75	61	73	35	76	20	69
2	57	13	3	6	9	13	9	12	10	12	16	19	8	17	2	7
3	11	3	1	2	1	1	5	6	1	1	1	1	2	4	0	0
4	5	1	1	2	0	0	2	3	2	2	0	0	0	0	0	0
5	2	0	0	0	1	1	0	0	0	0	1	1	0	0	0	0
8	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
NO ANSWER	39	9	0	0	12	17	8	10	8	10	3	4	1	2	7	24
TOTAL	437	100	47	99	71	100	77	100	84	100	83	99	46	99	29	100
NUMBER OF RESPONDENTS	437		47		71		77		84		83		46		29	

Table 27 E

27.E. COLOR(S) OF WARNING SIGNAL OF THE BEACON OR FLASHING LIGHT WHICH DEPARTMENT INDICATES IS THE MOST COMMONLY USED:

RESPONSE	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
RED AND BLUE	35	8	1	2	6	8	6	8	9	11	7	8	4	9	2	7
RED AND CLEAR	46	11	2	4	8	11	6	8	10	12	8	10	6	13	6	21
BLUE AND CLEAR	8	2	0	0	0	0	3	4	2	2	2	2	1	2	0	0
CLEAR	17	4	1	2	2	3	1	1	5	6	4	5	2	4	2	7
RED	243	56	27	57	40	56	49	64	45	54	45	54	24	52	13	45
BLUE	107	24	16	34	17	24	18	23	18	21	19	23	13	28	6	21
YELLOW	47	11	9	19	8	11	7	9	6	7	10	12	5	11	2	7
OTHER	1	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0
NO ANSWER	8	2	1	2	4	6	1	1	1	1	1	1	0	0	0	0
TOTAL*	512	118	58	122	85	119	91	118	96	114	96	115	55	119	31	108
NUMBER OF RESPONDENTS	437		47		71		77		84		83		46		29	

*Total equals more than 437 since some respondents selected more than one choice.

Table 27 F

27.F. COLOR OF THE DOME OF THE BEACON OR FLASHING LIGHT WHICH DEPARTMENT INDICATES IS THE MOST COMMONLY USED:

RESPONSE	DEPARTMENT TYPE															
	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
RED	222	51	20	43	34	48	37	48	50	60	43	52	22	48	16	55
BLUE	111	25	16	34	14	20	16	21	19	23	25	30	14	30	7	24
CLEAR	63	14	7	15	7	10	9	12	13	15	11	13	9	20	7	24
YELLOW	4	1	1	2	0	0	0	0	0	0	2	2	1	2	0	0
CHROME	4	1	2	4	0	0	0	0	0	0	2	2	0	0	0	0
NO ANSWER	61	14	4	9	21	30	18	23	8	10	7	8	3	7	0	0
TOTAL *	465	106	50	107	76	108	80	104	90	108	90	107	49	107	30	103
NUMBER OF RESPONDENTS	437		47		71		77		84		83		46		29	

*Total equals more than 437 since some respondents selected more than one response.

Table 28

28. ABOUT HOW LONG DOES THIS MODEL OF BEACON OR FLASHING LIGHT WORK BEFORE IT NEEDS REPAIR OR SERVICE (OTHER THAN LAMP REPLACEMENT?

RESPONSE	DEPARTMENT TYPE															
	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
LESS THAN 1 YEAR	25	6	5	11	2	3	4	5	2	2	8	10	4	9	0	0
1 - 3 YEARS	138	32	19	40	14	20	19	25	22	26	36	43	21	46	7	24
4 - 6 YEARS	77	18	8	17	10	14	10	13	19	23	14	17	12	26	4	14
7 - 10 YEARS	26	6	6	13	7	10	3	4	2	2	3	4	4	9	1	3
MORE THAN 10 YEARS	14	3	3	6	6	8	1	1	1	1	2	2	1	2	0	0
NEVER NEEDED TO REPAIR	149	34	4	9	28	39	40	52	37	44	19	23	4	9	17	59
NO ANSWER	17	4	3	6	5	7	4	5	2	2	3	4	0	0	0	0
TOTAL*	446	103	48	102	72	101	81	105	85	100	85	103	46	101	29	100
NUMBER OF RESPONDENTS	437		47		71		77		84		83		46		29	

*Total equals more than 437 since some respondents selected more than one choice.

