LAW ENFORCEMENT ASSISTANCE ADMINISTRATION (LEAA)

POLICE TECHNICAL ASSISTANCE REPORT

SUBJECT	Analysis of Current Commercial Alarms in Seattle and Design of a Specific Work Plan for Implementation
REPORT NUMBER	75-114-028
FOR	Seattle Law and Justice Planning Office
CONTRACTOR	Public Administration Service 1776 Massachusetts Avenue Northwest Washington, D.C. 20036
CONSULTANT	Jerry W. Greene
DATE	March 29, 1976

FOREWORD

This document is related to LEAA Technical Assistance requested by the Seattle (Washington) Law and Justice Planning Office (LJPO). The LJPO has implemented a Reduction of False Alarms Project (RFAP) funded by reverted FY 1975 Part C Funds. The RFAP study was officially approved for operation on January 2, 1976 by the Seattle City Council.

The request from the LJPO was for five working days' Technical Assistance to design a specific work plan for carrying out the intent of the RFAP study.

The consultant assigned to this LEAA Technical Assistance request was Jerry W. Greene, Criminal Justice System Consultant, Greene & Associates, 6349 Smith Road, Oakdale, California, 95361, (209) 847-5794. The personnel involved in requesting and approving the technical assistance includes:

- Lawrence G. Gunn - Director
  City of Seattle - Executive Department
  Seattle Law and Justice Planning Office
  600 Artic Building
  Seattle, Washington 98104
  (206) 583-6592

- Saul Arrington - Administrator
  Linda Chapman
  Law and Justice Planning Office
  Office of Community Development
  State of Washington
  Insurance Building
  Olympia, Washington 98504
  (206) 753-2235

- Walter V. Lawson - Police Specialist
  Robert O. Heck - Police Desk, ORO
  United States Government
  Department of Justice
  Law Enforcement Assistance Administration
  Region X
  Federal Office Building - Room 3292
  915 Second Avenue
  Seattle, Washington 98174
  (206) 442-4844

- Howard W. Edwards - Project Director
  PAS/LEAA Criminal Justice Technical Assistance Program
  Public Administration Service
  1776 Massachusetts Avenue, Northwest
  Washington, D.C. 20036
  (202) 833-1030

LIST OF CONTENTS

Section 1

INTRODUCTION

The intent of the five day technical assistance effort, as requested by the Seattle Law and Justice Planning Office, was primarily aimed at developing a work plan that would indicate how to carry out their $26,109 Reduction of False Alarms Project. The RFAP study will take a systems view of the Seattle false alarm problem, particularly as related to commercial silent alarm systems, and will be conducted by the LJPO instead of the Seattle Police Department. During the time period 1970 - 1975, the City of Seattle has experienced approximately 34,647 false alarms out of a total of approximately 35,905 alarms that police units were dispatched to. This represents a 96% false alarm rate. Even though Seattle has a false alarm ordinance (since 1972) which has caused a reduction of 3,601 total false alarms between the time period 1971 - 1975, the false alarm rate remains high.

The LJPO staff and other City officials find the 96% false alarm rate untenable, particularly in terms of police department manpower and resources that are being expended needlessly on false alarms. The RFAP study will concentrate on commercial silent alarm systems which account for approximately 87% of the total number of false alarms. The study will allow for an in-depth inquiry of the specific causes of false alarms in Seattle and the development of solutions to those problems. It is expected that a mix of technical, procedural, and regulatory solutions will be developed.

The LJPO request for LEAA Technical Assistance in developing a sophisticated work plan was based on their need for expert advise in how to carry out a false alarm study that would effectively reduce the false alarm rate in Seattle so that alarm systems can contribute more significantly to public safety in the City.

The consultant received his assignment from Public Administration Service on December 8, 1975. He then made contact with Walter V. Lawson of the LEAA Region X office and Lawrence G. Gunn, Director of the LJPO in Seattle. The consultant was put in contact with Bill Brown, the RFAP Project Director, so that arrangements for an on-site visit could be made. The consultant found, due to the holiday time period of the year (Christmas and New Years), that no commercial space was available on either airlines or trains. United Airlines was on strike at the time and no reservations could be made on any of the other major airlines until after January 10, 1976. The LJPO staff was waiting to hire a RFAP Project Manager until after the work plan was developed so that they could determine what type of individual was needed to run the project. It was felt that the sooner the work plan was finished, the sooner the project could be started. Therefore, the consultant decided to drive his own private vehicle up to Seattle and back to California so as to expedite the services requested.

The consultant was on-site for five days (December 22, 23, 24, 28, and 29, 1975) collecting information on the false alarm problem in Seattle and discussing the work plan format. The task to be performed by the consultant, as defined in the PAS/LEAA Contract for Police Consulting Services, was to provide an analysis of current

commercial alarms in Seattle and the design of a specific work plan for implementation. This was interpreted by the consultant and the LJPO staff to mean developing a detailed work plan to study the commercial false alarm problem in Seattle and the methodology necessary to carry out the intent of the RFAP study. Data on the false alarm problem in Seattle was collected from a variety of sources and several individuals were interviewed to gain information on their viewpoint of the problem. The individuals interviewed were:

- Lawrence G. Gunn - LJPO Director
- Bill Brown - RFAP Project Director
- Robert Cohen - SPD Inspectional Services Division, Methods analyst
- Detective Sergeant Don Vert, Detective James Fisk, and Officer Mark Sabourin - SPD Investigations Bureau, Security Unit
- Director C.E. Hill - SPD Communications Division, Special Operations Bureau

The information and data provided by these individuals was quite valuable and necessary to the development of the RFAP Work Plan.

Section 2

UNDERSTANDING OF THE PROBLEM

The intent of the LEAA Technical Assistance request from the Seattle Law and Justice Planning Office was to have a detailed work plan developed that would describe the false alarm problem as well as possible, identify gaps in LJPO's knowledge of the problem, and provide for the data elements and information necessary to fill those gaps. It took considerably more time to develop the work plan than the consultant had orginally estimated, but the RFAP grant application stated that the work plan would contain, at a minimum (and among other things) the following work elements:

- Describe precisely the nature and extent of the falsing problem.
- A review will be made of the technical aspects of alarms that contribute to falsing.
- Consider in detail how the human operational factor impacts on falsing.
- Analyze and describe the procedural interaction of the parties involved in the "alarm system".

The consultant was given five working days to develop and have typed a work plan that would meet the above requirements. It actually took six weeks of solid work to produce the RFAP Work Plan attached to this report. Four weeks were spent collecting information and reviewing literature on the false alarm problem in general and on the Seattle problem in specific. The last two weeks of effort represents 18 hours

a day writing time on the consultant's part and 12 hours a day typing time. The work plan was then forwarded to the LJPO staff for their review. They found the work plan to be satisfactory and that no changes in the work plan were necessary.

The difference between the number of days allotted by PAS/LEAA to develop the work plan and the number of days it actually took may possibly be related tc the fact that there are few individuals in law enforcement agencies and the alarm industry who are aware of the immense complexity of the false alarm problem. Each has a tendency to only look at the situation from his own viewpoint without attempting to appreciate the extent of the many similar problems that the others face on a day-to-day basis. Part of this problem may be due to the lack of any scientific research that accurately pinpoints the causes of false alarms and the steps that can be taken to substantially resolve this complicated state of affairs.

However, it is the consultant's opinion that the Seattle Reduction of False Alarms Project is of major importance and that a similar study should have been conducted several years ago. If the City of Seattle can clearly define their false alarm problem and successfully implement solutions to that problem which significantly reduces the false alarm rate, then it will be a landmark study that all other U.S. cities should follow.

Section 3

ANALYSIS OF THE PROBLEM

The attached RFAP Work Plan was developed in three sections: (1) a brief description of the reasons for the project, its goal and objectives, who will conduct it, and generalized information on crime in the City of Seattle and its false alarm problem; (2) a comprehensive review of the false alarm problem in general, causes of false alarms, some solutions to the problem, and additional variables that make the false alarm problem so complex; (3) a description of the tasks and activities necessary to carry out the RFAP study.

Section I is based on data and information collected from the LJPO staff, and members of the Seattle Police Department. Section II is based on the review of 58 different articles and documents. A clear understanding of the overall false alarm problem is vital to effectively carry out the intent of the RFAP study. Section III identifies the various types of data that must be collected, how they can be collected, the data analysis process, the solution implementation procedures, and impact evaluation measurement. The consultant pointed out that there may be a need to modify various aspects of Section III once the RFAP study is under way and, therefore, it should only be considered as a guideline to carrying out the project.

Section 4

FINDINGS AND CONCLUSIONS

The attached RFAP Work Plan clearly defines the findings of this LEAA Technical Assistance assignment. The conclusions of the assignment can be summarized as follows:

- The City of Seattle has a definite false alarm problem that has been consistent over the past five years.
- The Seattle Law and Justice Planning Office has embarked on a significant study of their false alarm problem that should result in a clear understanding of that problem and the solutions necessary to overcome it will be identified and successfully implemented.
- Few individuals realize the true extent of the false alarm problem nor its complexity.
- The LJPO has the opportunity to resolve its false alarm problem, but it will be necessary to continue its efforts in reducing the false alarm rate over a number of years to prevent a Hawthorn effect.
- Other U.S. cities should follow Seattle's approach in dealing with the false alarm problem.
- The RFAP Work Plan must be considered as a flexible document and advisory in nature since the activities carried out during the course of the project may result in different approaches that must be implemented.

The RFAP Work Plan should save the project staff a considerable amount of time and effort in conducting the RFAP study because it identifies the areas that should be dealt with to overcome the false alarm problem in Seattle.

Section 5

RECOMMENDATIONS

It should be kept in mind that one should not expect a significant reduction in the false alarm rate during the time period of the RFAP project. A majority of the tasks and activities delinated in the work plan deal with data collection and problem identification for which relevant solutions will be developed and tested in target areas of the City of Seattle. It should be obvious that, before the police or the alarm industry (and the subscribers) can effectively respond to the false alarm problem, they must be cognizant of the specific factors and variables which are present that precipitates the problem.

Therefore, it is the consultant's recommendation that the emphasis of the RFAP study must be placed on developing a long-range plan that will be followed by the City, the alarm system user, and the alarm industry upon completion of the project. The one-year RFAP study should be able to identify the elements necessary to assure a continuous reduction in the false alarm rate over the next few years that may eventually represent a 75% total reduction from the pre-project year.

It is also the consultant's recommendation that the project be based on a cooperative approach. Cooperation between the police, the business community, and the alarm industry will be vital to the success of the RFAP study. The consultant believes that such cooperation will be forthcoming if the study is properly carried out.

APPENDIX A

CITY OF SEATTLE

REDUCTION OF FALSE ALARMS PROJECT

DETAILED WORK PLAN

ACKNOWLEDGEMENT

The consultant who developed this Work Plan, Jerry W. Greene, wishes to acknowledge and express his sincere appreciation to his friends who provided information, advice , and support in the development of this document. They include:

- Colonel Albert J. Mandelbaum, U.S.A., Ret., an electronical engineer, bank alarm systems expert, and author of the book, Fundamentals of Protective Systems, published by Charles C. Thomas in 1973, who provided information and advice on false alarm problems.
- Royce A. Fincher, Jr., Police Legal Advisor for the San Jose (California) Police Department, who provided several informative articles and references on false alarms.
- Barbara R. Bomar, Information Specialist for the National Crime Prevention Institute, who provided copies of valuable material on false alarm problems and legislation.
- Detective Don Gilbert of the Modesto (California) Police Department who spent many hours discussing the false alarm problem with the consultant and possible solutions.
- Ada French, professional secretary and former FBI employee, who spent many long and dedicated hours typing this RFAP Work Plan under severe time constraints.
- Diane P. Greene, School Psychologist and the consultant's wife, who spent many hours in reviewing and making valuable recommendations to make this document more precise.

It would have been more difficult to have completed this Work Plan without the help of these informed, experienced, and kind people.

TABLE OF CONTENTS

Section | Page

Section Page

Section Page

Section Page

Section I

INTRODUCTION

The Seattle Law and Justice Planning Office (LJPO) has embarked upon a project to reduce the excessive number of false burglary and robbery alarms (estimated to be 97% false), which are occurring in the City of Seattle. This $26,109 LEAA and City-approved (as of January 2, 1976) "Reduction of False Alarms Project" will take a systems view of the false alarm problem, particularly as related to commercial silent alarm systems, and will be operated by the LJPO instead of the Police Department. There are three primary reasons for conducting this study:

(1) The police response to commercial alarms is less timely, precise, and careful as would be desired because of the lulling effects of frequent false alarms.

(2) Substantial public safety resources are wasted in response to false alarms.

(3) Alarm use is proliferating in commercial, as well as residential properties in the City.

Thus, as a larger portion of commercial and residential properties are equipped with silent alarm systems, the current false alarm situation is expected to worsen.

LJPO Director Lawrence G. Gunn believes it makes sense to conduct an in-depth inquiry into the false alarm problem to identify specific problems, and to develop a mixture of technical, procedural, and regulatory remedies to reduce the number of false alarms now responded to by the Police Department. The Reduction of False Alarms Project will seek to understand and document the motivations and

objectives of alarm subscribers, the alarm industry, and the City. The LJPO is hopeful that the study results will encourage a common interest in burglary prevention and apprehension of burglars in such a way that commercial silent alarm systems contribute significantly to public safety in Seattle.

Reduction of False Alarms Project (RFAP)

Bill Brown is the RFAP Project Director and James Mullen will act at the Project Coordinator for the LJPO on this grant. The LJPO Project Manager (a Program Coordinator II, at $18,246) is responsible for carrying out the intent of the study. Work study students will be available to assist in collecting relevant data with a total budget of $1,000 for this purpose. $1,120 is available for 8,000 miles personal car travel @ 14¢ per mile. A budget of $1,000 for computer time has been set aside, as well as $500 for computer tapes. If needed, a $3,000 amount has been allocated for alarm system repair supplies.

Both public and private resources are being extended on a burglary and robbery prevention/apprehension strategy with relatively little payoff. In fact, some City officials and most police officers view the use of commercial alarm systems as a public safety liability, primarily due to the excessive number of false alarms. Unless the City adopts a proactive stance, the situation is expected to worsen because individual business owners will continue to be convinced of the prevention value of alarm systems.

False alarms take up a considerable amount of police response time and resources. The problem of poor expenditure of police

resources is more critical due to decreased availability of financial resources of the City. The LJPO hopes to detail how and why false alarms occur and suggest potential regulatory, or other solutions, to the problem which could be implemented by the City to protect burglar alarm consumers against poor quality alarm system products being sold and to protect the City's interest in assuring that good quality alarms are being used. This project will also formulate strategies to reduce the poor expenditure of police resources.

The RFAP study will provide the necessary data to increase our knowledge and understanding of how and why false alarms occur. The study will develop an index of alarm systems marketed and in use throughout the City, which will assist the City in determining which are the most and least reliable. This project will also seek out incremental reductions in the current false alarm ratio. If a significant reduction can be brought about, it is conceivable that more on-scene apprehensions will be made by the police. Furthermore, if the false alarm ratio were reduced to the point where alarm systems could be viewed as a public safety asset by the City, policy to encourage proliferation of such systems could be implemented. On the other hand, should we be unsuccessful in significantly affecting the current situation, the City will have to develop a strategy to minimize the dissipation of public safety resources.

The goal of the RFAP is to cause a long-term reduction in the number and rate of false alarms, and to increase the public safety utility of privately owned commercial alarms. The study has three

primary objectives:

(1) To decrease the commercial false alarm rate in Seattle.
(2) To decrease the police response time to commercial alarms.
(3) To increase the apprehension rate relative to commercial alarm police responses.

The duties of the Reduction of False Alarms Project Manager include the following tasks:

- Review of all alarm systems currently marketed and in use in the City.
- Be responsible for determining why false alarms occur and documenting same.
- Prepare an index of the most, and least reliable alarm systems available in the City.
- Be responsible for preparing such legislation as may be required to lessen the frequency of false alarms.

The project manager will be employed by the LJPO for only the duration of the study, which is for a one-year period.

Seattle Law and Justice Planning Office

The LJPO, a division of Seattle's Office of Policy Planning (OPP) is currently staffed by nine individuals. A city-appointed Division Manager acts as the LJPO Director. He directs the activities of the office which is divided into four operational areas: (1) Planning, (2) Administration, (3) Evaluation, and (4) Operations. The purpose of the principally grant-funded LJPO is to develop and promote policy and program plans for reducing crime and improving the criminal justice system.

Organizationally, the Reduction of False Alarms Project will be operated by the LJPO, instead of the Police Department. The LJPO

has extensive experience in assembling and analyzing a broad array of information from a variety of sources, developing an action strategy, and promoting a concensus of opinion among several organizations, all of which involves complex multi-organizational problems. LJPO/OPP has horizontal access to the executive departments (Police, Fire, City Light, Department of Licenses and Consumer Affairs, and the Corporation Counsel) which, depending upon project recommendations, may be called upon for changes in operating policy, advice, data, and participation. The RFAP study will also involve some 3,000 private businesses that have alarm systems, hundreds of alarm distributors and manufacturers, and the City Council. Working with all of these organizations requires extensive extra-jurisdictional coordination that can best be managed by the Seattle Law and Justice Planning Office.

The Seattle Police Department

The Chief of Police supports the Reduction of False Alarms Project because it may increase the productivity and efficiency of his Department. The RFAP study will rely heavily on the experience and historical data of the Police Department's Security Unit. That unit is currently responsible for administering the City's False Alarm Ordinance #101476, also known as Chapter 12.85 of the City General Ordinances. As a result, the Security Unit has developed a broad data base that will be of significant value in isolating establishments that have historically experienced a high false alarm rate. That unit has also developed a broad base of knowledge on the causes and circumstances of false alarms. The Police Department's

Communications Division will also be of major importance in conducting this study as they have extensive data on false alarms and police response times.

Seattle Police Department had 1,084 sworn officers and 286 civilians as of December 1, 1974 (according to the latest available statistical report) for a total of 1,370 full-time employees and 96 part-time crossing guards. The Security Unit, composed of one Sergeant and one officer who administers the false alarm ordinance and conducts business security surveys, are a part of the Investigations Bureau.

The Police Department has three precincts -- Headquarters, North, and South -- as well as a training center. They also have a Special Activities Office, Water and Patrol Headquarters and Helicopter Hangar, four Harbor Stations, Mounted Patrol Headquarters, and a Community Services Officer Headquarters. The Police Department has 372 police vehicles, nine of which are owned by the Department. The other vehicles are leased through General Services. In addition, they have 12 male German Shepherd dogs, 8 horses, 2 helicopters, and 6 fiberglass boats.

Seattle's per capita full-time police coverage in 1974 was 2.7 police employees per 1,000 population; whereas, for 18 cities over 500,000 population, the median was 3.4 police employees per 1,000 population.

Summary of Crime in Seattle

The population of Seattle decreased from 552,000 to 530,000 in the 20-year period 1954-1974. During 1974 reported serious crime in

Seattle increased by 11.6 percent, a change from 40,274 crimes in 1973 to 44,943 in 1974. The increase within the last year reflects a general trend established over the past 11 years. Beginning with 1964 and 1965, serious crime has increased from approximately 20,000 reports to a high of 48,578 in 1969. For the next three years (1970-1972), there was a decrease to 36,476 reports in 1972, but since 1972, crime has begun to increase again. The most recent annual increase of 11.6 percent is quite close to the average annual percentage increment of 9.1 percent experienced between 1964 and 1974. Between 1964 and 1974, the crime index increased 110.0 percent.

The clearance rate for serious crime during 1974 was 19.0 percent, which represented 8,522 of 44,943 cases. The dollar value of property stolen in total index crimes was $12,479,750, of which $4,911,389 was recovered (39.4 percent). Total reported index crimes represents a rate of 88.6 serious crimes per 1,000 population for the City of Seattle during 1974.