Table 28 A

28.A. OF THOSE RESPONDENTS WHO HAVE NEVER NEEDED REPAIR OR SERVICE, HOW LONG HAS DEPARTMENT HAD BEACON OR FLASHING LIGHT?

RESPONSE	DEPARTMENT TYPE																	
	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
12 MONTHS OR LESS	45	30	2	50	11	39	6	15	14	38	6	32	2	50	4	24
13 - 24 MONTHS	35	23	1	25	5	18	15	37	9	24	3	16	1	25	1	6
25 - 36 MONTHS	30	20	0	0	3	11	10	25	3	8	4	21	0	0	10	59
37 - 48 MONTHS	11	7	0	0	1	4	2	5	3	8	3	16	1	25	1	6
49 - 60 MONTHS	11	7	1	25	3	11	2	5	4	11	1	5	0	0	0	0
61 - 72 MONTHS	5	3	0	0	2	7	1	2	1	3	1	5	0	0	0	0
73 - 84 MONTHS	2	1	0	0	0	0	1	2	1	3	0	0	0	0	0	0
MORE THAN 96 MONTHS	4	3	0	0	2	7	2	5	0	0	0	0	0	0	0	0
NO ANSWER	6	4	0	0	1	4	1	2	2	5	1	5	0	0	1	6
TOTAL	149	98	4	100	28	101	40	98	37	100	19	100	4	100	17	101
NUMBER OF RESPONDENTS	149		4		28		40		37		19		4		17	

Table 29

29. WHAT ARE THE MOST COMMON CAUSES OF BREAKDOWN OR MALFUNCTION IN THIS MODEL BEACON OR FLASHER?

RESPONSE	DEPARTMENT TYPE																	
	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
NONE	18	4	0	0	1	1	5	6	7	8	3	4	0	0	2	7
BULB FAILURE	187	43	19	40	28	39	26	34	27	32	46	55	28	61	13	45
MECHANICAL FAILURE	100	23	19	40	12	17	13	17	18	21	20	24	14	30	4	14
FAILURE CAUSED BY WEATHER	37	8	7	15	3	4	6	8	4	5	10	12	5	11	2	7
OTHER	42	10	7	15	1	1	8	10	9	11	8	10	7	15	2	7
NO ANSWER	94	22	3	6	29	41	21	27	24	29	7	8	2	4	8	28
TOTAL*	478	110	55	116	74	103	79	102	89	106	94	113	56	121	31	108
NUMBER OF RESPONDENTS	437		47		71		77		84		83		46		29	

*Total equals more than 437 since some respondents selected more than one choice.

Table 29 A

29.A. OF THOSE RESPONDENTS WHO INDICATED, OTHER CAUSES OF BREAKDOWN OR MALFUNCTION WHAT OTHER CAUSES WERE INDICATED?

RESPONSE	DEPARTMENT TYPE													
	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
MISCELLANEOUS OTHER	27	64	4	57	1	100	6	75	5	56	5	62	5	71	1	50
DAMAGE CAUSED BY CAR WASH	6	14	0	0	0	0	0	0	1	11	2	25	2	29	1	50
DAMAGE CAUSED BY ACCIDENT	1	2	1	14	0	0	0	0	0	0	0	0	0	0	0	0
DOMES/GLASS BREAKS	5	12	1	14	0	0	0	0	3	33	1	12	0	0	0	0
POOR GROUNDING	3	7	1	14	0	0	2	25	0	0	0	0	0	0	0	0
TOTAL	42	99	7	99	1	100	8	100	9	100	8	99	7	100	2	100
NUMBER OF RESPONDENTS	42		7		1		8		9		8		7		2	

Table 30

30. ABOUT LONG CAN THIS MODEL OF EMERGENCY WARNING LIGHT BE USED BEFORE IT MUST BE REPLACED?

RESPONSE	DEPARTMENT TYPE													
	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
LESS THAN 1 YEAR	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
1 - 3 YEARS	36	8	4	9	1	1	7	9	8	10	8	10	6	13	2	7
4 - 6 YEARS	68	16	6	13	11	15	10	13	13	15	15	18	9	20	4	14
7 - 10 YEARS	84	19	14	30	15	21	5	6	15	18	19	23	12	26	4	14
11 - 15 YEARS	32	7	6	13	5	7	4	5	3	4	7	8	7	15	0	0
MORE THAN 15 YEARS	11	3	1	2	1	1	3	4	1	1	1	1	4	9	0	0
NEVER NEEDED TO REPLACE	174	40	13	28	28	39	42	55	37	44	29	35	7	15	18	62
NO ANSWER	32	7	3	6	10	14	6	8	7	8	4	5	1	2	1	3
TOTAL *	438	100	47	101	71	98	77	100	85	101	83	100	46	100	29	100
NUMBER OF RESPONDENTS	437		47		71		77		84		83		46		29	

*Total equals 438 since one respondent selected two choices.

Table 30 A

30.A. OF THOSE RESPONDENTS WHO HAVE NEVER NEEDED TO REPLACE EMERGENCY WARNING LIGHTS, HOW LONG HAS DEPARTMENT HAD THESE LIGHTS?

RESPONSE	DEPARTMENT TYPE															
	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
12 MONTHS OR LESS	46	26	5	38	9	32	5	12	13	35	7	24	3	43	4	22
13 - 24 MONTHS	34	20	2	15	6	21	12	29	9	24	4	14	0	0	1	6
25 - 36 MONTHS	35	20	1	8	4	14	11	26	4	11	4	14	1	14	10	56
37 - 48 MONTHS	20	11	1	8	1	4	4	10	5	14	6	21	1	14	2	11
49 - 60 MONTHS	8	5	1	8	2	7	2	5	2	5	1	3	0	0	0	0
61 - 72 MONTHS	9	5	0	0	2	7	2	5	1	3	2	7	2	29	0	0
73 - 84 MONTHS	5	3	0	0	1	4	3	7	1	3	0	0	0	0	0	0
85 - 96 MONTHS	3	2	0	0	0	0	1	2	0	0	2	7	0	0	0	0
MORE THAN 96 MONTHS	6	3	1	8	3	11	1	2	1	3	0	0	0	0	0	0
NO ANSWER	8	5	2	15	0	0	1	2	1	3	3	10	0	0	1	6
TOTAL	174	100	13	100	28	100	42	100	37	101	29	100	7	100	18	101
NUMBER OF RESPONDENTS	174		13		28		42		37		29		7		18	