Burglary increased by 10.0 percent between 1973 and 1974 (12,926 and 14,219 reported cases respectively), while for the 11-year period it increased 188.3 percent. Burglary has followed the 11-year trend of index crimes quite closely. However, since burglary makes up approximately one-third of the reported index crimes, this is not surprising. During 1974, 1,483 or 10.4 percent of the burglary cases were cleared. These clearances and other enforcement activities resulted in the recovery of property worth

$729,177 of the total $5,647,709 taken in burglaries. There were 28.0 burglaries per 1,000 population in 1974.

Robbery has increased by 19.9 percent in the past year from 1,702 reported cases in 1973 to 2,041 in 1974. Although robbery has shown the same upward trend as the total crime index, it has tended to increase twice as fast on an average annual percent change bases (+19.5 percent). Between 1964 and 1974, robbery increased by 315.7 percent.

During 1974, $374,548 worth of property was taken in robberies. Of this, $262,762 was recovered. There were 515 (25.2 percent) cleared cases. The robbery rate in 1974 was 4.0 crimes per 1,000 population for the City. For more detailed information on the crime problem, refer to the City of Seattle 1976 Criminal Justice Plan and the annual Police Department statistical report.

The False Alarm Problem in Seattle

In 1971, former Police Sgt. Orin Church headed a task force to consider a punitive ordinance for the City of Seattle. The committee meetings went on for weeks and total agreement on the ordinance was never reached. Sgt. Church felt that it was almost a guarantee that a community cross-section of bankers, merchants, government, and burglar alarm industry representatives will never agree on the contents of an ordinance.

Robert Cohen, a Police Department Methods Analyst, conducted a study of the false alarm problem in Seattle in 1971 (while the task force was meeting) to determine the extent of the situation. His report reflected a false alarm rate of 97%, and emphasized

false bank alarms which represented 828 of the total 7,220 false alarms that were responded to in 1971. Cohen found that the statistics he utilized were not adequate at the time of his study. The ordinance was finally adopted by the City Council on October 20, 1972.

In a 1974 report relative to problems of administering the ordinance, Cohen stated that the ordinance has accounted for a reduction of false alarms by 1,300 a year (25% since 1972), but there were still approximately 4,500 false alarms occurring annually. The most current data on the false alarm problem, provided by the SPD Communications Division's Special Operations Bureau, indicates the following state of affairs:

YEAR	GOOD ALARMS	FALSE BANK	FALSE RES	FALSE OTHER	TOTAL FALSE (%)	GRAND TOTAL
1970*	223	698	594	5,928	7,220 (97%)	7,443
1971*	229	828	594	6,794	8,216 (97%)	8,460
1972	169	849	564	4,468	5,881 (97%)	6,050
1973	191	604	658	3,247	4,509 (96%)	4,700
1974	197	595	553	3,058	4,206 (96%)	4,403
1975**	234	618	603	3,394	4,615 (95%)	4,849
TOTALS	1,243	4,192	3,566	26,889	34,647 (96%)	35,905

* Data estimated from a variety of sources since known data for 1970 and 1971 was limited.

** Only 11 months of data.

Cohen's 1974 comment that the total number of false alarms had decreased since 1972 is true (1972-1973 = a reduction of 1,372; 1972-1974 = a reduction of 1,675). But, the total reduction in number of false alarms has leveled off, and the 1975 total of 11 months of data, indicates an increase of 409 total false alarms over 1974.

The RFAP grant suggested that false alarm data could be recovered from the Police Department's computerized dispatch system SELECT data tapes. However, a major problem with data contamination exists with such data. The Security Unit states that the SPD Communications Division kept legitimate and false alarm data only on banks until very recently. As of January, 1976, they are attempting to keep track of all alarms. It has been suggested that the total number of valid alarms is actually equal to 100 per month or 1,200 a year, rather than the 234 listed for 1975. If this is true, then the actual false alarm rate for 1975 (11 months) is only 78% rather than 96%. It is obvious that there is a serious problem with existing data on false alarms. For example, 1975 data either has fewer false alarms (3,515 instead of 4,615 = 72%) or there is a grand total of 5,949 alarms rather than 4,849. This problem will require a close analysis of the SELECT computer tape data if it is to be utilized as an accurate data base.

Additional false alarm problems, as pointed out by officers of the Security Unit, indicates that there is a major problem with alarm transmission systems (more of a problem than alarm system components), lack of standby battery power on many alarm systems, local alarms, and answering services. Many problems are also prevalent with

public institutions' alarm systems, such as schools and City government, which are not controlled by the current false alarm ordinance. However, the Security Unit officers firmly believe that the RFAP Project Manager will receive assistance and cooperation from the alarm industry and the business community in dealing with the false alarm problem which will be vital to the success of the project.

Problems With Administering the False Alarm Ordinance

There are a number of problems related to the Security Unit's administration of the false alarm ordinance as noted by Cohen in a 1974 study. Cohen notes that the handling of paperwork relating to false alarms requires so much time of the Security Unit as to seriously detract from its primary mission of assisting businesses to strengthen their physical security against burglaries. In addition, clerical support for the filing, typing and records associated with false alarms is a burden on the workload of the CID Business Office. Another look at this administration problem is needed to see if the use of data from the police department's SELECT computer tapes can help simplify the records keeping process.

The Security Unit officers state that they expect to collect approximately $23,000 in fees for 1975 due to false alarm ordinance violations. The total number of citations given out to alarm system offenders for 1975 totals 940 or an average of 78 cites given out each month. Most of the offenders pay their fines, but there are approximately twenty who have not paid and the Corporation Counsel must pursue these individuals in Civil Court to collect the fees. It may be that the false alarm ordinance needs to be amended to overcome some of the problems the Security Unit faces.

Reduction of False Alarms Project Work Plan

This RFAP Work Plan was developed by Jerry W. Greene (Criminal Justice System Consultant, Greene & Associates) at the request of the LJPO Director Larry Gunn. The request was based on the need for a work plan, as stated by the RFAP grant, which indicated it was to be developed with the assistance of a national expert through a short-term Technical Assistance Grant. The request was made via the State of Washington Law and Justice Planning Office, via LEAA Region X, and via Public Administration Service (PAS) who handles individual technical assistance assignments under a LEAA contract.

The intent of this workplan is to describe the false alarm problem as well as possible and to identify gaps in LJPO's knowledge of the problem and the data elements necessary to fill those gaps. This section of the RFAP Work Plan briefly described the basis for the study, its objectives, who will conduct it, and generalized information on crime in the City of Seattle and its false alarm problem.

Section 2 of this work plan provides a comprehensive review of the false alarm problem in general. It provides the basis for identifying the causes of false alarms, some solutions to the problem, and additional variables that make the false alarm situation so complex. A clear understanding of the total problem is vital to effectively carry out the intent of the RFAP grant.

Section 3 describes the tasks and activities necessary to carry out the study. It identifies the various types of data that must be collected, how they can be collected, the data analysis process,

the solution implementation procedures, and impact evaluation measurement. There may be a need to modify various aspects of this section once the project is under way and, therefore, should only be considered as a guideline.

Section II

A COMPREHENSIVE REVIEW OF THE FALSE ALARM PROBLEM

There are few individuals in law enforcement agencies and the industry who are aware of the immense complexity of the false alarm problem. Each has a tendency to only look at the situation from his own viewpoint without attempting to appreciate the extent of the many similar problems that the others face on a day-to-day basis. Part of this problem may be due to the lack of any scientific research that accurately pinpoints the causes of false alarms and the steps that can be taken to substantially resolve this complicated state of affairs.

The use of alarm systems to deter and detect intrusions into protected premises is not new. They have been in use for well over one hundred years and one of the first alarm companies was founded in 1859 (Saunders, 1970, p. 537). Dry contact switches were first used in the 1800's in Boston's fire alarm system and acoustic sensors have been available since the 1920's and 1930's. False alarms are not new, either. They were quite frequent in the alarm systems developed around the turn of the century (Walsh and Healy, 1974, p. 5-1), as well as in the more sophisticated systems currently used.

POLICE VIEWPOINT OF THE FALSE ALARM PROBLEM

The police and alarm industry agree that there is a false alarm problem, but often from entirely different viewpoints. The police express their points-of-view in the following ways:

1. False Alarms Waste Police Resources and Taxpayers' Money. Seattle Police Department responded to 8,460 burglary and robbery alarms in 1971, of which 8,216 (or 97%) were false alarms, at a total cost of $229,729.00. The number of false alarms represents 7,388 false burglar alarms at an average of 550 to 700 per month and 828 false bank alarms at an average of 80 per month. Police response to these false alarms involved 19,902 patrol units dispatched and 5,352 manhours (Cohen, 1971, p. 17-18). Seattle PD responded to approximately 3,170 fewer total alarms (or 62%) in 1975 due to false alarm legislation passed in 1972. However, they believe that, of the estimated 5,290 total alarms received in 1975, 97% (or 5,131) are still false alarms.

San Jose Police Department responded to approximately 900 alarms monthly in 1974 at an estimated cost of $84,956.60. This includes police officer and patrol car time, exclusive of other indirect costs, spent on false alarms. It was also determined that they would expend 7,505 manhours in one year on false alarms (Alsop, 1974, p. 38). The San Jose PD figures were based on an 18-day sample that was extrapolated into a one-year estimate. Based on Seattle PD's figures, San Jose PD may have underestimated their costs and resources considerably, or Seattle overestimated their costs.

Torrance Police Department spends well over $12,000 per year responding to 400 false alarms per month (Nowatka, 1975, p. 44); Pasadena PD spends over $21,608 (SDM, 1975, p. 18); and

St. Petersburg PD responded to approximately 2,400 false alarms in 1971 at a cost of approximately 2,370 manhours (Appel, 1972, p. 16).

Many agencies have used such cost figures to help justify the need for alarm legislation (Kellem, 1975, p. 20). This approach points out the waste of taxpayers' money and police resources that could well be used on valid calls for service and engaging in crime prevention efforts (Hager, 1975, p. 1; Taylor, 1972, p. 20) instead of responding to false alarms. It is obvious, however, that cost figures and police resources are calculated differently from agency to agency and are, therefore, difficult to compare. "Regardless of the precise number of false alarms, there is little doubt that false alarms do consume police manpower that might best be spent elsewhere" (NBFAA, 1974).

2. Congested Police Telephone Communications. Seattle Police Department estimated that an average of one false alarm per hour came in during the day, and almost two per hour between the hours from 5:00 p.m. to midnight (Cohen, 1971, p. 8). Many of the false alarm calls become grouped together at business opening and closing times, which congests telephone communications and can threaten the integrity of the communications facilities (Taylor, 1974, p. 20). In one case, an abnormally loud local siren alarm lasted 25 minutes during which time 48 telephone calls were received regarding it (Cohen, 1971, p. 8). Alsop (1974) also indicated that the San Jose PD complaint desk multi-

button telephone consoles become entirely tied up during busy periods of the day (p.38) of which many of the calls may concern alarms.

3. Congested Police Radio Communications. Often, radio communications are overburdened during peak hours of operation between the agency and patrol units when the channels are in use 90% of the time. False alarms add to this problem even more since air time is immediately available only 10% of the time when an officer needs it (Alsop, 1974, p. 39).

   False alarms also complicate dispatchers' efforts when they often have to deal with several urgent calls at one time. Keeping track of all calls for service that require immediate dispatching and the coordinating of available patrol cars, can become quite difficult, particularly since one night alarm may draw two to seven patrol units (Cohen, 1971, p.8).

4. Accidents Due to Response to False Alarms. Although no available research has attributed police patrol unit accidents directly to a false alarm response as yet, the probability that such has occurred is quite high. San Jose PD uses in excess of 20,000 patrol units to respond to 11,000 alarms yearly (Alsop, 1974, p. 39). Seattle PD used 19,902 patrol cars to respond to 8,216 false alarms in 1971 (Cohen, 1971, p. 18). Driving to the location of an alarm is hazardous (Fowler, 1975, p. 20; NBFAA, 1974) and accidents cost money whatever the call for service involves. But when 97% of the total alarms are false and an accident

occurs while responding to one, then the taxpayers' money and police resources are truly wasted.

5. Burglar and Holdup Alarm Sales Fraud. Although most alarm companies are competent and honest, there are cases where unscrupulous individuals or companies sell expensive and questionable services (Alsop, 1974, p. 39). One example of this problem involved a New York alarm company who claimed that their "overpriced local alarms were wired direct to the police department" (Mandell, 1973, p. 185). The company went bankrupt shortly after their business license was suspended. This type of firm does not help the alarm industry's image any more than false alarms do.

6. Repeated Response to False Alarms Develops Complacency on the Part of Police Officers Which Becomes Dangerous. One specific example of what could happen if each alarm is not assumed to be a real one, occurred in Seattle in 1955 in what is called the "Greenwood Bank Incident". "Three officers arrived separately and entered that bank in close succession. Two were severely wounded and the third killed when surprised by gunmen still inside" (Cohen, 1971, p. 6). Unfortunately, the problem of complacency is common and often causes officers to be less than cautious (Fowler, 1975, p. 22).

Pasadena Deputy Police Chief Winters believes that the officer's morale, in relationship to alarms, has increased 50% or more after having reduced false alarms by 63% in their city

(SDM, 1975, p. 126), because the probability of apprehending a thief has increased considerably. The Cedar Rapids Police Department study agrees with this belief (U.S. Department of Justice/Cedar Rapids, 1971, p. 36). This situation also increases an officer's caution.

7. False Alarms are Creating Hostility and Straining Relationships Between the Police, Industry, and Subscribers. This has become quite apparent in the past couple of years, with some representatives of the industry attacking the police in an attempt to upgrade their image and also in an attempt to lay the blame of a declining reputation on the police (Nowatka, 1975, p. 24). The extent and seriousness of this problem is apparent when the Western Burglar & Fire Alarm Association (WBFAA) comments that

> the user must have a method whereby operational failure, police response, procedures and arrival times can be verified to forestall collusion, or non-action by police who both monitor and investigate alarm signals (Bargert, 1974d, p. 19).

If the industry believes this is a problem, why do they continue to install annunciators in police departments (Nowatka, 1975, p. 44) instead of using central stations or answering services? In fact, many law enforcement agencies are having all, or most of the direct-connect alarm monitors removed (SDM, 1975, p. 118), whereas other agencies have decided to install their own complete city-wide burglar alarm systems (U.S. Department of Justice/Cedar Rapids, 1971; Greene, 1974).

8. Alarm Companies Selling Police Services Along With Their Equipment and Services. Every time a firm sells an alarm system, they are also selling police services (Watts, 1975, p. 60). They do this without ever asking if it is agreeable to the police to do so, even though they know that an alarm system is virtually useless unless the police respond to it once an alarm is initiated (Kaufman, 1974, p. 53). Generally speaking, there are no written policies requiring a police response to an alarm in state or local codes/ordinances, nor in police policy manuals. Some agencies do have a written policy on what the response to an alarm will be (Smith, 1973, p. 11; Watts, 1975, p. 60), but not that a response is required. Furthermore, no legal action can generally be taken if the police do not respond to an alarm. In fact, several cities are now refusing to respond to alarms in extenuating circumstances where a subscriber has many false alarms in a short period of time and refuses to correct the problem, or in cases where the alarm system is constantly being misused, such as employing a holdup alarm to call police because of a bar fight. In Auburn, Washington, with few exceptions, no alarm systems are allowed as defined by legislation passed around the beginning of 1974. The police viewpoint is, therefore, a reaction to the continuing false alarm problem which, for most cities, is becoming worse each year.

The alarm industry includes manufacturers, distributors, dealers, and their agents (Kellem, 1975, p. 21), or as the

Private Security Advisory Council's Alarm Committee defines an alarm business:

> ... Any person engaged in the sale, installation, maintenance, alteration, repair, replacement, or servicing of alarm systems or which responds to, or monitors, such alarm systems at protected premises to be protected (U.S. Department of Justice, 1975, p. 14).

The industry viewpoint of the false alarm problem is often stated by various associations to which they belong, such as the Alarm Industry Committee for Combatting Crime (AICCC) and the National Burglary & Fire Alarm Association (NBFAA). Their opinions are expressed through publications such as the NBFAA "SIGNAL" and the Security Distributing and Marketing" (SDM) magazine. SDM, whose current editor is Robert J. Bargert, presents editorial opinions on the false alarm problem and publishes viewpoints on this problem in an unbiased manner by allowing comments from both the police and the industry.

Even though false alarms were common in the past, the number of protected premises were relatively few in number and thus false alarms were not much of a problem to the police. However, with the increased emphasis on security caused by soaring crime rates in the past few years, and with police crime prevention officers recommending security precautions, the market for alarm systems has been increasing at a rate of 10% annually (Hager, 1975, p. 14). The number of false alarms and questionable alarm companies have also increased considerably. It should be noted, however, that the false alarm "rate may be lower now than ever before but there

are so many more systems in use that the total number of alarms is found to be greater" (Saunders, 1970, p. 539).

The result of the false alarm problem has been a decrease in the reputation of the alarm industry, loss of police confidence in private alarm systems, and bad press (Bargert, 1975c, p. 13). The industry blames this "problem on fly-by-night alarm companies and careless indifferent owners" (Hager, 1975, p. 1). However, "the industry has grown complacent in terms of quality workmanship, conscientious service personnel, and the salesman who used to take pride in engineering a good alarm system", states a member of the industry, Clem Williams (1971, p. 20). He goes on to say that many alarm companies are not interested in providing quality service or handling customer complaints since their interest mainly lies in making money. Underpaid and poorly trained installers are often not concerned with good installation practices, and salesmen are only thinking of their commissions. Most of these companies are not fly-by-night firms as such; they are just incompetent. "The alarm industry, like any other industry, is composed of companies which range from professional to incompetent" (Kassman, 1975, p. 22).

Unfortunately, this interest in increasing profits without much concern over the type of equipment sold or how it is installed, is all too common and not limited to fly-by-night alarm companies. It is possible that many of the problems relating to salesmen and installers could be overcome by stricter management policies, closer supervision by management, and better training. Security professionals

have frequently cited "...the need for more reliable equipment, the need for more and better-trained installers, the need for higher professional standards on the part of manufacturers and dealers of security products" (Mathews, 1971, p. 18).

Kassman (1975) also states that "it is up to management of alarm companies to train employees, keep up with new developments, provide proper supervision and assure quality control of installations and maintenance service" (p. 22). The lack of effective alarm company management may well be contributing to the current situation that is "...badly injuring the industry by causing excessive false alarms, equipment failures and causing a polarity between the police, the industry and businessmen" (Watts, 1975, p. 62). "...The alarm industry recognizes that false alarms and the existence of fly-by-night alarm system vendors are of continuing concern to the police as well as to members of the alarm industry" (AICCC, 1972, p. 52). "The only management that will survive in today's business climate is the one that will accept the complete responsibility for the performance of their products, service, and employees" (Williams, 1971, p. 20), which is still true today.

ALARM INDUSTRY VIEWPOINT OF THE FALSE ALARM PROBLEM

For the most part, the industry views the false alarm problem differently than do the police. In recent months, the industry has been quite defensive of their systems and their operations, and have been, in some cases, attempting to blame the police for

their poor public image. The industry expresses this viewpoint in the following ways:

1. Definition of False Alarm. There is considerable controversy over "...the lack of uniformity in defining false alarms" (Mandelbaum, 1973, p. 56) which the industry emphasizes as "so-called" false alarms. The industry finds it difficult to accept the police definition of a false alarm as an alarm which, upon investigation by responding officers, does not provide any evidence of an attempted or actual criminal offense (Mandelbaum, 1973, p. 56; U.S. Department of Justice/Cedar Rapids, 1971, p. 33; Taylor, 1972, p. 20; Rickett, 1970, p 607; NBFAA, 1974). The police believe that "apparently some alarm companies use a somewhat more moderate definition... " (U.S. Department of Justice/Cedar Rapids, 1971, p. 33).

   The International Association of Chiefs of Police (1973) defines a false alarm to mean "...the activation of an alarm system through mechanical failure, malfunction, improper installation, or the negligence of the owner or lessee of an alarm system or of his employees or agents" (p.3).