Table 31

31. WHAT IMPROVEMENTS CAN YOU SUGGEST FOR THIS MODEL OF EMERGENCY WARNING LIGHT?

RESPONSE	TIMES MENTIONED	
	NO.	%
MAKE LIGHTS BRIGHTER/MORE INTENSE/MORE VISIBLE/MORE CANDLEPOWER	24	5
MAKE UNIT MORE WEATHER PROOF/SEALING	22	5
BETTER QUALITY/MORE DURABLE	10	2
MORE THEFTPROOF/VANDALPROOF	7	2
INCREASE FLASH SPEED/STROBE RATE/TURNING RATE FOR FLASH	6	1
MAKE LIGHTS LARGER	3	1
IMPROVE MOUNTING	9	2
IMPROVE MOTORS/BEARINGS/GEARS	19	4
IMPROVE DOMES	6	1
IMPROVE REFLECTORS	4	1
NEW LIGHT ARRANGEMENT/FUNCTION	1	0
DEFLECTOR TO CUT WIND NOISE	2	0
IMPROVE STYLING	3	1
BETTER LUBRICATION SYSTEM	2	0
CHANGE TO BLUE LIGHTS	7	2
CHANGE TO RED LIGHTS	2	0
OTHER COLOR SUGGESTIONS	4	1
OTHER	13	3
NO ANSWER	322	74
TOTAL	466	105
NUMBER OF RESPONDENTS	437	

Table 32

32. CAN YOU THINK OF ANY OTHER EMERGENCY WARNING LIGHT NOW ON THE MARKET THAT MIGHT MEET YOUR NEEDS BETTER?

RESPONSE

	TIMES MENTIONED	
MANUFACTURER CODE	NO.	%
1	36	8
2	4	1
3	3	1
MISCELLANEOUS	7	2
NO ANSWER	385	88
TOTAL	437	100

Table 32 A

32.A. CAN YOU THINK OF ANY OTHER EMERGENCY WARNING LIGHT NOW ON THE MARKET WHICH MIGHT MEET YOUR NEEDS BETTER?
TYPES OF LIGHTS MENTIONED

RESPONSE	TIMES MENTIONED	
	NO.	%
BAR LIGHT	13	3
LIGHT AND SIREN BAR	7	2
REFERENCE TO SIREN OR SPEAKER	4	1
REVOLVING LIGHT	4	1
STROBE LIGHT	9	2
ROTATING BEACON LIGHT	2	0
TWO LIGHTS	1	0
FOUR LIGHTS	2	0
OTHER	9	2
NO ANSWER	392	90
TOTAL	443	101
NUMBER OF RESPONDENTS	437	

Table 32 B

32.B. CAN YOU THINK OF ANY OTHER EMERGENCY WARNING LIGHT NOW ON THE MARKET WHICH MIGHT MEET YOUR NEEDS BETTER?
COLORS OF LIGHTS MENTIONED

RESPONSE	TIMES MENTIONED	
	NO.	%
RED	37	8
BLUE	14	3
CLEAR	10	2
YELLOW	5	1
RED AND YELLOW	1	0
BLUE AND CLEAR	3	1
NO ANSWER	387	89
TOTAL*	457	104
NUMBER OF RESPONDENTS	437	

*Total equals more than 437 since some respondents selected more than one choice.

Table 33

33. WHAT IS THERE ABOUT THIS OTHER LIGHT THAT WOULD MAKE IT BETTER MEET YOUR NEEDS?

RESPONSE	TOTAL	
	NO.	%
MORE VISIBLE/BIGGER	44	10
MORE COMPACT/LOWER PROFILE	5	1
MOUNTING EASIER/BETTER	7	2
EASIER TO MAINTAIN	2	0
BETTER WEATHERPROOFING	5	1
BETTER FLASHING ARRANGEMENT	1	0
OTHER	12	3
NO ANSWER	381	87
TOTAL	457	104
NUMBER OF RESPONDENTS	437	

Table 34

34. HOW MANY STANDARD PATROL CARS DOES YOUR DEPARTMENT HAVE?

RESPONSE	DEPARTMENT TYPE													
	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
LESS THAN 5	205	47	0	0	40	56	69	90	69	82	3	4	0	0	24	83
5 - 10	51	12	0	0	12	17	2	3	8	10	25	30	0	0	4	14
11 - 50	66	15	1	2	11	15	1	1	3	4	48	58	1	2	1	3
51 - 100	20	5	2	4	2	3	0	0	0	0	4	5	12	26	0	0
101 - 500	51	12	23	49	0	0	0	0	0	0	0	0	28	61	0	0
501 - 1000	19	4	16	34	0	0	0	0	0	0	0	0	3	7	0	0
MORE THAN 1000	7	2	5	11	0	0	0	0	0	0	0	0	2	4	0	0
NO ANSWER	18	4	0	0	6	8	5	6	4	5	3	4	0	0	0	0
TOTAL	437	101	47	100	71	99	77	100	84	101	83	101	46	100	29	100
NUMBER OF RESPONDENTS	437		47		71		77		84		83		46		29	

Table 35

35. CAN OFFICIAL TRAFFIC CONTROL SIGNALS BE OPERATED SO AS TO HELP PATROL CAR IN EMERGENCY?

RESPONSE	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
YES	64	15	2	4	9	13	14	18	11	13	20	24	4	9	4	14
NO	354	81	43	91	53	75	59	77	71	85	61	73	42	91	25	86
NO ANSWER	19	4	2	4	9	13	4	5	2	2	2	2	0	0	0	0
TOTAL	437	100	47	99	71	101	77	100	84	100	83	99	46	100	29	100
NUMBER OF RESPONDENTS	437		47		71		77		84		83		46		29	

Table 35 A

35.A. IF YES TO 35 HOW ARE LIGHTS CONTROLLED?

RESPONSE	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
BRIGHT LIGHT FROM PATROLCAR	7	11	0	0	2	22	3	21	0	0	2	10	0	0	0	0
RADIO SIGNAL FROM PATROLCAR	5	8	0	0	3	33	1	7	0	0	1	5	0	0	0	0
OTHER	53	83	2	100	4	44	10	71	11	100	18	90	4	100	4	100
TOTAL *	65	102	2	100	9	99	14	99	11	100	21	105	4	100	4	100
NUMBER OF RESPONDENTS	64		2		9		14		11		20		4		4	

* Total equals 65 since one respondent selected two choices.

Table 35 B

35.B. OF THOSE DEPARTMENTS WHO INDICATED OTHER MEANS OF CONTROL, WHAT OTHER MEANS WERE INDICATED?

RESPONSE	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
MANUAL MEANS	45	85	1	50	4	100	10	100	10	91	13	72	3	75	4	100
OTHER MEANS	8	15	1	50	0	0	0	0	1	9	5	28	1	25	0	0
TOTAL	53	100	2	100	4	100	10	100	11	100	18	100	4	100	4	100
NUMBER OF RESPONDENTS	53		2		4		10		11		18		4		4	

Table 36

36. OFFICERS MAY BE TRAINED IN VARIOUS WAYS TO USE EMERGENCY WARNING EQUIPMENT. INDICATE THE TWO MOST COMMON METHODS OF TRAINING USED IN YOUR DEPARTMENT.

RESPONSE	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
READ TRAINING MANUALS	81	19	2	4	16	23	23	30	21	25	6	7	6	13	7	24
PART OF REG. TRAINING CLASS	220	50	42	89	17	24	19	25	35	42	56	67	39	85	12	41
EXPERIENCED OFFICERS TRAIN	356	81	36	77	59	83	57	74	69	82	72	87	35	76	28	97
ATTEND SCHOOL OUTSIDE DEPT.	116	27	0	0	29	41	33	43	32	38	13	16	1	2	8	28
OTHER	6	1	1	2	1	1	1	1	2	2	0	0	0	0	1	3
NO ANSWER	13	3	1	2	3	4	4	5	2	2	2	2	1	2	0	0
TOTAL	792	181	82	174	125	176	137	178	161	191	149	179	82	178	56	193
NUMBER OF RESPONDENTS	437		47		71		77		84		83		46		29	