   The U.S. Department of Justice Law Enforcement Standards Program (1974) defines a false alarm as "an alarm signal transmitted in the absence of an alarm condition" (p. 6).

   It can be seen that there is a problem in defining false alarms. The industry's definition of a false alarm could not

be found in the extensive literature utilized for this comprehensive review. They usually indicate what isn't a false alarm instead. The AICCC believes that "when a system functions as it was intended to function, the signal received can hardly be regarded as false" (NBFAA, 1974). However, "...care must be taken to distinguish between the probability that a sensor device performs as it was intended, and the probability of detecting a real intrusion" (Mines, 1974, p. 20).

Colonel Albert J. Mandelbaum, U.S.A., Ret.,(1973) an electronical engineer, bank alarm systems expert, and author of the book, Fundamentals of Protective Systems, suggests that the following definitions could be utilized to resolve the problem:

1. Valid Alarm: An alarm in which the system operates, detects, or reacts as it was designed to do....

2. Infraction Alarm: An alarm caused by the failure of authorized persons to follow operating procedures or regulations established for the operation of the system....

3. Environmental Alarm: An alarm occurring when the system detects a phenomenon other than that which the system was designed or intended to detect....

4. Equipment Alarm: An alarm caused by instability, malfunction, or failure in the technical operation or hardware of the system....(p.57)

These are good definitions from a technical viewpoint but the police do not have the time, and often do not have the expertise, to determine the exact cause of an alarm unless it is very obvious. Therefore, the police must use their definition and the industry must learn to live with it.

2. Number of False Alarms Unknown. The industry believes that law enforcement agencies often do not keep accurate data on the number of alarms dealt with, which is probably true in many cases. However, some agencies, such as the Seattle Police Department Communications Division, are now attempting to keep data in the form of: (1) Good Alarms, (2) False Bank Alarms, (3) False Residential Alarms, (4) False Non-Residential Alarms, (5) Total False Alarms, and (6) Total Number of Alarms. Such data, unfortunately, does not include the cause of each alarm.

The AICCC notes that statistical conclusions should allow for the nature of alarm systems and the incidents which can trip an alarm (NBFAA, 1974). The NBFAA (1974) also notes that police statistics should refer to "...the number of false alarms per 100 alarm systems, the number of alarms per hours of alarm operations, etc.", instead of just using total number of false alarms as a data base. It is also thought that the number of alarm installations, determined by some survey means or another, is needed for comparative purposes and to determine if the false alarm situation is improving or becoming worse due to new installations. Furthermore, points out the NBFAA, the false alarm problem should not be assessed in a manner that would group all alarm systems and alarm companies together due to the wide range of quality equipment to do-it-yourself equipment, and from professionals to fly-by-nights or incompetents.

Police analysis of such data would be difficult to achieve due to the lack of local industry data that must be provided

to the police before they can effectively make such academic determinations. Frankly, it makes little difference to the police how many hours an alarm system works before it initiates a false alarm or the cause of the false alarm. They are primarily interested in the number of false alarms they have to respond to. It is questionable whether or not all alarm companies keep complete and accurate data themselves. If this were done, they should be able to lay out the facts before the police officials in each jurisdiction where they operate and, working together, attempt to reduce the number of false alarms.

The AICCC, NBFAA, WBFAA, and Underwriters' Laboratories have accumulated data through various surveys, primarily from central station operations. Even though such data is enlightening, it only represents a small amount of data when all of the alarm companies in a police jurisdiction are taken into consideration. Not only is the data difficult to obtain due to the lack of cooperation on the part of some alarm companies, but at times it cannot be gotten at all because so many alarm companies go out of business every year.

3. Slow Police Response Time. The major complaint of the WBFAA is that "many police departments indicate they do not have the time or inclination to respond to burglar alarms..." (Burgert, 1974d, p. 18). This may be true in exceptional cases, but most police departments do respond to alarms, although they may treat them as routine calls rather than priority emergency calls due

to excessive number of false alarms and the industry's inability to deal with this problem themselves (Nowatka, 1975, p. 24; Mandelbaum, 1973, p. 58). As a matter of fact, it is becoming a nationwide trend to reduce response priorities due to the false alarm problem. Torrance Police Department Sergeant Paul Nowatka (1975) suggests that "if it wasn't necessary for the police departments to respond to hundreds of false alarms per month, they might be able to respond faster to legitimate ones" (p.44).

Deputy Steve Watts (1975) of the Multnomah County (Oregon) Division of Public Safety, points out that there is a passive resistance on the part of officers answering alarms at locations where they have experienced several false alarms. Thus, they may not respond "...as quickly as the alarm user would like, or [clear] a call without searching the premises adequately" (p.61). The current belief is that alarms just do not justify an emergency police response when so many of them are false.

Many agencies do not have a written policy on response to alarms. It is often up to the individual officer's preference whether or not he wants to use lights and sirens (Cohen, 1971, pg. 5). Most officers attempt to get to the location of the alarm as fast as safely possible. The response may also be determined by the time of the alarm, the type of alarm (burglar or holdup), and the location of the alarm (U.S. Department of Justice/Cedar Rapids, 1971, p. 33). As pointed out previously, no response may occur at all in cases where there is an

excessive number of false alarms at one particular location or if the alarm system is misused.

Salt Lake City does have a written policy on alarm responses of which the subscribers and industry of that city are aware. It primarily consists of the following guidelines:

1. The department responds to all burglar or intrusion alarms, and if units are not available at the time the alarm is received, they will be dispatched as soon thereafter as possible. If the units which respond to the alarm are unable to locate a point of entry into the premises and there exists no particular reason to believe that a burglar may be inside, they may immediately resume normal patrol.

2. However, if the dispatcher has been informed by the alarm company or answering service that an alarm service man or other persons responsible for the premises will go to the location of the alarm, one police unit will be assigned to hold at the location for no more than 15 minutes. After the expiration of 15 minutes, the unit may resume patrol if no one has appeared to assist in checking the premises.

3. In the event someone arrives to check the premises after the assigned unit has resumed patrol, the police dispatcher will send another unit to the scene. Also, if an emergency occurs during the 15 minutes that a unit is holding at the location of an alarm, the police dispatcher is authorized to reassign the unit to respond to the emergency. (Smith, 1973, p. 11)

This policy directly deals with a related problem, that of waiting around from 20 minutes to two hours until a responsible party shows up so the premises can be searched. This obviously wastes many manhours that could be spent on other police duties. Watts (1975) suggests that an alarm ordinance should "define what the police response time will be to an alarm system..." (p.60). Law enforcement agencies <u>should</u> develop written poli-

cies regarding (1) under what conditions a response will not be made, (2) procedures for responding to alarms similar to Salt Lake City's, (3) response priorities, (4) response times, and (5) procedures to be taken upon arrival at the location.

Another problem related to slow police response times, is that central station personnel may arrive before the police and manage to capture intruders red-handed. However, this can, and has posed some rather sticky situations. The WBFAA suggests selling burglars back to the police if the alarm company catches them before the police arrive (Bargert, 1974d, p. 11). Apparently not all police departments have a slow response time, though. Pasadena PD has a 3-5 minute average response time to alarms in the city (SDM, 1975, p. 19).

The industry should appreciate that police response time is affected by many variables, such as:

- patrol unit availability
- distance to the location
- time of call
- type of call
- traffic congestion
- lack of manpower
- departmental policies
- dispatching techniques
- communications capability
- telephone answering system
- number of calls for service

These variables apply to all cals for service. Response time can be improved by: (1) a reduction in the number of false alarms, (2) utilizing computer-aided dispatch, (3) computerized crime analysis, (4) computerized manpower allocation, and various other solutions.

Regardless of what the causes for slow police response time may be, Pasadena Deputy Police Chief Winters states:

> ...An alarm user who does not really care about his system or its operation, to the extent that he would allow that alarm system to average three false alarms per month for a whole year, is getting an unfair amount of police service that is not meaningful. But it's meaningful to this extent: that it deprives other people, who need that police service for genuine problems, of that service. (SDM, 1975, p. 130)

The point here is that the police would rather perform meaningful tasks instead of wasting time and resources on false alarms.

4. Slow Police Response Time Decreases Apprehensions. The WBFAA states that the "...facts show clearly that quick or timely responses to silent alarm systems result in higher arrest rates accompanied by more convictions" (Bargert, 1974d, p. 18). The Cedar Rapids city-wide police alarm system project agrees with that viewpoint (U.S. Department of Justice/Cedar Rapids, 1971, p. 7). It is true that a timely response increases the probability of apprehending a criminal if it is a good alarm. In Pasadena (and most other cities) "the apprehension rate is relatively low since the vast majority of the alarms are false" (SDM, 1975, p. 19). Even on good alarms, the probability of apprehension is low because the intruder may already be gone by the time the police get there due to a slow response time, the local alarm scares him away, or the attack is a "smash and grab" one.

That slow police response time and the reduction in response priorities directly affects "potential on-site apprehension

rates, and thus the effectiveness and deterrence effects of alarm systems" (Mandelbaum, 1973, p. 58) cannot be denied, but neither can the extent of the false alarm problem that has resulted in slower response times.

That silent alarm systems provide for increased apprehensions cannot be denied, either, if the number of false alarms were low. Cedar Rapids PD indicated that their police alarm system was catching more burglars than ever (Matias, 1971, p. 11) with a 26% apprehension rate or "...over 9 times as many cases solved with alarms than where there was no alarm" (U.S. Department of Justice/Cedar Rapids, 1971, p. 23).

The WBFAA emphasizes a projected $9,000,000 a year savings for the taxpayers due to alarms that result in arrests (Bargert, 1974d, p. 18). They somehow overlooked the amount of taxpayers' money being spent on false alarms, which "...would be considerably in excess of the nine million dollars allegedly saved" (Nowatka, 1975, p. 44). This point is emphasized in the NBFAA's statement that "the courts and jails are not full of arrested thiefs who were apprehended as a result of the thousands of burglary and holdup alarm systems in the U.S. because an overwhelming majority of the alarms are false for one reason or another" (NBFAA, 1974).

5. Police Lack Enough Manpower. Robert Bargert (1974d), Editor of SDM, believes that the data provided by the WBFAA indicates "...that - false alarms or not - most police departments would do better to beef up their staffs as necessary with a view toward decreasing response time, rather than relegating burglar

alarms to the present low priority system they enjoy!" (p. 58; Bargert, 1974c, p. 11). Most police officials would agree with him wholeheartedly about needing additional personnel, but not because of the response time problem which is directly affected by false alarms. Pasadena PD figures that if they can reduce false alarms by 75%, this would provide for sufficient savings to hire two additional officers (SDM, 1975, p. 133).

Not having enough time to perform routine patrol checks on businesses, is common these days due to increased crime rates (Watts, 1975, p. 60). It is quite true that alarm systems provide assistance to the police as long as they operate, and are operated properly. Scotland Yard welcomes the use of burglar alarms because it reduces the number of patrolmen required (NBFAA, 1974). One California police chief said that he would like to see a burglar alarm system in every residence in the city as long as the false alarm rate was relatively low. The lack of manpower prompted one small city in Idaho to get a LEAA grant to install their own city-wide burglar alarm system because they could not conduct business security checks effectively (Greene, 1974, p. 4).

This, then, is the alarm industry's viewpoint of the false alarm problem. But what of the user's viewpoint? The Select Committee on Small Business nor the Small Business Administration cannot proport to speak for all of the citizens who have alarm systems. While the false alarm

battle rages on between the police and the industry, no one is speaking in defense of the end user who is being blamed for a majority of the false alarms.

Some indication of the subscribers' problems are reflected in one case in which Torrance PD received, over a several-month time period, 275 letters from alarm users who had excessive false alarms. These users requested assistance from the police in solving their false alarm problems (Nowatka, 1975, p. 24). Does this indicate that the alarm companies are not providing quality service to their customers; otherwise why are the users requesting the police to assist them in their false alarm problems? Pasadena PD has an informal problem-solving approach to their false alarm problem that involves the subscriber, his alarm company, and a police alarm specialist working together "to decide what has to be done to materially change the situation for the better" (SDM, 1975, p.126). Why can't the "so-called" professional alarm systems applications engineer solve his customers' problems without having to involve a police alarm specialist? A 1971 New York City Police Department study revealed that, of the 26.1% of the businesses that had burglar alarm systems, over half of them failed to work. Also, customers were complaining about poor installations and service (Williams, 1971, p. 20).

A U.S. Department of Justice Residential Security Study (1973) indicates that "...many of the currently available intrusion detection devices are highly unreliable..." (p. 29). The study recommends buying a dog because they may "...be more menacing to burglars, many of whom go out of their way to avoid them" (p.86).

THE INDUSTRY AND ITS PROBLEMS AS RELATED TO FALSE ALARMS

Alarm companies have their problems, too. The include fly-by-night or incompetent competitors, irresponsible customers, undesirable newspaper coverage, a need for better equipment and personnel, and the industry's market which has leveled off.

Incompetent Alarm Companies and Irresponsible Customers.

Even though a majority of the industry strives to manufacture, install, and service reliable alarm systems, there are those unscrupulous alarm firms who are much more interested in making money than with quality service and the use of dependable equipment (Smith, 1973, p. 9). Assistant Police Chief Smith also states that

> Unfortunately, there are many customers who will buy the cheapest product possible to satisfy insurance requirements, and these systems are often inadequate. Neither the customer nor the company in such instances seem to worry much about maintenance. False alarms from poorly designed, installed, and maintained equipment continue to be a major problem (p. 10).

According to the alarm industry, there are a number of "fly-by-night" or incompetent alarm companies who are more than willing to accommodate such customers which is damaging to the industry's reputation.

Bad Press.

Bargert (1975c) noted, with some disdain, that in two large newspaper articles, strong statements were made by some police chiefs. pointed out the lack of integrity in the industry and emphasized suede shoe operators, while ignoring the fact that 90% of the industry is attempting to solve the false alarm problem (p. 13). Bargert believes that customers would not buy an alarm system because

of misleading statements made in both newspapers. Most members of the industry are aware of such adverse publicity (Bargert, 1974d, p. 18), and should try to provide some factual data to the press so that their viewpoint would also be expressed.

The Need for More Professionalism in the Industry.

It is interesting to note that 10% of the industry is doing such an excellent job of tarnishing the industry's reputation due to false alarms, poor equipment, and procedures. It is also interesting to note that while both the police and the industry blame the user for most of the false alarms, the 10% incompetent alarm companies are having a field day installing less than adequate equipment that malfunctions excessively. Hence, it is the users and the fly-by-night alarm companies that are ruining the industry's reputation. But is this really true?

Leon B. Kassman (1973), President of a New York alarm company, states that "even with many professional firms, the number of executives, salesmen, and technicians who can be thought of as experts is appallingly low" (p. 22). He goes on to say that "the need for more professionalism at all levels of the alarm industry is clearly evident" and that

> there appears to be a general lack of commitment on the part of the average alarm installer, servicemen, and some equipment manufacturers which can be characterized as a general adherence to a fairly sloppy approach to installation and service (p. 22).

Furthermore, a false alarm study related to central stations conducted by the AICCC in 1972, indicated the immediate need for improvement in two specific areas: (1) reducing subscriber error (which

accounted for 51% of all the false alarms reported) by training them how to properly operate the system installed, and to improve the monitoring of alarms by vendors, and (2) the need for better alarm equipment (which accounted for 23% of the false alarms), designing the system to fit the premises, improving installation practices and techniques, and providing for training of sales and operating personnel (p. 53). It appears then, that the false alarm problem is not solely limited to alarm users and fly-by-night alarm companies. Therefore, the 90% of the industry that is trying to solve the false alarm problem should stop blaming the police, the user, and incompetent alarm companies for the entire situation; and, instead, accept the responsibility where it really lies - with the whole industry. The industry should actively seek assistance and cooperation from the police and the users instead of alienating them.

The Alarm Industry Market

There is "...no doubt that reputable manufacturers and other members of the industry are as concerned as the police with the false alarm problem; perhaps even more so because their continued existance depends upon the reliable performance of their product" (Smith, 1973, p. 9; Rickett, 1968, p. 607).

Even though increased burglary and robbery rates have caused an increase in the sales of alarm equipment, the current economic climate has caused the market to level off somewhat (NBFAA, 1974; Kassman, 1975, p. 22; Willick, 1975, p. 78).

The installation of an alarm system represents 20% of the revenue received by the alarm company, much of which goes to the parts supplier.

The remaining 80% of the revenue taken in comes from a typical five-year service contract. Customer service calls can easily cut into this profit margin if not carefully controlled, especially since false alarms account for a majority of service calls. Even though a $15-$20 charge is made for each service call, parts and labor will overcome the profit margin unless the number of false alarms are kept to a minimum. Therefore, "false alarms are not only giving the industry a bad reputation, they are also costing the installer profits" (Willick, 1975, p. 79).

EFFECTIVENESS OF ALARM SYSTEMS

The police and the industry believe that alarm systems of good quality are effective in deterring crime if they are properly installed and operated, and if the police respond in a timely manner (Holcomb, 1962, p. 26; Walsh and Healy, 1974, p. 5-1; Kaufman, 1974, p. 53; Saunders, 1970, p. 537; Smith, 1973, p. 9; U.S. Department of Justice/Cedar Rapids, 1971, p. 3; Greene, 1974, p. 11). Most burglars are not skilled enough to bypass or "spoof" an alarm system (Holcomb, 1962, p. 26) but, "burglars and arsonists sometimes attack facilities which 'advertise' they are protected by particular types of systems, knowing that a criminal act can be completed before security personnel arrive" (Kaufman, 1974, p. 53). Also,

> the value of burglar alarms was recognized quite early and it became a common practice for insurance companies to encourage their use by offering discounts on burglary insurance premiums. (Saunders, 1970, p. 537)

However, crime insurance is becoming harder to obtain or renew. It is expensive and the "deductibles" are higher than ever. "... Many

companies now find it cheaper to be self-insured and spend the money saved on self-protection" (Mandell, 1974, p. 8). Businessmen know that they will not be compensated by their carriers for anywhere near the total amount of their losses. It is often necessary, in this day and age, to install an alarm system and other physical security devices before insurance can be obtained at all.

Federal crime insurance became available on January 1, 1972, from the U.S. Government for those individuals or businesses who could not otherwise obtain crime insurance, or from individual states who adopted their own version of the federal plan, such as the California Fair Plan. To qualify for coverage under this plan, physical security of the premises must meet the minimum standards' and particularly heavy risk establishments must include alarm systems as defined in the following manner:

(1) Central station, supervised service, alarm systems shall be required for the following:

- (I) Jewelry - manufacturing, wholesale and retail;
- (II) Gun and ammunition shop;
- (III) Wholesale liquor;
- (IV) Wholesale tobacco;
- (V) Wholesale drug; and
- (VI) Fur store.

(2) Silent alarm systems shall be required for the following:

- (I) Liquor store;
- (II) Pawn shop;
- (III) Electronic equipment store;
- (IV) Wig shop;
- (V) Clothing (new) store;
- (VI) Coin and stamp shop;
- (VII) Industrial tool supply house;
- (VIII) Camera store; and
- (IX) Precious metal storage facility.

(3) Local alarm systems shall be required for the following:

(I) Antique store;
(II) Art gallery; and
(III) Service station.
(The National Locksmith, 1972, p. 31)

The effectiveness of alarm systems can be enhanced by a good security program that includes alarm systems, locks, mechanical barriers, and safes (Toepfer, 1975, p. 16; Mines, 1974, p. 6-8; Mandell, 1974, p. 19). The security of a business, internal and external, should be of major importance to business management, and they should designate a specific individual who would be responsible for carrying out the security program (Mandell, 1974, p. 19). Unfortunately, many small businessmen often overlook "...even normal security measures that would prevent many crimes" Holcomb, 1962, p. 10). If top management actively supports and backs up security programs through written po ies, training, and occasional review, false alarms may be reduced and controlled since employees would follow alarm system operating procedures more closely.