Table 37

37. WHO IN YOUR DEPARTMENT IS RESPONSIBLE FOR CHOOSING AND ORDERING EMERGENCY WARNING EQUIPMENT?

RESPONSE	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
HEAD OF UNIT	302	69	6	13	66	93	65	84	78	93	47	57	14	30	26	90
USERS OF EQUIPMENT	21	5	2	4	4	6	1	1	2	2	6	7	5	11	1	3
MAINTENANCE STAFF	39	9	5	11	2	3	0	0	1	1	16	19	13	28	2	7
OTHER	159	36	47	100	11	15	24	31	15	18	33	40	23	50	6	21
NO ANSWER	15	3	2	4	3	4	2	3	2	2	2	2	4	9	0	0
TOTAL	536	122	62	132	86	121	92	119	98	116	104	125	59	128	35	121
NUMBER OF RESPONDENTS	437		47		71		77		84		83		46		29	

Table 38

38. WHAT TEST METHODS DO YOU USE FOR NEW EMERGENCY WARNING EQUIPMENT?

RESPONSE	ALL DEPARTMENT TYPES		STATE		COUNTY		CITY (1-9 OFFICERS)		CITY (10-49 OFFICERS)		CITY (50 OR MORE OFFICERS)		FIFTY LARGEST CITIES		TOWNSHIP	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
BUY FEW PIECES/GET OPINION	116	27	32	68	11	15	3	4	16	19	24	29	26	57	4	14
STANDRD TESTS BEFORE BUYING	43	10	7	15	5	7	5	6	9	11	8	10	7	15	2	7
TESTS BEFORE INSTALLATION	14	3	2	4	0	0	4	5	1	1	4	5	1	2	2	7
TEST AFTER INSTALLATION	54	12	6	13	8	11	10	13	14	17	10	12	3	7	3	10
NOT TESTED EXCEPT IN USE	187	43	2	4	43	61	42	55	44	52	31	37	11	24	14	48
OTHER	70	16	9	19	9	13	13	17	10	12	19	23	6	13	4	14
NO ANSWER	16	4	1	2	4	6	5	6	2	2	3	4	1	2	0	0
TOTAL *	500	115	59	125	80	113	82	106	96	114	99	120	55	120	29	100
NUMBER OF RESPONDENTS	437		47		71		77		84		83		46		29	

*Total equals more than 437 since some respondents selected more than one choice.

Table 38 A

38.A. OF THOSE RESPONDENTS WHO INDICATED THEY USE STANDARD TESTS BEFORE BUYING, WHAT TESTS ARE THEY?

RESPONSE	TIMES MENTIONED	
	NO.	%
MISCELLANEOUS OTHER	7	16
DEMONSTRATION BY SALESMAN	6	14
HAVE MANUFACTURER LEND DEPARTMENT EQUIPMENT TO TRY IT OUT	8	19
MENTION QUALITIES THEY LOOK FOR BEFORE BUYING	4	9
DEPARTMENT DESCRIBES A SPECIFIC STANDARD TEST THEY USE BEFORE BUYING	6	14
NO ANSWER	12	28
TOTAL	43	100
NUMBER OF RESPONDENTS	43	

Table 38 B

38.B. OF RESPONDENTS WHO INDICATED THEY TEST EQUIPMENT AFTER INSTALLATION ON THE PATROLCAR, WHAT TESTS ARE USED?

RESPONSE	TIMES MENTIONED	
	NO.	%
MISCELLANEOUS OTHER	5	9
CHECK TO SEE IF EQUIPMENT FUNCTIONS	24	44
KEEP RECORDS ON PERFORMANCE/MAINTENANCE OF EQUIPMENT AFTER INSTALLATION	2	4
TEST THROUGH USE IN THE FIELD	3	6
MENTION A SPECIFIC TEST WHICH IS PERFORMED	5	9
COMPARE EQUIPMENT TO SPECIFICATIONS	1	2
NO ANSWER	14	26
TOTAL	54	100
NUMBER OF RESPONDENTS	54	

Table 38 C

38.C. OF THE RESPONDENTS WHO INDICATE THAT THEY USE TESTS OTHER THAN THOSE LISTED FOR NEW EMERGENCY WARNING EQUIPMENT, WHAT OTHER TESTS ARE USED?