The effectiveness of alarm systems can be measured in several ways, but a great deal more research needs to be conducted to establish the effectiveness of different types of alarm systems and equipment. Kellem (1975) suggests that alarm system effectiveness can be measured by comparing the total alarm population to the number of false alarms and to the number of alarms bypassed. You could also calculate a ratio of attacks against alarmed premises to those of non-alarmed premises (p. 50).

The AICCC (1972) indicates that

> if total sensors were taken into account in arriving at the false alarm rate, the efficiency factor of alarm systems would be even greater than it appears to be by considering a business protected by an alarm system to be a single unit (p.53).

However, the police are generally more interested in the efficiency of alarm systems only as long as they don't false alarm too much, rather than calculating how effective they are.

ALARM SYSTEM EQUIPMENT AND INSTALLATION PROBLEMS

There are a number of problems with improper installations and sloppy services. Equipment sold to one dealer may turn up being serviced by a competitor. Dealers may be unaware of losing customers they sold a system to, due to the lack of service. A dealer may sell equipment to a customer but never follow up to see if it was installed properly and in good working order, as well as not training the user on how to operate the system to avoid false alarms. Furthermore equipment is often received by the dealer without installation instructions or service manuals being included (Williams, 1971, p. 21).

Alarm systems and sensors can be classified in any number of ways. The following list is a typical classification:

- Electromechanical (contact switches, metallic foil, stripping wires, trip wires, double contact barriers, pressure mats, electrical key switches)
- Acoustic
- Motion sensing (sonic, ultrasonic, radio frequency, CCTV)
- Photoelectric (active and passive)
- Proximity (capacitative, magnetic)

- Vibration and seismic
- Stress
- Differential air pressure
- Thermal
- Wafer detection
- Chemical analysis (breath, CO_2)
- Alarm reporting telephone (dial-alarm)
- Alarm transmission systems (DC, AC, RF)
- Computer application (monitoring, alarm notification)

Alarm sensors can detect the following characteristics of an intruder:

- Movement
- Reasoning ability
- Odors and other chemicals generated
- Sound and ultrasonic disturbances produced
- Seismic and pressure effects
- Radiation generated (such as infrared)
- Reflection and absorption to induced forms of energy
- Magnetic and electric field effects
- Rhythms characteristic of man's physiology or activity
- Effects of items he carries
- Disturbance to the environment (Rickett, 1968, p. 612)

The ideal alarm system would only detect an intruder with criminal intentions and nothing else. Unfortunately, such a system does not exist. Most actual security systems

> ...use alarm sensors that operate in a narrow range bordered by probabilities of failure to respond to an alarm condition on one side and excessive false alarms on the other side (Rickett, 1968, p. 611).

Rickett goes on to say that "the nature of the risk involved determines what kind of a compromise can be tolerated between failure probability and false alarms" (p. 611).

Alarm Systems Utilized by the Industry

The most common types of alarm systems can be grouped together as perimeter, volumetric, or a combination of both. The signals from these sensors are processed by the master control unit logic

and the signal is then transmitted as a: (1) local alarm, (2) central station silent alarm, (3) proprietary silent or local alarm, or (4) police direct connect alarm (Kaufman, 1974, pp. 53-54). There also is a local-central alarm station combination in use.

Local alarms act primarily as a deterrent by frightening the intruder away after he has activated a perimeter sensor by breaking a window or forcing open a door, hopefully without taking any property. As a deterrent, the burglar must believe that there will be an immediate police response or fear that he will be seen and identified later by nearby citizens. The local alarm depends entirely on someone's hearing the alarm and reporting it to the police. In remote areas, such an alarm may not be that much of a deterrent if the burglar believes he can get away clean before the police arrive (Mines, 1974, p. 9). Considering the response time of most law enforcement agencies, this may be all too true.

A silent alarm connected to a central station, police department, answering service, or proprietary system, is more designed to apprehend a criminal after he has entered the protected premises, rather than scare him away. Silent alarms are always used in hold-up alarm systems, although one inexperienced alarm salesman suggested the use of a local alarm during a study of a city-wide police alarm system in Idaho! (Greene, 1974).

If either local or silent alarm systems are part of a security program, as suggested earlier, securely locking up valuables (such as cash or jewels) inside the premises or keeping them better

hidden, could possible delay the intruder long enough for him to be apprehended by the police. There are several ways of detaining a burglar after he has entered the protected premises even though he is aware of the alarm system (Mines, 1974, p. 9-10; Toepfer, 1975, p. 59).

The industry estimates that alarm installations are made up of approximately 70% commercial alarms and 30% residential alarms. Deputy Police Chief Winters of Pasadena PD believes that at least one-third of the alarms are local alarms and many are dial-alarms.

Elba Lu, Statistician for the San Jose Police Department's former Burglar Methodology Grant, supervised a survey of 275 small businesses in a selected target area in order to collect data that would allow for the development of burglary preventative strategies and other purposes. The following data was collected on alarm systems:

- Type Alarm System (N=275)
  (None 61.1%) (Silent 12.7%)
  (Audible-Local 16.7%) (Audible-Central 9.5%)

- Type of Alarm Coverage (N=275)
  (None 60.7%) (Perimeter 22.5%)
  (Interior 5.1%) (Perimeter & Interior 11.6%)

- Who Purchases/Leases Alarm (N=108)
  (Owner/Mgr 78.0%) (Parent Company 29.0%)
  (Other 1.0%)

- Reason Burglary Failed (N=25)
  (Alarm 44.0%) (Next closest is neighbor/other citizen and other, both at 20.0%)

- Functioning of Alarm (N=68)
  (Triggered 76.5%) (Bypassed 22.0%)
  (Malfunction 1.5%)

(Horton, 1974, pp. 9-19)

This data not only indicates the type of alarms found, but the effectiveness of them as well. A considerable amount of additional data was also collected (Greene, et al, 1975, p. 18). Police departments with crime prevention units should collect data on alarm systems when conducting residential and business security surveys to gain information useful in better determining the false alarm problem in their jurisdiction.

Installation of Alarm Systems.

The installation of alarm system equipment is based on several factors and

> experience has proven that there is not one single type of equipment that will meet all requirements. The equipment therefore must be tailored to the job by informed sales engineers who should know about and understand the full scope of products offered by the alarm industry and also the limitations of each (Toepfer, 1975, p. 16).

It is obvious that alarm systems must be designed and installed based on the environment of the premises so that it will not have excessive false alarms (Mandelbaum, 1973, p. 145). There are problems associated with the installation of alarm systems, however. Do alarm salesmen, when faced by the customer's budget restraints, know where to place sensors that would detect the most probable entries into the premises based on that type of business, type of building construction, or location of the business? (Watts, 1975, p. 62). This is the type of information that the police can provide to the industry to assist it in the installation of appropriate alarm systems.

Other problems arise in relationship to equipment received from manufacturers in which 10% of the equipment received is faulty.

"... It is difficult to continue to sell where faulty equipment is provided or improper service on good equipment is lacking..." (Williams, 1974, p. 20). The manufacturers, on the other hand, complain that their products are being improperly installed.

Customers have their problems, too. They "...often have difficult decisions to make due to diversified opinions of the alarm salesman..." (Toepfer, 1975, p. 16), who often emphasize that their equipment has fewer false alarms than their competitor's equipment. Furthermore, there has been an industry trend that has developed in the last decade that states, "the less people know about the workings of their alarms, the better all around" (Kassman, 1975, p. 22). This may be why, among other things, that Dallas wanted complete system schematics supplied to customers (Taylor, 1972, pp. 21-22) which the industry objected to because it would compromise the security of the equipment and disclose proprietary information (SDM, 1972, p. 19).

Kassman (1975) believes that insurance underwriters and brokers, architects, general contractors, and realtors, all contribute to the lack of subscribers' knowledge of alarm systems. He further thinks that they need a better understanding of alarm systems themselves (p. 22).

Central Alarm Stations

Central stations have increased 55% in twelve years (170 stations in 1961 to 310 stations in 1973), all of which have multiple clients (NBFAA, 1974). Alarm systems connected to central stations appear to be effective. The AICCC (1972) reported that 172 central stations servicing 152,425 alarm systems provided approximately 55 million

hours of protection. Of 2,906 actual alarms that these systems had, there were 536 criminals captured, or 1 suspect apprehended every 48 hours (p. 53).

> WBFAA statistics relating to the 100,000 alarm systems in California serviced by U.L.-listed Grade A Central Stations reveals that one out of every three burglary attacks on these systems resulted in an arrest. (Out of 147 known attacks, there were 45 known captures...) (Bargart, 1974d, p. 18).

It is interesting to note that the WBFAA data does not relate that closely to the AICCC findings which indicate a capture ratio of one to five instead of one to three.

Central statior alarm systems do have failures such as the following ones:

- Door contacts compromised
- Door panels (protective wiring compromised)
- Motion detectors failed to respond
- Photoelectric beams avoided
- Fishing (through openings in protective screens)
- Master control unit compromised
- Foil failure (windows broken without rupture of the conductive foil)
- Telephone lines compromised
- Unexplained equipment failures
- Interior devices avoided
- Weak batteries

(U.L., 1971, p. 7-10).

Also, central station alarm systems are based on leased telephone lines whose maintenance is beyond the control of the industry or the subscribers (Mines, 1974, p. 23) especially when trying to determine and correct false alarm problems which may be related to telephone company employee actions.

There are other limitations on central station alarm systems which the following statement discloses:

> Because most central station alarm contracts contain limitation of liability clauses, an alarm company is generally not liable for damages, irrespective of the size of the client's loss resulting from an alarm installation failure, except for a nominal amount indicated in the limitation... Better Food Markets v. American District Telegraph Company, 40 Cal. 2d 179, 253 Pacific 2d 10 (1953) (Walsh and Healy, 1974, p. 6-4).

The subscriber appears to be caught between the insurance company who charges high premiums for crime insurance (and may demand that an alarm system be installed) and the central station alarm system which may fail or be compromised, since he can't recover anywhere near his losses from either firm due to their limitation clauses. Thus, it is best that the subscriber hold his false alarm operating errors to a bare minimum. If he doesn't and a real crime takes place (and the police do not respond in a timely fashion due to a known record of excessive false alarms at that location), he will not be able to collect much money to cover his losses from the insurance company or the alarm company. Furthermore, he will be unable to write off any sizable loss as a tax deduction. Also, a burglary or robbery may cause an increase in his insurance premiums, or the policy may even be cancelled by the insurance company.

Security Related Installation Problems.

Another major problem with alarm system equipment and installation, involves the fact that many alarm components suppliers only stock

> ...20 different key changes of shunt switch locks even though they are U.L.-listed locks capable of close to one million different combinations...

> Can we justify charging a customer for a security system that is only as secure as the "common" key that controls it? (Toepfer, 1975, p. 74-75)

For those businessmen who use a key to turn their alarm systems on and off, there are probably several other alarm systems that could be similarly controlled by the same key. Unfortunately, th common key problem applies to many locking devices. Thus, a "false alarm" may be caused by some unauthorized individual using a key on an alarm system installation other than for the one it is intended.

CAUSES OF FALSE ALARMS

The NBFAA (1974) succinctly states that "the causes of false alarms are as many and varied as the systems and the subscribers who use these systems". The causes can be classified into two general categories: (1) human error and (2) alarm system electromechanical malfunctions.

Human Error

Both the police and industry agree that the majority of false alarms are caused by the subscriber, although the "how much" they are at fault varies anywhere from 30% to almost 97% depending upon the source of the information (NBFAA, 1974; Mandelbaum, 1973, p. 56; Smith, 1974, p. 21; Willick, 1975, p. 79; Appel, 1971, p. 16; Cohen, 1971, p. 2; Fowler, 1975, p. 23; U.S. Department of Justice/ Cedar Rapids, 1971, p. 33; SDM ,1975, p. 19; Alsop, 1974, p. 39; Holcomb, 1968, p. 10; Taylor, 1972, p. 20). In 1973, Underwriters' Laboratories conducted a survey of 80,000 businesses that had alarm

systems for the AICCC and found the major leading cause of false alarms was subscriber error (NBFAA, 1974).

Cohen's (1971) false alarm study pointed out that Seattle alarm companies estimated subscriber (or owner) error to make up 50% of all false alarms (p.2). Cedar Rapids revealed a 76% subscriber error (noted as "accidental" or careless) in their study (U.S. Department of Justice/Cedar Rapids, 1971, p. 33). Another estimation of subscriber or operator error is stated to be 97% (San Francisco Cronicle/Hillsborough, 1976, p. 2).

Many reasons have been given for subscriber error, which can be summarized, as follows:

- Use of an alarm system for purposes other than its intended purpose (Alsop, 1974, p. 39)
- Simple lassitude, ignorance, nature of work habits (NBFAA, 1974)
- Inadequate training in, and observance of alarm system operating procedures (NBFAA, 1974)
- Failure to lock doors or windows (21.2%)
- Custodial or other personnel improperly entering security areas (17.8%)
- Improper operation of the alarm system by the user (14.8%)
- Failure to notify the centrol station of a change in procedures (12.7%)
- Miscellaneous subscriber error (33.5%) (Data and percentages from NBFAA, 1974)
- Failure to test alarm system before activating it (Mandelbaum, 1973, p. 59)
- Failure to turn system on when leaving the premises (Mandelbaum, 1973, p. 59)
- Returning to the premises and entering without informing the central station (In some cases, the proprietors have entered and left the premises before central station guards or police have arrived and later deny ever having entered the premises.) (Mandelbaum, 1973, p. 59)
- Janitor accidentally activates the alarm system while sweeping floor (Cohen, 1971, p. 2)
- Forgetting to put the alarm system into the proper mode (SDM, 1975, p. 19)

- Lack of motivation to properly operate alarm system (Fowler, 1975, p. 23)
- Irresponsibility or carelessness on the part of the subscriber

Subscribers "...are sometimes less than honest in admitting an error" in the operation of their alarm system (U.S. Department of Justice/Cedar Rapids, 1971, p. 33). It should be noted that there is usually a learning curve associated with new alarm installations until the users become familiar with the operation of the system (U.S. Department of Justice/Cedar Rapids, 1971, p.32).

Possible Solutions to Human Error False Alarms

Kellem (1975) states that "if 60% of all false alarms are caused by the subscriber, the subscriber must be willing to communicate the problem" (p. 20). It has been suggested that subscriber error can be substantially reduced by designing the system so it is easier to operate. Frank B. Smith (1974), President of an alarm company in New Jersey, believes that

> the system installed should have as many defenses against inadvertent customer falsing as it does against actual intrusion. Furthermore, the dealer should thoroughly indoctrinate the purchaser of the system in avoiding false alarms (p.21).

Mandelbaum (1973) also suggests that the improvement of operational procedures and design of the system and control functions can reduce human error (p. 145). Willick (1975) comments that

> the large percent of false alarms caused by human error leads to some interesting conclusions. First, alarm system designs which emphasize product reliability will not solve the major cause of false alarms. Second, the majority of service calls made by an installer are unnecessary. Third, service calls can be substantially reduced by reducing the human error factor. Finally, the

poor relationships with police departments can be dramatically improved (p. 79)

There are a number of steps that the industry can take to reduce human error, as pointed out in the preceding paragraphs, and it rests upon the industry to concentrate on those solutions.

The reduction of false alarms due to human error is also a responsibility of the police, particularly crime prevent officers. The police can make generalized recommendations to businessmen and homeowners in the process of conducting crime prevention programs. They can also follow Fort Collins (Colorado) Police Department's example by developing a pamphlet which discusses the false alarm problem in their jurisdiction (Fowler, 1975, p. 23). This could include the significance of the problem, magnitude of the problem, and how the owner can improve his alarm system.

Mel Mandell's (1973) Handbook of Business and Industrial Security and Protection provides an excellent model that could be followed in developing a pamphlet:

- Designate an executive responsible for the purchase of security and safety equipment.
- Risk must be assessed before any equipment is purchased.
- Question claims of "high reliability".
- Avoid panaceas.
- Purchase products locally.
- Look for service first.
- Check spare parts inventory.
- Seek standard parts for electronic devices.
- Consult with your insurance agent before making any substantial investment in security/safety equipment.
- Favor U.L. approval.
- How long in business?
- Caution: Recent franchisee.
- Don't hire amateurs.

- Avoid door-to-door salesmen.
- Seek expert advice.
- Favor long warranties.
- Seek self-checking features.
- Demand an instruction or owner's manual.
- Banned products.
- Normally open or normally closed?
- Long-term contracts.
- High installation charges.
- Lease-purchase agreements.
- Beware of buying security by mail.
- Check with local consumer fraud agencies

(pp. 185-191)

This type of information, and that on different types of alarm sensors and systems, will help citizens make more informed purchases of alarm systems that eventually would be effective in reducing false alarms.

Alarm System Electromechanical Malfunctions

There are a multitude of reasons why alarm equipment can cause false alarms, all the way from sensors to central station equipment. The number of alarm system electromechanical miscues varies in percentages similar to those related to human error. Cohen (1971) indicated that alarm companies in Seattle estimated equipment falsing to make up 32% (21% installation, 11% equipment failure) of the total number of false alarms (p. 2). The AICCC conducted a study involving 152,425 alarm activations in a 30-day period. It was found that 92% of them were false and that 23% of the false alarms could be attributed to equipment malfunctions (NBFAA, 1974). Pasadena Deputy Police Winters indicated that two recent years of false alarm data suggests that 60% to 70% of the false alarms were caused by mechanical problems (SDM, 1975, p. 19). It is likely that some

of the mechanical problems could actually be caused by human error, but it is difficult to establish this. The Seattle false alarm study points out that 5% to 25% of all false bank alarms are due to equipment malfunctions, such as:

- Wire fatiguing after many years of use (fraying and becoming short-circuited or grounded).
- Wire short-circuited in underground facilities by flood or fire.
- Telephone or alarm lines purposely or accidentally broken as a result of damage.
- Accidental "igniting" of an alarm by telephone linemen checking wires for an "open circuit".
- Vault alarms tripped by "shock waves" from passing vehicles due to the alarm sensitivity being set too high (p.2).

Cohen also noted that more sophisticated alarm equipment such as bill traps, has increased false alarms because tellers forget they are there. Fowler (1975) believes that contributing factors to equipment related false alarms includes:

- Inadequate design of the alarm system itself
- Poor quality and/or misapplication of equipment
- Lack of system upkeep (service contract)
- Alarm signal transmission problems (phone lines) (p.23)

Design and Installation Problems. The NBFAA (1974) noted that a variety of actions related to equipment sensitivity, such as doors and windows being wired so that the slightest movement triggers an alarm, are often designated as "false" even though the system is usually performing exactly as designed. It appears that the industry has a tendency to utilize this type of statement all too often

to avoid accepting the responsibility of creating false alarms due to their design and installation practices. The meaning of the phrase, "the system is performing exactly as designed", should be limited to the original intent and purpose of alarm systems: that of detecting very specific activities related to burglary and robbery, not the detection of air currents, wind-rattled door and window panes, and normal everyday events.

Equipment-related false alarms may be the result of the alarm installer in not taking into account the normal environment of the protected premises within which the alarm system must function. This situation may be further complicated by improper installation procedures and/or misapplication of the alarm equipment. Martin Reiss (1971), President of the Security Equipment Industry Association (SEIA) in 1971, presented the following examples of alarm equipment misapplication:

> - [An ultrasonic alarm system was placed in a large warehouse which was located in a very cold climate. Large heaters with blower fans were kept in constant use to keep the warehouse warm. This also kept the ultrasonic alarm system in a constant alarm condition.
>
> - Audio detection sensors were installed to protect a large area enclosed on four sides, except that one side was made up of a chain-link fence. The fence helped to keep the intruders out, but not the sounds which constantly tripped the alarm system.
>
> - A microwave alarm system was utilized to protect a plant and installed opposite the plant's coke machine which had a bad vibration when in operation. The only thing the microwave system monitored was the operation of the coke machine] (p. 10).

Unfortunately, these examples are "...typical of misapplications which take place almost daily somewhere in the alarm industry", states Reiss (p. 10). Dialer-type of alarm equipment has often been used in the wrong situations. Jerry Johnson (1973) points out that "it would be a gross understatement to say that there have been a lot of misapplications of voice dialers" (p. 18). The dialer problem caused Dallas, and many other cities, to pass ordinances that made it illegal for dialers to be programmed to police department emergency telephone numbers (Taylor, 1972, p. 20). This action was taken because the dialers created many problems for the department, such as:

- 98% of them were false alarms.
- Many recorded messages were unintelligible or provided inadequate information.
- False alarms, plus repetitive calls, may overburden telephone trunk lines and police switchboards.
- The owner nor other authorized party was notified of the alarm and the responding police could not gain access to the premises to search it nor complete their investigation. (Taylor, 1972, p. 20)
- The messages do not have any standard format. (SDM, 1975, p. 130)

The dialer alarm messages have mostly been diverted from police departments to answering services. But, has this caused any reduction in the number of false alarms just because the answering service now takes the emergency message? It would appear that the answering service just relays the message to the police and the number of false alarms may not have decreased very much as a result of this transfer.

Additional problems with alarm system installations that may cause false alarms is the fact that

> many vendors do not install their equipment. The purchaser generally does not know how to place his equipment properly nor wire it. Even if the vendor does the installation, the equipment sensitivity may be set incorrectly or the owner might change the sensitivity setting (Alsop, 1974, p. 40).

This is an example of the situation in which the alarm functions as it was designed but where it was improperly installed. When alarm systems are not designed for a particular premises, one invariably finds a combination of components from many different manufacturers (Saunders, 1970, p. 537). Unless these components are carefully integrated, the result may be poor protection and excessive false alarms.

Maintenance of Alarm Systems. Holcomb (1962) states that "it should go without saying that any alarm system must be kept in the best possible condition. Unfortunately, many businessmen will install an alarm system and then pay very little attention to its maintenance" (p. 28). Many alarm companies will attempt to get a customer to sign a lengthy service contract with no escape clauses; but,

> as a result of government action in the courts, central station services now include an escape clause exercisable at the end of two years and every year thereafter on the anniversary of signing,

states Mandell (1973, p. 190).

Alarm Transmission System. An alarm company not only sells police services along with its alarm equipment, but also sells telephone company services (Watts, 1975, p. 60). Maintenance and repair of the phone lines, which have been in use since the late 1800's, are beyond the control of the alarm company. This can create anxieties and frustration when the telephone company does not respond in a timely fashion. An alarm may be tripped by telephone linemen who, in the course of checking other phone circuits, may accidentally open an alarm circuit (NBFAA, 1974; Cohen, 1971, p. 2: AICCC, 1972, p. 53). Stanford Research Institute (1969) indicates that "the diurnal and seasonal changes in the temperature of several miles of overhead telephone cable with 26 gauge wire can cause changes in wire resistance..." and possibly cause false alarms (p. 26). Flooding of cable vaults and weather-induced line perturbations, such as rain storms, and phone lines being blown down, may also cause false alarms.

Certain facts should be known about leased signaling circuits that relate to false alarms, such as:

- Burglar alarm circuits are customarily identified at each telephone company terminal strip, in the protected premises, on telephone poles, and in the telephone company central office, by means of red fiberboard clips as a warning to linemen and installers not to tamper with the lines.

- The identifying clips are frequently lost or linemen enter a circuit regardless of the clip in their search for a wire pair over which they can talk to the central office. With present systems, this causes a false alarm.

- Periodic leakage tests are made by telephone company central office personnel. Occasionally, such a test is made on a burglar alarm line, causing a false alarm and sometimes burning out sensitive meter relays. (SRI, 1969, p. 26)

The AICCC (1972) states that "obtaining better cooperation from telephone companies to reduce the number of alarms generated by faults and testing on lines ..." (p. 53) is necessary to help reduce the number of false alarms.

Central Station Problems. There are a few problems with central station equipment that may cause false alarms. Norman Mines (1974) conducted a study of central station burglar alarms and uncovered the following possible deficiencies with their equipment:

- Better central station standby power systems are needed which facilitate supervisory operation power at longer distances from the subscriber and which operate for longer periods of time. [The type of standby power generator that provides a trickle charge to the standby battery power system and its fuel capacity in terms of operating hours, should be adequate enough for at least 72 hours of operation or a reasonable alternative.]

- When AC power fails, the batteries must either work on their own or be charged from a generator. System performance suffers due to the variable voltage output and limitation on length of operating time from the standby power batteries.

- Lead-acid standby power batteries have problems related to corrosion, fluid loss and plate decay. Because of the maintenance requirements of these batteries, it is difficult to reduce the cost of a central station alarm system to the individual subscriber; also, false alarms due to battery failure will be more common due to brown-outs and black-outs of city utility power.

- Central station alarm systems experience an increase in false alarms due to their transmission mode which can be affected by power losses, transient current, power surges, and phone lines that are blown down. (p. 21)

Thus, it appears that there is also room for improvement in central station equipment.

Miscellaneous Equipment Problems. Although most equipment failures are discovered by subscribers or service personnel routinely checking out the system, some problems do occur that can cause false alarms. Power to alarm system knocked out by electrical storms (those without standby battery power), electrical work or phone repair, voltage drops due to other equipment in the building, water leaks, and similar factors can cause false alarms (U.S. Department of Justice/Cedar Rapids, 1971, p. 34). It is also possible that wiring may be "stretched" or frayed while pulling it through metal conduit which may eventually result in a false alarm due to shorting or grounding.

Specific Technical Causes of False Alarms. Alarm systems are generally made up of sensors, wiring, master control unit, and in the case of silent alarm systems, alarm transmission lines and central station equipment, any of which may cause a false alarm due to a number of factors. One example involving an ultrasonic alarm system in which

> ...Christmas ornaments moving in the draft caused by the air-conditioning system generated a puzzling series of false alarms. Ringing telephones and other objects that generate sound frequencies with overtones in the region of sensitivity of ultrasonic sensors, have also been known to trigger a false alarm (SRI, 1969, p. 17).

The following information is related to sensors which may cause false alarms depending upon their application, installation, and maintenance. A majority of the information is taken from Mandelbaum's (1973) book, Fundamentals of Protective Systems, pp. 152-202. Other data is taken from Walsh and Healy (1974) and Rickett (1968).

- Electromechanical switches and sensors. Exposed switch contacts are subject to corrosion (except reed contacts) from environmental conditions. Experience indicates that switches on frequently used door and windows often become loose. The gap or spacing must be compensated for because of play tolerances in the opening surface. Mechanical switches, plungers, and levers may malfunction when exposed to freezing or wet weather. Magnetic switches intended for wood doors will be prone to false alarms if mounted on metal doors without adequate insulation and spacing. Magnetic switches mounted on metal doors eventually lose their magnetism and will false alarm just by shaking the door. Magnetic switches have to be electrically protected from sudden power surges of voltage to avoid false alarms. Bank bill traps may become corroded and caked with ink and dirt that accumulates from long direct contact with paper money. Metallic foil on windows and glass-panelled doors often becomes damaged. Also, foil can cause false alarms due to small cracks in the tape resulting from contraction and expansion from changes in temperature.

- Acoustic sensors (microphones without human monitoring). Both high ambient noise levels in or near the protected premises and extraneous noise (aircraft sonic booms, traffic rumble, vehicular backfire, and trucks) can cause false alarms.

- Motion sensing. "Sonic" motion detectors are highly sensitive to noise and will detect the movement of pieces of paper moved by air currents from ventilators or air-conditioning vents. "Ultrasonic" motion detection systems are highly susceptible to ambient and transient noise that have frequency components in the ultrasonic range (19 to 40 kH_z), as well as to air turbulence in the radiated field. Sources that could cause ultrasonic noise are sonic booms, thunder, insects and bats, gas escaping under pressure, high voltage corona discharges, and moving machinery parts. Air turbulence could result from fans, space heaters, or air-conditioning units.

  "Radio Frequency" (microwave or radar) motion detection systems can penetrate nonmetallic walls and windows, and such systems may detect the movement of nearby persons, vehicles, or other objects outside the protected premises, and generate false alarms as a result. Radio frequency systems can also be affected by spurious radiations, interference, and radio "noise" from mobile radio, citizen's band, radio amateur, and radio paging transmissions, as

well as emissions from fluorescent lamps, electrical machinery, or other devices in the vicinity.

"CCTV" motion detection systems can result in false alarms due to changes or failure in its power supply, or changes in, or failure of the light source in the room.

- Photoelectric sensors. "Active light beam" detection systems could have false alarms caused by transient or sporadic light beams, such as flashing sunlight reflections from passing vehicles and lightning, or from variations in light caused by inclement weather, lamp failure, dust on the lens and mirrors, and accidental misalignment of the lens and mirrors.

  "Passive light" detection systems may generate false alarms due to other sources of infrared energy within their field, such as heating elements and other devices in the premises that emit heat during operation, sudden changes in the light source intensity or sudden extraneous flashes of light such as from lightning or automobile headlights, or power failure.

  "Dual mode operation" of the active infrared beam detection system requires a very high sensitivity level for the second mode operation when the pulse-modulated beam is projected into space instead of on a surface not farther than 150 feet away. This makes the unit highly susceptible to false alarms from small transient or spurious infrared radiations.

The "semiactive infrared system" projects an elliptical cone of infrared light toward the protected area and provides limited volumetric coverage. It is susceptible to the same false alarm problems as in the dual mode operation.

- Proximity detection sensors. These types of sensors are also called capacitative alarm sensors. A major problem with these sensors which could result in false alarms, is the tendency of the basic oscillator frequency to drift with changes in environmental temperature and humidity. Outdoor installations are particularly sensitive to expansion and contraction of the sensing wire between daytime and nighttime temperatures. When proximity detection systems are employed for perimeter fencing, frequent false alarms will occur unless care is taken to insulate and place the sensing wires high enough to avoid the effects of small animals or the swaying of nearby vegetation. Rain and snow on the sensing wires or on the ground beneath may also cause false alarms, as well as vibrations of the fence. When such systems are used indoors, care must be exercised before the system is activated to ensure that extraneous metallic objects are not left near the protected objects so as to avoid false alarms. All of the protected metal objects, such as safes and file cabinets, must be carefully insulated from the ground if false alarms are to be avoided.

- Magnetic sensors. "Magnetometer" detection systems (passive) used in doorways, corridors, or other portals, can cause false alarms unless the threshold is properly adjusted to detect such objects as a pistol, large knife, or hand grenade, instead of a needle, hatpin, nail file or key. They are also susceptible to false alarms caused by lightning or radio interference, by transient fields created by stopping and starting of nearby electrical equipment, such as elevator or air-conditioning systems in the building, or by operation of electrical cleaning equipment (vacuum cleaners), in the immediate vicinity of the sensing coils. False alarms occur at times from the presence of legitimate objects or devices such as transistor radio sets, bunches of keys, metal cigarette cases, metal prosthetic devices, or other ferrous metal devices.

  "Magnetometer" detection system (active) false alarms can be caused by the same factors as the passive system and will also respond to non-ferrous metal.

- Vibration and seismic sensors. "Vibration" sensor systems employing the use of the piezoresistive effect of semiconductors is highly sensitive and can cause false alarms due to traffic rumble, vibrations generated by street railways, elevators in the building, stock-handling vehicles (fork lifts), and large air-conditioning machinery in the protected building. It may also be responsive to the effects of impact power devices nearby, such as pile drivers,

riveting machines, jackhammers, and other construction devices. Vibration sensors must be rigidly attached to the protected structural members and the threshold levels frequently adjusted to minimize false alarms arising from external and spurious vibrations.

"Seismic" sensor systems are extremely sensitive and are, therefore, subject to false alarms from extraneous earth vibrations, such as traffic rumble (vehicular, heavy pedestrian flow), sonic booms, minor earthquakes, and nearby street construction.

- Stress detection sensors. "Stress" detection systems employ small ultrasensitive wire, foil, or piezoresistance semiconductor strain gauges as sensing elements. False alarms can be caused by rapid changes in atmospheric temperature and humidity, settling of the building, and shocks to the building from external man-made sources or seismic occurences. Also, radio interference or electrical "noise" (EMI) from nearby electrical devices may be picked up and cause false alarms unless all of the circuits are properly shielded and all unit housings securely grounded.

- Differential air pressure detection sensors. "Differential air pressure" detection systems can false alarm unless the two protected rooms are sealed against air leakage. Unless standby battery power is available, any interruption in the power line would stop the fan, thus altering the pressure

differential and causing a false alarm. Furthermore, inspections and entry into the rooms by watchmen and guards must be prohibited to avoid false alarms.

- Thermal detection sensors. These sensors are employed in the protection of vaults, safes, or restricted rooms and areas to sense flammable cutting tools. Such sensors may possible cause a false alarm due to wire fatigue or accidental damage during alterations/remodeling of the protected premises.

Adjustable threshold circuits and integrating circuits are generally incorporated into the various detection systems to allow for control of the sensitivity of the sensors, thus reducing the false alarm potential. Nevertheless, it is known that customers have increased the sensitivity of their systems and thereby caused false alarms.

Related Technical Problems

Related technical problems include equipment possibly damaged during the shipping and handling of alarm components. Sometimes, damage does occur but it is not noticeable. Unless the dealer or installer conducts performance tests on all of the equipment received from the manufacturer (10% of the components are usually damaged or defective) to see if it meets the manufacturer's specifications before installation, false alarms may occur as a result

after the system is installed. Another installation problem that may result in false alarms is not utilizing enough sensors where necessary. The range of coverage of each detector may be over-extended and result in system instability and high sensitivity settings (Rickett, 1968, p. 609).

Most protected premises are subject to continuous change, such as moving merchandise and displays around in a retail store. The proprietor and his employees may be unaware that such changes may possibly cause a false alarm. Alarm sensors should be able to tolerate some shifting of material in or around the protected area/object without having to readjust the sensitivity every time.

Another technical problem related to false alarms in which "the system performed as designed" is the situation where a door may be locked, but the installation of the door and door frame allows the door to open in excess of the spacing required for a magnetic switch to operate, thus causing the false alarm. In this particular case, neither the subscriber nor the alarm equipment is at fault due to poor construction methods and materials, age, wear, and maintenance of doors and windows. Therefore, care must be taken when installing dry contact switches on doors and windows. The openings must be checked for soundness and the switches should take into account the tolerances involved. Also, the doors and windows may become loose due to age and/or constant use after the switches are installed, thus causing false alarms unless a sound maintenance program and quality service are provided.

Technical problems relating to the use of sophisticated alarm systems which may result in false alarms, involve commercial establishments who appear to account for the majority of false alarms (especially large businesses). Deputy Police Chief Winters believes that this is true,

> primarily because they have more elaborate systems, premises that are used more extensively and by a greater number of people. And then, too, with commercial systems, you've got more people involved and more exposure for the kind of false alarm caused by mishaps involving people. (SDM, 1975, p. 130).

Improved design and installation practices of commercial alarm systems may help reduce the number of false alarms. Suggestions for these improvements are discussed next.

Possible Technical Solutions to False Alarms.

There are a variety of technical solutions that may be utilized in reducing false alarms. However, "...it would appear that technical improvements will help only moderately in reducing the incidence of false alarms"(NBFAA, 1974). Technical alterations that may reduce both human error and alarm-equipment-caused false alarms, as suggested by the NBFAA (1974) and Mandelbaum (1973), include:

- The use of fail-safe devices which permit the subscriber to stop the transmission of an accidentally-caused false alarm. A warning buzzer would allow the user a few moments grace to turn the system off before it transmits the signal.
- Improve the structural conditions of doors, window sashes, and windows which alarm components monitor.

- Improve housekeeping in and about the protected premises.
- Improve the maintenance of the alarm system and its communications capability, particularly for those facilities whose alarm systems are monitored at central stations or by police monitor boards.
- Improve alarm equipment sensitivity, maintainability, and fail-safe characteristics.
- Install cross-check sensors for devices permitting users and police to check or abort an alarm signal.
- The use of two or more sensors (such as ultrasonic and microwave) which must be actuated at the same time.
- Use a stable power source with emergency standby power capabilities. Circuitry should be able to compensate for brief interruptions in power and power surges (similar to circuitry utilized in computer systems) to avoid false alarms.
- Alarm system components should be tested for proper operation prior to installation.
- The use of an acoustic (microphone) detection system connected to a central station or answering service which can alert monitoring personnel to an intrusion. They can then listen in and confirm whether or not an intruder is present before notifying the police.
- The master control unit should have a switch that makes it necessary to rotate the system activation switch

from the off position to a test position before the switch can be moved to the armed position. The switch should be so designed that it could not be turned to the on position unless the test position verified correct operation of the alarm system.

- The use of human engineered recessed manual alarm button, key operated, or double-button switches (both buttons must be depressed at the same time to actuate the switch), will reduce accidental triggering of holdup alarms and, thus, false alarms.
- Testing of the premises to be protected for unusual levels of ambient noise, vibration, nearby traffic movement, or spurious electrical or electromagnetic radiations.

There are other technical solutions and improvements that could no doubt be utilized to reduce false alarms caused by alarm equipment. The industry should identify, document, and implement such improvements.

False Alarms and Physical Security

Toepfer (1975) points out that "the alarm industry no doubt is the victim of false accusation when an employee, customer, or thief remains in a place of concealment within the premises at lock-up time..." and when he "...leaves by a 'protected' exit door, the alarm sounds, the door closes and re-locks and the 'false alarm' goes into the record" (p.75). Many devices used for emergency exit doors (as specified by the NFPA Life Safety Code) "...may be pre-rigged to

permit surreptitious entry or may be manipulated from the outside..." (Toepfer, 1975, p. 75). Toepfer suggests that "false alarms" caused by unauthorized departures may be detected in a number of ways, such as:

- A printer-recorder to monitor each door.
- A glass covered box placed over the knob or handle.
- A wire seal attached to the door or lock.
- A mechanical counter attached to the door to allow the "logging" of openings on a daily basis.

Unknown causes of false alarms may possibly be due to the following situation, as noted by Toepfer:

> Some metal store fronts and doors are furnished by the contractor with lock hardware (factory installed). It is a fact that many of these locks are set to "common keys" for the convience of the supplier. Therefore, we find that many merchants are using locks keyed the same as many other persons throughout the community. If the merchant does not have his locksmith [rekey] the lock when he moves in, he risks a surreptitious entry and theft even though he is equipped with an alarm system. (p. 74)

To overcome this problem and prevent "false alarms", subscribers should consider having their door locks rekeyed, as well as the lock for the alarm system if one is used. It should be noted that these physical security problems (and others) bear a direct relationship to the false alarm problem.

Determining Technical Causes of False Alarms

Mines (1974) suggests some excellent ways of determining the technical causes of false alarms. He indicated that alarm systems should be so designed that the cause of the alarm could be established,

such as:

- What sensor(s) actuated the alarm?
- If the alarm is caused by equipment failure, what part failed - the sensor(s), master control unit logic circuitry logic or relays, alarm transmission system, or the annunicator? (p. 24)

These functions could be built into the control box installed on the premises. Although some master control units have annunciated indications of which sensor was activated (utilizing a stepper switch), definite improvements are needed. Current sensor determination methods can result in ambiguity and confusion if two alarm initiations occur from one sensor because the stepper may move beyond the basic indicating point for the sensor in question. If alarm equipment is the cause of a false alarm, such problem identification will allow for repair or replacemtn of the component involved and the prevention of additional false alarms.

Alarm System Standards

There are a number of organizations who have, or are in the process of developing, technical standards relating to alarm system components which are related to false alarm problems. Such organiaztions include Underwriters Laboratories, Incorporated (U.L.); the American Society for Testing and Materials (ASTM); and the U.S. Department of Justice Law Enforcement Standards Program. The NBFAA (1974) notes that

> the alarm industry itself, of course, is concerned over the impact of false alarms and would like to upgrade the standards of product reliability, installation, and testing procedures for burglar alarm systems.