RESPONSE	TIMES MENTIONED	
	NO.	%
GET OPINION OF OTHER LAW ENFORCEMENT AGENCIES	38	54
DEMONSTRATION BY MANUFACTURER/SALESMAN	5	7
MANUFACTURER LENDS DEPARTMENT EQUIPMENT FOR TRIAL USE	14	20
SPECIFICATIONS ARE WRITTEN BEFORE PURCHASE	3	4
HAVE FOUND THROUGH EXPERIENCE WITH PARTICULAR BRAND THAT IT WORKS BEST	3	4
HAVE OFFICERS USE EQUIPMENT AND GIVE THEIR OPINIONS	7	10
USE SPECIFICATIONS FROM ANOTHER DEPARTMENT	5	7
MENTION SPECIFIC QUALITIES THEY LOOK FOR IN EQUIPMENT	1	1
MISCELLANEOUS OTHERS	6	9
TOTAL*	82	116
NUMBER OF RESPONDENTS	70	

*Total equals more than 70 since some respondents selected more than one choice.

C-114A (REV. 7-73)

U.S. DEPT. OF COMM. BIBLIOGRAPHIC DATA SHEET	1. PUBLICATION OR REPORT NO. NBSIR 73-212	2. Gov't Accession No.	3. Recipient's Accession No.

4. TITLE AND SUBTITLE

LEAA POLICE EQUIPMENT SURVEY OF 1972

Volume III: Sirens and Emergency Warning Lights

5. Publication Date

6. Performing Organization Code

7. AUTHOR(S)

P. Klaus and E. Bunten

8. Performing Organ. Report No.

9. PERFORMING ORGANIZATION NAME AND ADDRESS

NATIONAL BUREAU OF STANDARDS
DEPARTMENT OF COMMERCE
WASHINGTON, D.C. 20234

10. Project/Task/Work Unit No. 4314517

11. Contract/Grant No. LEAA-J-IAA-009-2

12. Sponsoring Organization Name and Complete Address (*Street, City, State, ZIP*)

National Institute of Law Enforcement & Criminal Justice
Law Enforcement Assistance Administration
Department of Justice
Washington, D. C. 20530

13. Type of Report & Period Covered: Final July '71- 9/73

14. Sponsoring Agency Code

15. SUPPLEMENTARY NOTES

16. ABSTRACT (*A 200-word or less factual summary of most significant information. If document includes a significant bibliography or literature survey, mention it here.*)

The report outlines the methodology of and summarizes a portion of the data from the LEAA Police Equipment Survey of 1972. One of a series of seven reports resulting from this nationwide mail survey of a stratified random sample of police departments, the present report summarizes the answers of 437 police departments concerning their sirens and emergency warning lights: use of sirens and lights; experience with most commonly used electronic sirens, electromechanical sirens, and emergency warning lights; purchasing, repair and replacement of this equipment; and training of officers in use of this equipment. The data are presented by all responding departments and by seven department types.

17. KEY WORDS (*six to twelve entries; alphabetical order; capitalize only the first letter of the first key word unless a proper name; separated by semicolons*)

Sirens, Emergency Warning Lights, Police Equipment, Standards

18. AVAILABILITY

[XX] Unlimited

[ ] For Official Distribution. Do Not Release to NTIS

[ ] Order From Sup. of Doc., U.S. Government Printing Office Washington, D.C. 20402, SD Cat. No. C13

[X] Order From National Technical Information Service (NTIS) Springfield, Virginia 22151

19. SECURITY CLASS (THIS REPORT): UNCLASSIFIED

21. NO. OF PAGES: 125

20. SECURITY CLASS (THIS PAGE): UNCLASSIFIED

22. Price


AMERICAN REVOLUTION BICENTENNIAL
1776-1976