Kellem (1975) indicates that "equipment standards refer to technical and reliability of individual devices and the classification of alarm systems as to the extent of coverage (p. 21). He also points out that "...performance standards are meant to be a measure of the dealers' ability to provide services desired as to the reliability of their systems and the extent of protection" (p. 21).

Walsh and Healy (1974) reveal that U.L. standards on alarm systems are not generally available to subscribers and do not like to be referenced on specific standards as being available from them. This is mainly due to the fact that U.L. tries to avoid making such information available to individuals with criminal intentions. U.L. states that "a standard is written for the manufacturers of these devices and would have little, or no meaning for someone interested in purchasing or evaluating burglary systems" (Walsh and Healy, 1974, p. 5-3). But, U.L. does make available Product Directories which "contain the names of companies who have demonstrated an ability to produce products, devices, or systems in accordance with the Laboratories' requirements for the product categories covered" (U.L., 1975, p. 2). The Accident, Automotive, and Burglary Protection Equipment Lists (September 1975) is available to the general public, alarm subcribers, and the police for review and it is recommended by U.L. when considering the installation of an alarm system. Supplements are also available from U.L. that keep the Product Directories listings current.

Underwriters Laboratories, Incorporated was initially sponsored by the insurance industry. They later became independent and currently provide unbiased and professional testing of many different pro-

ducts relative to safety and performance.

Some U.L. test procedures are quite time-consuming, but this is usually predicated on the nature of the burglar alarm system equipment or the alarm installing company. A local alarm system installation may only take five hours to be listed by U.L., whereas a central station may take up to 120 days. The length of time to test manufacturers' equipment is often determined by the availability of the components to be tested.

There are some problems with the misuse of U.L. listings. How many alarm installation companies get U.L. approval on two or three installations and then use the U.L. symbol in their advertisements to attract more business in which they install less than quality type systems? Furthermore, it appears that manufacturers also misuse U.L. listings as well as alarm system salesmen in some cases. An example here is the situation in which alarm system equipment is represented to be U.L. listed in such a way that the customer believes that it means effective operation which may not be true.

It is true, however, that some alarm systems and central stations may operate just as effectively as U.L. listed services. A point to keep in mind here is <u>how</u> U.L. listed equipment is installed and serviced. Any alarm system must be installed and serviced properly to insure effective operation and few false alarms.

Some police department alarm ordinances are de-emphasizing the need for U.L. listing. Watts (1975) states that, "I don't believe a company has to be U.L. listed to be a good central station or a good alarm company..." (p. 62). He notes that there are 73 alarm companies in the Portland Metropolitan area, of which only two are

U.L. listed. He believes that the lack of U.L. listing does not automatically make the other 71 unreliable. "...But I can assure you," states Watts, "we have more than our share of trouble with some of them" (p. 62).

Pasadena does not require U.L. listed systems, although they can set performance standards for alarm systems. However, they do not attempt to describe the kind of alarm system that should be installed. They "...believe it's up to the alarm industry to regulate themselves to such an extent that they are motivated to sell reliable and safe equipment" (SDM, 1975, p. 131). They feel that the police should not get involved in regulating the industry's alarm systems standards since they are not alarm systems experts. It is interesting to note, however, that Pasadena has a police alarm specialist who works with subscribers and their alarm companies to solve false alarm problems.

Kellem (1975), the National Crime Prevention Institute's (NCPI) Electronic Security Specialist, notes that the "Underwriters' Laboratories has done a commendable job in certain areas as long as the industry is willing to pay for the services, but a much more comprehensive approach is needed" (p.21).

FALSE ALARM LEGISLATION

The high false alarm rate, the misapplication of alarm systems, and the existance of fly-by-night or incompetent alarm companies, has ultimately resulted in a proliferation of false alarm legislation. The false alarm problem has been increasingly attracting attention for at least 20 years, until almost every law enforcement

CONTINUED

1 OF 2

agency in the U.S. wants to implement some type of false alarm legislation. Similar in growth to the false alarm problem and the increased number of ordinances, is the amplification of hostility and strained relationships between the police, the industry, and the alarm subscriber or owner.

The AICCC conducted a "Survey of Legislation Affecting the Alarm Industry" in 1974 which involved data collected from 28 states and 104 cities. The results of the survey clearly indicate an increase in the number of ordinances proposed or adopted relative to alarm companies and alarm systems, especially in 1972 and 1973. The following data reveals that the number of ordinances has increased from one ordinance in 1955 (Las Vegas) to 23 ordinances in 1973, for a total of 87 ordinances related to the alarm industry:

1955	1957	1960	1961	1967	1968	1969	1970	1971	1972	1973
1	1	1	1	1	4	8	10	15	22	23

This increase in the number of ordinances over an 18-year period represents an attempt by the police to cope with the tremendous number of false alarms to which they respond and related problems.

Examples of the False Alarm Problem

"Los Angeles Times" staff writer, Philip Hager (1975), provided the following examples that have led to such an increase in alarm ordinance promulgation:

- San Francisco Police Department Captain Jeremiah Taylor states that "the false alarm rate is fantastic". SFPD ties up two patrolmen for at least

30 minutes on every false alarm which represents a total of 21,000 wasted man-hours a year. They have approximately 25,000 alarm systems in San Francisco. Lt. Frank Jordon believes that many citizens are being misled by some alarm company's advertisements. San Francisco PD is drafting an ordinance to deal with this false alarm problem and it has been suggested that a flat fee per alarm - false or not - be considered (similar to San Jose Police Department's proposed ordinance which was dropped by the PD). SFPD first introduced an ordinance in 1970 which required alarm companies to register with them.

- Monterey, California, charges a $50 "response fee" per false alarm on repeat offenders (they had 44 false alarms in one month from the same store) and may terminate an alarm system in extreme cases. They reduced their 95% false alarm rate to 47.5% in four years due to this ordinance.
- Glendale, California, had a 95.9% false alarm rate before they had an ordinance adopted, which caused a 12% reduction in the false alarm rate to 83.9%, and are presently attempting to close loopholes in the ordinance that may result in an even lower rate.
- Los Angeles has approximately 50,000 alarm owners and a 97% false alarm rate. LAPD responded to 40,000 alarms in 1968 and 120,000 alarms in 1974, of which the

> the overwhelming majority were false in 1974. Their ordinance is expected to cause such a reduction in the number of false alarms that it will likely result in a savings of up to $1.7 million annually. (pp. 1 and 14)

There are many other such examples of false alarm problems and there is no question that alarm legislation is needed to help resolve such a significant problem.

Alarm Legislation

Kellem (1975) states that the objectives of alarm legislation are to:

- Minimize false alarms due to subscriber error and substandard equipment or installation;
- Eliminate the criminal element from the alarm business; and
- Control the use and application of alarm equipment.

He further states that crime prevention objectives in regard to alarm legislation are to:

- Encourage the installation of as many reliable systems as feasible with the sophistication required for maintaining sound risk management principles; and
- Maintain open lines of communication with the security industry and the public, keeping them informed of current crime trends and problems, enabling them to take appropriate preventive action. (p. 20)

Most efforts at reducing the number of false alarms through the use of legislation are directed toward subscriber error. The NBFAA (1974) found that of 15,000 municipalities surveyed, 36 "...have enacted some sort of legislation penalizing alarm users for false alarms". Most of the ordinances emphasized the control of holdup alarms rather than intrusion systems. Some cities have elected to

regulate alarm system equipment such as dial-alarm systems. Most people in the industry agree that such control is needed (SDM, 1972, p. 19), but unreasonable legislation may inhibit some businessmen from installing a system (NBFAA, 1974; Bargert, 1974c, p. 11).

The industry considers some police legislative efforts to be completely unrealistic such as charging a $10.00 alarm response fee for any alarm whether it is false or not (Bargert, 1974b, p. 13), and requiring the subscriber or his authorized agent to respond to an alarm within one hour or face a substantial fine (District of Columbia) (Bargert, 1974a, p. 15). Another example of the industry's distaste for unreasonable legislation is the Beverly Hills ordinance (which was designed to cover administrative expenses of enforcing the ordinance) which calls for a $12.50 fee for all alarms responded to after the first one in a 30-day period, false or not (Bargert, 1975c, p. 13).

There is, however, at least one police department ordinance that the industry believes has partially solved that city's false alarm problem and "...makes a burglar alarm truly valuable to the conscientious user" (Bargert, 1975a, p. 13); namely, Pasadena, California. In fact, Bargert (1975c) believes that "...the Pasadena ordinance is recognized as one of the finest in the country by both law enforcement agencies and alarm industry experts" (p. 13). That city's Burglary and Robbery Alarm Permit Ordinance was adopted on December 26, 1972.

Pasadena Police Chief Robert McGowan believes that the 63% reduction in false alarms that they have experienced in 20 months is due to:

- The courageous support of the City Council in the enactment of a tough comprehensive ordinance;
- The establishment of standards for alarm systems which relate to performance rather than to technology; and,
- A vigorous program of implementation in which police personnel have effectively enlisted the cooperation of individual subscribers and representatives of all alarm companies doing business in the city.
(SDM, 1975, p. 18)

Pasadena PD has an ultimate goal of reducing the false alarm rate by 75% in relation to the pre-ordinance period.

Deputy Police Chief Winters denotes the key points of the Pasadena ordinance to be, as follows:

- The ordinance primarily authorizes the setting of performance standards for alarm systems.
- It requires an alarm user's permit and a permit for alarm companies operating in the city and/or their agents.
- It provides for penalties for those who do not comply with the ordinance.
- There is a well-defined appeals procedure that provides due process for a subscriber or anyone else who comes under the provisions of the ordinance.
(SDM, 1975, p. 122)

It appears that it would be prudent of other U.S. law enforcement agencies to develop alarm legislation similar to the Pasadena ordinance. Such ordinances can foster cooperation between the police and the industry which may ease currently strained relationships. Watts (1975) believes that reasonable legislation

> ... will also protect police response capabilities and emergency communications equipment, and will decrease the potential danger to the police and others when police are required to respond to many avoidable false alarms (p.60).

The need for such reasonable and prudent legislation is applicable to different levels of government if cooperation between the police and the industry is to be achieved.

Carl Kellem (1975) outlines the relationship of legislation to different levels of government as follows:

- FEDERAL -- Equipment Standards) ...Industry
- STATE -- Licenses)
  -- Identification Cards)
  -- Performance Standards) ...Industry
  -- Fines)
- LOCAL -- Permits)
  -- Fines) .....Subscriber
  -- Fees)

(p.21)

Kellem emphasizes that state legislation could more easily achieve the goals related to alarm ordinances easier and more economically than could jurisdictions. This would also ease the situation for the industry who now must deal with varying requirements from each jurisdiction in which they conduct business.

Administration and Enforcement of Ordinances

Unless ordinances are reasonable in nature, enforcement of them may be very expensive or they may not be enforceable at all. When a law enforcement agency first develops alarm legislation, considerable thought should be put into how it will be administered so that the overhead costs will not exceed the reduction in response cost relative to those alarms eliminated. It must also be cost effective in the sense that the amount of time expended by the city to collect false alarm fees does not exceed the paperwork costs.

Former Seattle Police Department Sgt. Church emphasized the problem of enforcing an alarm ordinance which "...might make liars out of users" (NCPI, 1972, p. 4). He also mentioned that the alarm industry representatives would like a complete investigation of each false alarm before any service charges are levied. Church comments that "they know if the onus is on the city, instead of on them, many false alarm causes cannot be isolated" (p.4).

The Need for Cooperation

The NBFAA (1974) states that "a workable solution to the false alarm dilemma is going to require a cooperative effort -- on the part of police, subscribers, and the alarm industry". The police and the industry agree on this need for cooperation (NCPI, 1972, p. 3; Fowler, 1975, p. 22; Watts, 1975, p. 62; SDM, 1975, p. 127). Fowler (1975) states that cooperation "...increases the probability of success as more individuals from various positions in the problem are included in the decision-making process" (p. 22). The need for cooperation between the police and the industry is not only related to reducing the number of false alarms, but also to the development of alarm legislation.

Legislative efforts involve four basic concepts, two with cooperation and two without: (1) developing an ordinance and then seeking review and recommendations from the industry on it, (2) forming an advisory committee representative of the population that will be effected by alarm legislation who work together in drafting an ordinance, (3) forming a committee which cannot agree on the content of an ordinance and thus impeding progress, and

(4) proposing and adopting an alarm system without the cooperation of the industry.

Pasadena took the first approach. They drafted an ordinance which various members of the industry heard about and subsequently requested a copy of it. At this point, the police decided to actively seek the cooperation of the industry and sent a copy of the proposed ordinance to each alarm company that operated in their jurisdiction, asking for their comments. They then held a meeting to discuss the industry's comments and recommendations, as well as related factors. Any law enforcement agency that is considering the development of an alarm ordinance should emphasize input and cooperation from the industry. Deputy Police Chief Winters states, "... I think they would have a much better chance of passing the ordinance if they get the vocal support of the alarm industry, or some key representative at the minimum" (SDM, 1975, p. 127).

The second legislative approach was taken by the Fort Collins (Colorado) Police Department. They developed an advisory board consisting of representatives from the police, industry, telephone company, answering services, and the fire department. The committee worked together in drafting a comprehensive ordinance which is related to the licensing of alarm systems -- subscribers/owners, alarm companies and their agents, answering services, and service contracts for alarm systems. The Fort Collins ordinance emphasizes performance standards similar to Pasadena. No mention of false alarm fees was made in Fowler's (1975) article but, in those cases where excessive false alarms are not improved upon "...within a

reasonable amount of time, the police would merely refuse to respond after notifying the owner" (p. 23). It is very interesting to note that "...the only systems which have remained on 'unreliable status' longer than two days are city-owned systems" (p. 64). Their program has resulted in a 53% reduction in the number of false alarms over a two-year time period.

The use of a committee or task force that cannot agree on the content of an ordinance, can impede progress in resolving the false alarm problem. Seattle Police Department formed a task force, headed by Sgt. Orin Church, to study their false alarm problem and to draft an ordinance. The committee had many meetings without ever reaching total agreement on the ordinance. Sgt. Church stated that he "...learned it's almost a guarantee that a community cross-section of bankers, merchants, government and burglar alarm industry will not agree" (NCPI, 1972, p. 3). Seattle finally adopted an ordinance which has accounted for a reduction in the total number of false alarms by 1,300 a year (25% since 1972), but 96% of the total number of all alarms responded to are still false.

The fourth legislative approach results from the lack of cooperation from the industry. In this situation, "...strict, and sometimes unreasonable legislation in the form of false alarm ordinances always follows" (Nowatha, 1975, p. 24). Bargert (1972) pointed out the Fort Lauderdale, Florida, problem in which the city requested the industry's cooperation and guidance in formulating an ordinance. "As a matter of fact, of 26 alarm companies contacted by the City, only two responded!" states Bargert (p. 3).

Fortunately, not all of the law enforcement agencies have problems like Fort Lauderdale. There will always be some subscribers and some representatives of the alarm industry who will not be very cooperative, as well as some police officers. Generally speaking, it is believed that the industry is genuinely cooperative in developing alarm legislation and that the cooperative approach is necessary in successfully overcoming much of the false alarm problem (NCPI, 1972, p. 3).

Another approach which deals with the false alarm problem is that taken by the Alarm Industry Information Sharing Group located in Portland, Oregon. Watts (1975) indicates that the group will attempt

> ...to work out problems regarding police response to alarm systems, alarm ordinance coordination, and to share those statistics that can help not only the alarm industry but also the police department in better serving the community. (p. 62)

The AIISG has, as one of its main objectives, the development of self-policing the industry with emphasis on dealing with incompetent alarm companies who are giving the industry a poor reputation and causing an excessive drain on police resources.

Cooperation between the police, subscriber, and the industry is absolutely vital if any progress is to be made in dealing with the false alarm problem. The lack of cooperation will only result in a continued deterioration of the strained relationships, and increase the hostility, which currently exists in so many U.S. police jurisdictions.

THE NEED FOR FALSE ALARM RESEARCH

Research efforts by the police and the alarm industry have been very general in nature, limited to their own viewpoint, and often misleading and questionable statistics are utilized to present their case. It should be obvious that, before the police or the industry (and alarm users) can effectively respond to the false alarm problem, they must be cogizant of the specific factors and variables which are present that precipitates the problem.

Fortunately, there is one city which is attempting to take an in-depth look at the false alarm problem. "The Seattle Law and Justice Planning Office has embarked on a project to improve the current situation regarding commercial silent alarms in the City," states LJPO Director Lawrence G. Gunn. This is the first city in the nation to take a systems view of the false alarm problem, which many agencies currently consider to be a liability to law enforcement, and attempt to develop specific remedies to improve upon the situation.

LEAA should give serious consideration to a joint law enforcement/alarm industry review of the false alarm problem on a national level. They could then develop guideline manuals for the police, the alarm user, and the alarm industry to follow that would make alarm systems more of an asset to public safety.

SUMMARY

This comprehensive review of the U.S. false alarm problem was designed to present the varying viewpoints on the subject, some of the causes, possible solutions, and the complexity of the false alarm problem which few individuals fully appreciate or comprehend. The following points are a summary of the findings made in this review:

- The use of intrusion detection systems is not new nor is the false alarm problem which dates back to the 1800's.
- The police and the alarm industry agree that there is a false alarm problem, but often from entirely different viewpoints.
- The police viewpoint mainly concerns the waste of their manpower, resources, and the taxpayer's money; congested communications systems; potential accidents; fly-by-night alarm companies; the effects of false alarms on their officers; the increase in strained relationships; and the misuse of police services.
- The alarm industry viewpoint deals with the police's improperly defining false alarms, lack of statistical data on false alarms and the way the police currently calculates false alarm rates, slow police response times, a decrease in the number of apprehensions due to slow responses, and the belief that the police need additional manpower to overcome these problems.
- The industry blames much of the false alarm-related problems on subscriber error, fly-by-night alarm companies, and the police. However, it has been noted that the industry needs to develop more professionalism itself.
- Alarm systems are generally thought to be effective in deterring crime and also allow for the apprehension of suspects. It is not specifically known just how effective they are, however, due to the lack of any scientific research on the subject.

- There are a number of problems related to the design and installation of alarm systems, often due to the misapplication of equipment and the lack of appropriate training. Alarm components should be tested for proper operation before installation by the dealer.

- The subscriber/owner is blamed for much of the false alarm problem by both the police and the industry, but he has no one speaking in his defense. It is clear that providing the user with human engineered alarm systems and appropriate training will help reduce false alarms caused by him.

- There are any number of things that can go wrong with alarm system components after they are installed which can cause false alarms.

- Better maintenance and service of alarm systems is needed.

- The telephone companies should be more willing to admit their share in causing false alarms and attempt to overcome the causes.

- Central station operations need to update their systems and provide for means to reduce false alarms caused by their function in silent alarm systems.

- There are a number of solutions that can be implemented to reduce human error and electromechanical problems which cause false alarms.

- The physical security of a protected premise should be carefully considered during alarm system installation, checking the types of locks utilized and their possible rekeying needs, and methods that can detain an intruder long enough for the police to arrive.

- All future alarm system installations should provide a means to clearly identify technical causes of false alarms.

- Alarm equipment standards and installation procedures need to be upgraded to reduce the number of false alarms.

- The police need to develop reasonable alarm legislation on the state and local levels which includes licensing of alarm users, alarm companies and their agents, and related factors to help control and reduce false alarms. They also need to improve upon their response times, assisted by the use of technical solutions.

- The need for cooperation between the police, subscriber, and the industry, is absolutely vital for an effective response to be made to the false alarm problem.

- There is also a need for scientific research on the specific causes of false alarms, reflected by accurate data, so that appropriate solutions to these causes can be implemented.

It should be obvious that the false alarm problem is costing the police/taxpayer, the subscriber/owner, and the alarm industry money and resources that could well be utilized in better ways. It should also be clear that it is time for all three parties to stop blaming one another for the false alarm problem and start working together to reduce it. False alarms are a fact of life since they will never be entirely eliminated, but they can be reduced to such an extent that alarm systems will contribute more significantly to public safety. It is also a fact of life that all parties need to utilize the police definition of a "false alarm": A false alarm is an alarm which, upon investigation by responding officers, does not provide any evidence of an attempted or actual criminal offense.

REFERENCES

Alarm Industry Committee for Combating Crime (AICCC)
1972 "Report: Alarm Systems." Police Chief, November, pp. 52-53.

Alsop, Clark H.
1974 "San Jose Gets Proposal for Alarm Ordinance." Police Chief, September, pp. 38-41.

Appel, Stephen W.
1972 "Need Some Additional Manpower?" Police Chief, December, pp. 12 and 15-16.

Bargert, Robert J.
1975a "Editors Outlook: The Horizon Brightens." Security Distributing & Marketing, March, p. 13.

1975b "Editors Outlook: 'Bad Press' From the 'Bad Press'." Security Distributing & Marketing, October, p. 13.

1975c "Editors Outlook: Alarm Users to 'Pay' for Legislative Misguidance." Security Distributing & Marketing, September, p. 13.

1974a "Editors Outlook: More on Legislative Bungling." Security Distributing & Marketing, October, p. 13.

1974b "Editors Outlook: The Cancer Grows." Security Distributing & Marketing, November, p. 13.

1974c "Editors Outlook: Bounties for Burglars." Security Distributing & Marketing, December, p. 11.

1974d "W.B.F.A.A. Launches Effort to Upgrade Alarm Industry Image." Security Distributing & Marketing, December, pp. 18-19 and 58.

1972 "Eye on Security: Another Ordinance...Another 'Ho-Hum' Attitude." Security Distributing & Marketing, July/August, p. 3.

Chleboun, T.P. and K.M. Duvall
1972 "An Evaluation of Small Business and Residential Alarm Systems." GTE Sylvania, June. (Unpublished)

Cohen, Robert
1971 "False Alarms." Seattle Police Department, Project Number 71-56, November. (Unpublished)

deDufour, W.F.
1973 "Widespread Burglar Alarm Use - Implication for the Police Community and the Alarm Industry." The MITRE Corporation, April. (Unpublished)

Fowler, Ed A.
1975 "A Cooperative Community Approach to the Reduction of False Alarms." Security Distributing & Marketing, November pp. 22-23 and 64.

Greene, Jerry W., et al
1975 "The Development of Prevention Methodology by Burglary Offense Analysis, First Year Final Evaluation Report, San Jose (California) Police Department." Public Systems incorporated (PSi). (Unpublished)

1974 "Citywide Burglar Alarm System - Selection of Type of System and Location Analysis." LEAA Individual Technical Assistance Report, Public Administration Service (PAS), May. (Unpublished)

Hager, Philip
1975 "False Burglar Alarm Calls on the Rise." Los Angeles Times, Morning Edition, August 15, pp. 1 and 14.

Holcomb, Richard L.
1962 Protection Against Burglary. Santa Cruz, California: Davis Publishing Company.

Horton, Stanley
1974 "San Jose Police Department Burglary Methodology Grant, Fourth Quarterly Report." San Jose Police Department, October. (Unpublished)

International Association of Chiefs of Police (IACP)
1974 Model Burglar & Holdup Alarm Systems Ordinance. Gaithersburg, Maryland: International Association of Chiefs of Police, Incorporated.

Johnson, Jerry S.
1973 "Reliability - Does it Come Naturally with Digital Dialers?" Security Distributing & Marketing, February.

Kassman, Leon B.
1975 "Providing Complete Security ... A Critique." Security Distributing & Marketing, May, pp. 22-23.

Kaufman, Sy
1974 "The Functions and Operations of Business Security Systems." The Office, August, pp. 53-56.

Kellem, Carl W.
1975 "Alarm Legislation - The Objectives and the Means." Security Distributing & Marketing, May, pp. 20-21 and 50.

Mandelbaum, Albert J.
1973 Fundamentals of Protective Systems - Planning, Evaluation, Selection. Springfield, Illinois: Charles C. Thomas, Publisher.

Mandell, Mel
1973 Handbook of Business and Industrial Security and Protection. Englewood, New Jersey: Prentice-Hall, Incorporated.

Mathews, Walter
1971a "A Manufacturers' Dream; A Salesman's Nightmaire." Security Distributing & Marketing, May, pp. 19-24.

1971b " 'More Installers, Better Equipment' Are Universal Security Needs." Security Distributing & Marketing, August, pp. 18-20 and 28.

Matias, George J.
1971 "A Better Criminal 'Mousetrap'." FBI Law Enforcement Bulletin, September, pp. 11-14 and 29.

Mines, Norman H.
1974 "Burglary Prevention and Central Burglar Alarms." The MITRE Corporation, March. (Unpublished)

Murphy, Robert B. and Stanley Horton
1975 "A Management Approach to Prevention of Crimes." Police Chief, November, pp. 30, 32-33, and 34.

National Burglar and Fire Alarm Association (NBFAA)
1974 "An Assessment of False Alarms." NBFAA SIGNAL, First Quarter. (Reprint, no page numbers)

National Crime Prevention Institute (NCPI)
1972 "False Alarm Study." National Crime Prevention Institute, School of Police Administration, University of Louisville (Kentucky), LEAA Grant Number N1-72-DF-99-0009. (Unpublished)

Nowatka, Paul M.
1975 "Image Upgrading - Another Approach." Security Distributing & Marketing, February, pp. 24 and 44-45.

Reiss, Martin H.
1971 "Pitfalls in Product Application." Security Distributing & Marketing, October, p. 10.

Rickett, Stanton B.
1968 "False Alarms in Security Systems: Their Causes and Corrective Measures." Law Enforcement Science and Technology II, Volume 2, published by IIT Research Institute.

San Francisco Cronicle
1976 "Hillsborough Alarm." San Francisco Cronicle, January 28, p. 2.

Saunders, George W.
1970 "The Role of the Testing Laboratory in the Evaluation of Surveillance Detection Equipment." Law Enforcement Science and Technology III, Volume 3, published by IIT Research Institute

Security Distributing & Marketing (SDM)
1972 "The Dallas Ordinance: How Local Alarm Companies See It." Security Distributing & Marketing, July/August, pp. 19-20.

1975 "The Pasadena Ordinance Story - SDM Interviews a Deputy Police Chief." Security Distributing & Marketing, August, pp. 18-19, 121-123, and 125-138.

Security World
1970 "The Central Station: A Case in Point." Security World, October.

Smith, Frank B.
1974 "When Worlds Collide." Security Distributing & Marketing, July, pp. 20-21.

Smith, Joseph L.
1973 "False Alarms - A Major Problem to Law Enforcement." FBI Law Enforcement Bulletin, May, pp. 8-11.

Stanford Research Institute (SRI)
1969 "State of the Art in Burglary and Holdup Alarm Techniques, Devices, and Systems." Stanford Research Institute, Security Systems Research Group. (Unpublished)

Steiner, Richard V.
1972 "Advantages of Police Monitored Alarms." Police, March.

Taylor, Thomas E.
1972 "The Dallas Ordinance: How the City Sees It." Security Distributing & Marketing, March, pp. 20-22.

The National Locksmith
1972 "HUD Issues New Standards." The National Locksmith, January, pp. 27-31.

Toepfer, Edwin F.
1975 "Locks, Safes, Alarms - They Go Together." Security Distributing & Marketing, September, pp. 16-17 and 74-75.

Underwriters' Laboratories (UL)
1971 1971 Field Service Record - Certificated Burglar Alarms. Underwriters' Laboratories, Incorporated, Bulletin Number 32, Burglary Protection and Signaling Department.

U.S. Department of Justice
1975 A Model Burglar and Hold-up Alarm Business Licensing and Regulatory Statute. Law Enforcement Assistance Administration (LEAA)/National Institute of Law Enforcement and Criminal Justice (NILE & CJ), Private Security Advisory Council, Alarm Committee.

1974 Terms and Definitions for Intrusion Alarm Systems. LEAA/NILE & CJ, Law Enforcement Standards Program.

1973 Residential Security (Monograph). LEAA/NILE & CJ, Grant Number NI-71-026-C2, U.S. Government Printing Office Stock Number 2700-00235. (Arnold Sagalyn, Project Director)

1971 Installation, Test and Evaluation of a Large-Scale Burglar Alarm System for a Municipal Police Department Cedar Rapids (Interim Report). LEAA/NILE & CJ, Grant Number NI 70-009.

Walsh, Timothy J. and Richard J. Healy
1974 Protection of Assets, Volume No. 1. Santa Monica, California: The Merritt Company, distributed by Insurors Press, Incorporated.

Watts, Steven B.
1975 "Alarm Ordinance Promulgation." Security Distributing & Marketing, September, pp. 60-63.

Wilkie, Francis E.
1974 "Police Monitoring of Holdup and Burglar Alarms." Police Chief, April, pp. 65-66 and 82.

Williams, Clem N.
1971 "Have You Heard From a Customer Lately?" Security Distributing & Marketing, September, pp. 20-21.

Willick, Tim
1975 "Design for Profitability." Security Distributing & Marketing, April, pp. 78-80.

Alarm Industry Committee for Combating Crime (AICCC)

AICCC members include the Central Station Electrical Protection Association (CSEPA); American District Telegraph Company (ADT); Burns International Security Services, Incorporated; Diebold, Incorporated; Holmes Protection, Incorporated; Mosler Safe Company; National Burglar and Fire Alarm Association (NBFAA); and Wells Fargo Alarm Services. The AICCC headquarters is in Suite 900, 1776 K Street, N.W., Washington, D.C., 20006.

National Burglar and Fire Alarm Association (NBFAA)

Their magazine, SIGNAL, can be obtained from their office located at 1730 Pennsylvania Avenue, N.W., Washington, D.C., 20006.

Security Distributing & Marketing (SDM)

This magazine can be obtained from their office located at 2639 S. La Cienega Blvd., Los Angeles, California, 90034.

Standarization Division, Federal Supply Service, General Services Administration, Washington, D.C., 20406.

Obtain the following Federal Specification: Alarm Systems, Interior, Security, Components For. This specification covers groups of components which when selectively assembled and interconnected provide interior alarm systems for security application.

Underwriters Laboratories, Incorporated (UL)

- UL 609 Standard for Safety: Local Burglar Alarm Units and Systems (ANSI SE 2.1-1972).
- UL 611 Standard for Safety: Central-Station Burglar-Alarm Units and Systems (ANSI SE 2.2-1972).
- UL 634 Standard for Safety: Connectors and Switches for Use with Burglar Alarm Systems (ANSI SE 2.6-1973).
- UL 639 Standard for Safety: Intrusion-Detection Units (ANSI C 33.70-1971).
- UL 681 Standard for Safety: Installation and Classification of Mercantile and Bank Burglar-Alarm Systems (ANSI Se 2.3-1972).
- UL 1023 Standard for Safety: Household Burglar-Alarm System Units (ANSI 2.4-1972)
- UL Field Service Record - Certificated Burglar Alarms, Burglary Protection and Signaling Department (free)
- Accident, Automotive, and Burglary Protection Equipment Lists ($1.65)
- Fire Protection Equipment List ($1.35)

- Classified Products Index ($1.35)
- Supplement to Annual Product Directories ($2.00)
- Quarterly Supplement to Annual Product Directories ($1.65)
- Supplement to various equipment/materials lists ($1.35)

A copy of any of the above mentioned publications may be obtained upon request and a statement of why the document is needed (except for the equipment lists and product directories) from any of the U.L. offices and testing stations such as the one located at 1655 Scott Boulevard, Santa Clara, California, 95050, (408) 985-2400 (attention: Bob Hedden, Assistant Managing Engineer).

LEAA/NILE & CJ Law Enforcement Standards Program

- NILECJ-STD-0302.00 (May 1974): Mechanically Actuated Switches for Burglar Alarm Systems. Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402 - price is 55 cents, Stock Number is 2700-00258.
- LESP-RPT-0305.00 (October 1974): Terms and Definitions for Intrusion Alarm Systems. Same address as above. Price is 65 cents, Stock Number is 027-000-00290-1.

WARNING

The information to be collected during this study will be highly sensitive in nature and must be closely protected for the following reasons:

- Data will be collected on commercial alarm systems which may compromise their security unless the information is carefully controlled. The information collected will involve specific data on the alarm systems and operating practices of many businesses and thus, would allow an individual with criminal intent to bypass these systems if such information were to fall into his hands.

- Information collected from alarm companies will be proprietary in nature and must not be revealed to their competitors nor individuals with criminal intentions.

Therefore, all data collected must be securely locked up and made available only to those individuals directly involved in the RFAP study and only on a "need to know" basis.

WARNING

SECTION III

WORK STATEMENT AND METHODOLOGY

The goal of the Reduction of False Alarms Project (RFAP) is to cause a long-term reduction in the number and rate of false alarms in Seattle, and to increase the public safety utility of privately-owned commercial alarms. The objectives of the RFAP study are:

1. To decrease the commercial false alarm rate in Seattle.
2. To decrease the police response time to commercial alarms.
3. To increase the apprehension rate in response to commercial alarms.

The tasks and activities necessary to achieve these objectives, and ultimately the goal of the RFAP study, are presented in this section of the work plan as a guideline to carrying out the project. It should be understood that a project such as this false alarm study must be quite flexible. Therefore, the efforts that are to be undertaken may vary, be added to, or eliminated depending upon possible events that may occur during the course of the project. It will be helpful to utilize Section II of this work plan as a reference in order to keep a proper perspective of the overall false alarm problem while trying to define Seattle's specific problems.

The tasks and activities to be implemented for this study are divided into six phases:

- PHASE I - PROJECT ORIENTATION
- PHASE II - DATA COLLECTION
- PHASE III - DATA ANALYSIS AND PROBLEM DEFINITION
- PHASE IV - SOLUTION GENERATION
- PHASE V - SOLUTION IMPLEMENTATION
- PHASE VI - EVALUATION AND REPORTS

The means to carry out these functions of the project are based on cooperation from City departments, alarm users, and the alarm industry. The RFAP study will be more successful with cooperation than without, although total cooperation from all of the parties involved cannot be expected. Therefore, some alternatives are presented that will not require cooperation in certain situations.

The goal of the Reduction of False Alarms Project deals with an overall reduction in the false alarm rate, not the total number of false alarms. The total number of all alarms has been reduced by 3,611 between the years 1971 and 1975 (11 months of data for 1975). The total number of false alarms has been reduced by 3,601 during the same period, which the City attributes to the False Alarm Ordinance which was passed in October of 1972. It should be noted that even though the total number of all alarms and the total number of false alarms have both been reduced by an almost equal amount, the false alarm rate has not changed significantly (97% in 1971 and 96% in 1975). Furthermore, both categories in 1975 are higher than they were in 1974. In any case, one can expect an overall reduction in total alarms and false alarms, but the false alarm rate should be more significantly reduced than the reduction in total alarms.

It should be kept in mind that one should not expect a significant reduction in the false alarm rate during the time period of this project. That is almost asking for a miracle considering the fact that it took Pasadena 20 months to reduce their false alarm rate by 63%, Monterey (California) only reduced their rate to

47.5% in four years' time, and Fort Collins (Colorado) reduced their false alarm rate by 53% which took two years to accomplish. The emphasis must, instead, be placed on developing a long-term plan that will be followed by the City, the alarm user, and the alarm industry upon completion of the project. The one-year RFAP study should be able to identify the elements necessary to assure a continuous reduction in the false alarm rate over the next few years that may eventually represent a 75% total reduction.

The objectives of the project specifically refer to commercial silent alarms because they make up 74% of all current false alarms. In addition, financial institutions represent 13% of the total number of false alarms, and both together equals 87% of the false alarm problem. Furthermore, the Seattle Police Department Security Unit officers indicate that local alarms presents a large problem in addition to the silent alarm problem. Thus, a look must be taken at both commercial local and silent alarm systems which includes intrusion and robbery functions, but with emphasis on the silent alarm systems.

PHASE I - PROJECT ORIENTATION

The project orientation represents the RFAP study initialization which is directed at:

- The first meeting of the Project Manager with LJPO staff members, including the LJPO Director Larry Gunn, RFAP Project Director Bill Brown, RFAP Project Coordinator James Mullen, and officers of the Police Department's Security Unit,and Communications Division Special Operations Bureau.
- Developing a close working relationship between the RFAP Project Manager, LJPO staff, and Security Unit officers.

- Defining the policies, procedures, and methods under which the project will be conducted.
- Identify specific individuals in various public and private agencies who may become involved in some aspect of the RFAP study.

The RFAP Project Manager's first meeting with the members of the Seattle Law and Justice Planning Office Staff and SPD Security Unit officers, is important to the study's initialization and will significantly reduce start-up time, and enhance the chances for project success. It permits the Project Manager to get acquainted and to form the beginning of the close working relationship with the LJPO staff and Security Unit officers, which is vital to the RFAP project direction, communication of results, and successful on-time completion of tasks.

Such a meeting will also permit agreement, definition, and specific directions for the Project Manager to follow regarding:

- Progress Reporting
- Briefing
- Workshops
- Contacts
- Existing Data
- Constraints
- Liaison

Thorough pre-planning will insure understanding of project goals, objectives, and tasks to be carried out. After this first meeting, the next step is to make a presentation to City officials who will be associated with the RFAP study in some capacity or another.

Task 1. Meeting With LJPO Staff and SPD Officers

This vital project orientation meeting must be preceded by assuring that all attendees have a copy of the RFAP work plan and have had time to study it before the meeting. The LJPO staff and Security Unit officers can discuss the work plan and perhaps modify portions of it as necessary. They can assist the RFAP Project Manager by indicating all available sources of data and information that are relative to the study, as well as specific individuals in the City government, business executives, and members of the alarm industry who will be of assistance to the project.

Task 2. Presentation of RFAP Study to City Officials and News Media

Once the LJPO staff and Security Unit officers have agreed on the direction of the study, it should then be presented to City executives in a meeting. This should include City Council members, and executives from the Police Department, Fire Department, Department of Licenses and Consumer Affairs, Corporation Counsel, and Building Department. The purpose of this presentation is to familiarize the City executives with the project so they may: (1) be able to discuss it, (2) understand the goal and objectives, and the methodology of achieving them, (3) to be able to assist in its implementation, and (4) be able to answer questions from the community regarding it.

In addition, executives from adjoining cities and the county should be invited to the presentation. They may provide relevant in-put to the RFAP study and be able to utilize its findings. News media representatives from the radio, television, and newspapers

should also be invited because they will be playing an important role in the solution implementation phase. By involving them in the beginning of the project, they will be able to clearly understand the purpose of the RFAP study and what it is attempting to accomplish.

The presentation should include the reason for the project, a review of the false alarm problem in general, and the methodology in which it is to be carried out. This should be accomplished in one hour, utilizing slides with comments made by the RFAP Project Manager. Directly involved in this activity will be the LJPO Director who will present the project staff involved, the Project Director who will cover the City's reasons for initiating the study, and the RFAP Project Manager who will conduct the balance of the presentation. At the end of the presentation, a question and answer session will held and a copy of Section II of the RFAP Work Plan will be given to each participant so that they may clearly understand the complexity and extent of the false alarm problem. The project orientation presentation is critical to the success of the RFAP study and must be well planned. It should be accomplished within the first month of project start-up.

Task 3. Introduce RFAP Study to Business Community and Alarm Industry

The primary purpose of this activity is to briefly explain the project's purpose, operation, and the goal and objectives. This effort is necessary to let the business community (including the telephone company) and the industry know that the City is vitally interested in reducing the false alarm rate. By doing this,

businessmen will find their alarm systems to be of more value due to a faster response from the Police Department, which may result in a higher apprehension rate as well. The industry will benefit in terms of a better market for their alarm systems and improvement of their currently tarnished image. This effort is aimed at seeking their cooperation and assistance in reducing the false alarm rate.

This task can be accomplished by the use of utility billing records in which a two-page letter would be sent to each commercial establishment within the City. A similar letter should be sent directly to each alarm company which conducts business in the City. It may be reasonable to send each alarm company a copy of Section II of this Work Plan so that they will have an up-to-date review of the entire false alarm problem.

A second method that should be utilized to back up the first procedure, is to prepare lectures (similar to the City officials presentation) to be given to civic groups (Rotary, Kiwanis, etc.), briefing them on the RFAP study and asking that they disseminate the information among their colleagues who have alarm systems. Each alarm company and alarm components supplier should be contacted individually to explain the project to them and seek their advice and cooperation which will be vital to the data collection phase of the study. They should also be asked if they would be interested in serving on an advisory committee that is to be formed later in the project time period. A brief review of the project should be

passed out to all participants contacted. This task should be accomplished within the first two months of the project start up.

Alternative Orientation Procedures

It is believed that these three tasks are necessary to enhance the RFAP study and assist in achieving the purposes of the project. The generalized announcement approach will prepare them for individual contact in person and improve the probability of cooperation. Information on this project will undoubtedly leak out and may appear to be threatening in some manner to various individuals who may be involved in this study. It may be threatening to some in any case, due to their methods of operation; and, these people may be the ones creating the largest false alarm problem in the City. However, an alternative to Tasks 2 and 3 would be to identify the major false alarm offenders and their alarm companies through the Security Unit's records and contact them individually rather than utilizing a more generalized announcement of the project before contacting them.

PHASE II - DATA COLLECTION

Before the police, industry and subscribers can effectively respond to the false alarm problem in the City of Seattle, they must be cognizant of the factors or contributors which are present that precipitates that problem. Isolation of those causative or contributory factors will provide significantly valid data, which is necessary to support design and direction of solutions that may be effectively implemented to reduce the number of false alarms.

The need to collect and analyze appropriate date is necessary for several reasons:

- Data is necessary to establish accurate "baseline" data to serve as a reference point against which the results of change can be measured. Without the baseline data, it is impossible to demonstrate whether or not false alarms were reduced in the City of Seattle.
- Data is necessary to support the design and implementation of various solutions to the false alarm problem.
- Data is necessary to clearly establish the extent and causes of false alarms in Seattle.
- Data is necessary to specify police response time, costs, and apprehensions.

Relevant data and information will be collected from a number of sources. Such sources will include:

(1) Seattle Police Department data on false burglary and hold-up alarms from the Communications Division's Special Operations Bureau and the Investigation Bureau's Security Unit. Data on numbers of alarms, response time and number of apprehensions will be collected.

(2) The top 50 commercial false alarm offenders as identified by the Security Unit's records, will have an indepth survey made of their alarm systems and operational procedures in an attempt to identify specific causes of false alarms.

(3) The alarm industry which includes any company or person engaged in the sale, installation, maintenance, alteration, repair, replacement, servicing of alarm systems, or who monitors and responds to alarms within the City limits.

Data on number, type, and location of alarm systems will be sought, as well as maintenance information relevant to false alarms. Documentation of legitimate alarms experienced will also be made and compared to SPD data in an attempt to develop a more accurate data base.

(4) Telephone company data and information will be collected to determine their requirements for alarm systems and alarm transmission systems. Available data possessed by the company on false alarms should be documented and obtained where possible.

(5) Major insurance companies and brokers, architects, general contractors, and realtors must be contacted since they have considerable influence on the number and type of alarm systems installed. Information to be collected includes requirement for alarm systems, the number and type installed, and the location of such systems with which they have dealt.

(6) Financial institution data and information will be collected from the FBI, Regional Administrator of National Banks (relative to 12 CFR 21 data requirements) and financial institution officials. This data includes crime statistics, number and type of equipment installed, and maintenance records.

Task 1. Collect Data From Seattle Police Department

This task provides for the collection of statistical data from the Communications Division's Special Operations Bureau which is

necessary to establish accurate baseline data on the false alarm problem, and to identify the number and location of alarm installations in the City, SPD's computerized dispatch system's SELECT data tapes can provide a number of variables on the false alarm problem. The SELECT computer tapes provide an available data base including the period of January, 1975, to present, in consecutive 28-day intervals. During each of these periods, the taped data cover a minimum of 66% of all SPD dispatched calls.

Verify SELECT Computer Data

It will be necessary to: (1) identify exactly what type of information is available on the tapes relative to number of alarms, response times, and apprehension data, and (2) to verify the accuracy of this data since it appears to be contaminated.

The first step is finding whether or not the tapes contain the following types of variables necessary to the RFAP study:

Alarm Data

- Type alarm (burglar, holdup, unknown)
- Type system (audible, silent, unknown)
- Type application (bank, commercial, residential)
- Source of alarm (central station, answering service, dialer, victim, witness)
- Location of alarm (name of company or resident, address, SPD census tract number)

Response Data

- Time call received
- Dispatch precedence code
- Time primary unit dispatched
- Time unit arrived
- Time call cleared
- Number of backup units involved
- Time expended by backup units (collect same information as on primary unit)

Dispatch Results Data

- Designations utilized as necessary (052C, 211F, 211K, etc.)

This type of data must be collected on each alarm and also by month, day, and time so the extent of the false alarm problem can be accurately assessed in the City of Seattle.

The second step is necessary to determine the degree of error the SELECT computer tapes may contain. This can be done by manually comparing four weeks of computer printout data from the SELECT tapes to the actual MIR dispatch cards for those weeks. The major area of concern here is the separation of the existing data into legitimate alarms and false alarms which allows for establishing the false alarm rate. SPD Security Unit officers believe that the actual number of legitimate alarms is closer to 100 per month than the 1975 average of 21 per month. This type of discrepancy can not only throw off the "known" false alarms rate, but also adds verification to the alarm industry's claim that the police keep inaccurate data on false alarms. If the error between the recorded number of legitimate alarms (based on case number assigned - physical arrest made; case number assigned - report made, no arrest; and other related codes) is too great, then it may only be necessary to recode the number of legitimate alarms for the year 1975 so the data base will be reasonably accurate.

Implementation

A computer program will have to be written to obtain the necessary 1975 data from the SELECT tapes. Arrangements should be made to change the computer coding procedures so that the data needed,

as previously described, can be obtained in the future. Arrangements should also be made to have a computer printout run every two weeks during the course of the project to aid in evaluation and identification of major falsing problems.

Additional Information Needs

In addition to the SELECT computer data, information must also be manually collected from the Security Unit's records so as to identify the top 50 commercial false alarm offenders. To accurately determine these offenders, data will be collected from 940 Alarm Compliance Reports (ACR) that the Security Unit keeps. The purpose for collecting this data, other than identifying major offenders, is to help establish an index of alarm companies, alarm equipment, and other data. The data off of each ACR form should be computer coded, keypunched, and run on a SPSS or similar computer program. The section of the ACR dealing with causes of alarms can be separated into various categories so as to expedite the coding procedure. This data could possibly be correlated with SELECT computer data to assist in establishing an accurate data base.

Other Police Department data will be collected through interviews with the Communications Division Director on dispatch policies and coding procedures, Patrol Bureau Assistant Chief of Police on response policies, and the Project Director of the 1975 LJPO-funded Manpower Allocation Project. An in-depth review of the Security Unit's function relative to the administration of the false alarm and alarm company/agents licensing ordinances will also be made. It

may be feasible to utilize the SELECT computer tapes to overcome the amount of record keeping the Security Unit now deals with by allowing for the automatic identification of false alarm offenders.

Task 2. Collect Data From Major False Alarm Offenders

Once the offenders are identified, a review of burglary and robbery offenses in their census tract should be made to establish the relationship of alarms to crime statistics. A survey form must be designed in such a way that it can be keypunched from, without needing to code and then keypunch. The data can then be run on a computer program to simplify analysis of the data. The survey form must include provision for collecting such data as:

- Possible causes of the false alarms as determined by the businessman
- Type of alarm system (perimeter, volumetric, both)
- Type of sensors
- Type of master control unit and its capabilities
- Type of alarm transmission system
- Name of alarm company
- Provisions of maintenance contract
- Alarm operating procedures
- Insurance company

Appointments will need to be made to insure that the manager and employees who are responsible for operating the alarm system are available for interview. Identifying specific technical causes of their false alarms may be difficult without test equipment. But, there are so many different kinds of sophisticated alarm components and alarm systems, that it would not be worth the cost of buying all of the test equipment that would be necessary to identify faulty equipment. Furthermore, having knowledge of what can cause false alarms, as pointed out in Section II, will allow the surveyor to view

the design, installation, and the alarm system in light of those possibilities.

Task 3. Collect Data From Alarm Industry

This task allows for the collection of data on number, type, and location of alarm systems influenced by the industry. The alarm companies that conduct business in the City of Seattle can be identified through the Department of Licenses and Consumer Affairs as they are required to have alarm business permits, as defined by Ordinance 101523, also known as the License Code (Ordinance 48022), which was adopted in October, 1972.

Implementation

After the alarm companies have been identified, an appointment should be made with executives of each company that are responsible for design, installation, maintenance, and service calls of the alarms systems they control. Information on each of their systems should be collected where possible after identifying the nature of the data available. The false alarm problem should be discussed based on a prepared series of questions, to get their viewpoints of it relative to Seattle. Courses of action that could possibly reduce the false alarm rate should be reviewed as well as the methods they utilize to determine false alarms and legitimate alarms. In those cases where the alarm company maintains any of the commercial alarm systems in the top 50 offender category, the problems with those installations may be discussed intelligently and additional data relative to those specific cases could be collected.

Cooperation should be emphasized and interest in participation on an advisory committee noted.

Task 4. Collect Data From the Telephone Company

The activities to be carried out in this task involve the collection of data and information on the telephone company's specifications for different types of alarm transmission systems, how these systems are protected and maintained, and causes of false alarms in their viewpoint.

Implementation

An appointment should be made with the telephone company official, or officials, who are responsible for handling leased telephone line contracts, and maintenance of those lines. If possible, a list of the frequency of maintenance on leased telephone lines should be obtained which indicates the cause for the maintenance. Discuss the false alarm problem with the officials and seek their cooperation in reducing it.

Task 5. Collect Data From Related Businesses that Influence Alarm System Installations

This task allows for the collection of information on how insurance companies and brokers, architects, general contractors, and realtors influence the number and type of alarm system installations.

Implementation

Officials of major firms, representative of the parties listed above, should be contacted to determine under what circumstances they recommend or require an alarm system to be installed, the type of

system, and the alarm companies they deal with. Discussion of the false alarm problem should be held and cooperation sought in reducing it.

Task 6. Collect Data From Financial Institutions

This task is included due to the excessive number of false alarms related to bank alarms which usually results in a larger response of police units than other alarm systems receive. The total number of false bank alarms exceeds that of false residential alarms and represents 13% of the total number of false alarms. The number of false bank alarms decreased from a 1972 total of 849 to a total of 604 false alarms in 1973 (71% reduction), but are now gradually increasing in number to 618 (11 months' data) in 1975 and may reach a total of 698 (based on an average of 5 years' data).

The data presented on the next page is taken from the Seattle Police Department Communications Division's Special Operations Bureau's records. It reflects the following findings:

Assuming walk-in business hours of the bank to be the usual 10:00 A.M. to 3:00 P.M., there were 10 false alarms outside of business hours in December, 1974, and 9 in November, 1975, for a total of 19 false alarms that were caused by bank employees or janitors. There were five false alarms that occurred on weekend days, as well. It appears that each branch almost takes turns initiating false alarms, too. This problem should be reviewed and an attempt made to reduce the number of false bank alarms.

SEATTLE FIRST NATIONAL BANK

DECEMBER, 1974 (N=12)

Day	Date	Time	Branch
MON	02	0855	#1*
MON	02	1131	#2
TUE	03	0815	#3*
TUE	03	1914	#3*
WED	04	1641	#4*
THR	05	1532	#5*
THR	12	1743	#6*
MON	16	0009	#7*
WED	18	1142	#8
FRI	20	2124	#9*
SAT	21	0827	#9*+
TUE	31	2217	#10*

NOVEMBER, 1975 (N=13)

Day	Date	Time	Branch
SUN	02	1130	# 7 +
SUN	02	2337	# 7*+
SUN	09	1715	#11*+
THR	13	1244	#12
MON	17	0842	#13*
WED	19	2039	# 5*
THR	20	0359	#14*
THR	20	1407	#15*
THR	20	2040	#16*
FRI	21	1600	#13*
SUN	23	1104	#12 +
MON	24	1050	#10
FRI	28	1956	#17*

* False alarms outside business hours.
\+ False alarms on a weekend day.

New bank branchs continue to open and new equipment, such as portable teller's cages, are causing frequent false alarms in other cities. This may also be a problem in the City of Seattle. Alarm systems in banks are usually split between vault protection and holdup alarm systems, but some banks also have perimeter alarm systems connected with the vault and holdup alarm system which makes it more difficult to identify technical causes of false alarms.

The lack of standardization of sensors, control logic, annunciators, alarm transmission system, installation, operation, and maintenance can also contribute to bank false alarms. Bank security operations and policies, and training are also relevant here.

Implementation

The bank branchs with the highest number of false alarms should be identified and contact made with their managers iva the main or

regional office. Statistical data may be acquired from the local FBI office and the Regional Administrator of National Banks. Banks are required to keep specific data relating to their security, which includes alarm systems, as called for by Part 21 of the Code of Federal Regulations (12 CFR 21) which was published in 1969 in support of the Bank Protection Act of 1968 (82 Stat. 295), Public Law 90-389.

A review of their operating procedures, training provided, and type of equipment should be made in an attempt to identify potential causes of false alarms. Working with bank executives on improvement of their problem will foster cooperation and appreciation of the City's efforts in reducing the false alarm rate.

PHASE III - DATA ANALYSIS AND PROBLEM DEFINITION

This phase of the Reduction of False Alarms Project deals with methods of analyzing the data collected in Phase II and the identification of specific problems. Much of the data collected will be computer processed to reduce the amount of analysis time that would otherwise have to be done manually. It is recommended that a SPSS(H) computer program be utilized where possible for descriptive statistics. It will have to be determined during the course of the RFAP study as to exactly what type of statistical analysis will be required, such as time-series or trend analyses using either multiple correlational or analysis-of-variance techniques, etc., which will be determined by the type of data collected.

However, parameters dealing with the type of output can be defined as follows:

1. Alarm data (input from Tasks 1 and 3)
2. Response data (input from Task 1 only)
3. Apprehension data (input from Task 1 only)
4. Index of alarm subscribers/owners (input from all tasks)
5. Index of alarm companies (input from Tasks 2-6)
6. Index of alarm components and systems in operation (input from Tasks 2, 3, and 6)
7. Index of top 50 false alarm offenders (input from Task 2 only)

The specific reasons for these parameters are as follows:

- Alarm data will provide an overall view of the false alarm problem by location in the City. This will allow an overlay to be made on a map of Seattle which will allow for identifying alarm patterns, both legitimate and false. The results may allow for the selection of a target area to test solutions generated. This probably will not include all of the top 50 false alarm offenders, but it will provide a means of testing solutions to the problem which can then be implemented City-wide.

- Response data may be correlated with time of day, which can involve traffic congestion, number of calls for service, etc., to determine the effectiveness of manpower allocations, and SPD policies and procedures. A target area identified as having a high percentage of legitimate alarms could be utilized in shifting more patrol units to that area to reduce response time and/or assigning a high priority call to each alarm.

- Apprehension data should be closely analyzed relative to the target area selected for quicker response time. This would test for a higher apprehension rate based on more timely responses to commercial alarms.

- The index of alarm subscribers/owners would allow for their identification should an amendment to the False Alarm Ordinance be decided upon which would require alarm system user permits, thus allowing for better control of the false alarm problem.

- The index of alarm companies could be correlated with the top 50 false alarm offenders as well as the firms related to the target areas selected with the highest false alarm rate and the lowest false alarm rate. In-depth discussions should then be held with these alarm companies in an attempt to determine the causes of the high and low false alarm rates.

- The index of alarm components and systems in operation could be correlated with commercial establishments having a high false alarm rate which may indicate less than desirable equipment. It would be extremely difficult to firmly establish that the alarm systems equipment in these situations are causing all of the false alarm problems due to so many variables. This index would also be a list of alarm systems currently marketed and in use in the City.

- The index of the top 50 false alarm offenders merely provides a listing of firms or individuals which must be dealt with in an attempt to reduce their false alarm rate.

Implementation

Based on the data collected, a number of false alarm rates could then be established. The most important one, of course, is the false alarm rate for all alarms. Other false alarm rates, such as number of false alarms per installation could be calculated, but many variables must be considered in determining such rates. Each of the parameters will reveal identifiable problem areas and trends which must have a variety of solutions developed and tested to see if they can reduce the false alarm rate.

PHASE IV - SOLUTION GENERATION

After assembling and analyzing the information and data identified in the previous phase of this work plan, solutions to the false alarm problem will be generated. There will be a need to consider a mixture of issues containing technical and procedural

considerations, operational and regulatory matters and overall City policy considerations that address the question of alarm proliferation.

Task 1. Describe the Alarm System/Response Interaction Network

Based on the Data Analysis and Problem Definition Phase of this work plan, it is necessary to delineate the relationship of the parties involved in the false alarm problem. These parties include the police, the subscribers/owners, the alarm industry, the Corporation Counsel, the City Council, and others. Each of these parties has a role in the alarm system/response interaction network.

Task 2. Flowchart Interaction Network

A flowchart will be developed which ties together the various factors that denote the motivations and interactions of the parties involved. This will allow for identifying those areas in which solutions would be most effective in reducing the false alarm rate in the City. As solutions are developed, they can be "plugged" into this network in a modular fashion, either singularly or in combination. Those solutions that do not show prospects of being successful could be removed and replaced with other modular solutions.

Task 3. Develop Solutions

Specific solutions to the false alarm problem will depend on the type of data collected and the results of the analysis of this data. It is at this time that an attempt will be made to develop effective solutions to the problems identified.

PHASE V - SOLUTION IMPLEMENTATION

The solutions developed by the previous phase can most likely be implemented in several different ways. The following examples are solution implementation strategies that may result from the RFAP study findings and how they could be implemented.

1. The data collected from the Communications Division's Special Operations Bureau indicates two major findings: (1) that there appears to be a grouped pattern of excessive false commercial alarms occurring in a certain census tract or portion thereof, and a significantly small number of false alarms in another census tract, and (2) a majority of these alarms occurs at normal business opening and closing times. To implement any solutions to these problems, it will be necessary to know the total number of alarms installations, type and application of the systems involved, as well as the type of businesses and their past crime histories. This can be established by referring to the cross indices which can be computer manipulated to determine this information, data from the SPD Investigations Bureau, and Bureau of the Census data references.

   The excessive false alarm and low false alarm areas could then be designated as target areas to test solutions instead of attempting to tackle the whole City of Seattle. In the high false alarm target area, depending upon the number of businesses involved, you then select 10% of the firms with the most false alarms in the target area. Each

business should then be contacted by both the RFAP Project Manager and the alarm company who services that business's alarm system and, working together as a team, determine the specific causes of the false alarms and work out a solution to resolve the problem. In this target area, the police may also test the effectiveness of a response policy similar to the Salt Lake City policy described on Page 16 in Section II of this work plan.

In the low false alarm target area, a one-month test program could be worked out with the police department to see if the police patrol unit average response time can be reduced to less than five minutes, and an increase in the number of apprehensions made. This will require the addition of more patrol units to be assigned to the target area and/or a higher priority response code assignment. To enhance the apprehension probability, a simplified floor plan of each business, parking areas, and escape routes could be given to each patrol officer in the target area in a 5" x 8" notebook. Color slides of each business, day and night, inside and outside views, might also be useful when shown to the officers at briefing time. This would allow the officers working together to cover the escape routes and be aware of the layout of the building interior which would give them an advantage over the possible intruder.

In testing out methods and solutions in these two target areas, the most successful solutions could then be implemented City-wide. This example will necessitate a good deal of cooperation and coordination of the parties involved, but it may prove to be very effective and result in a better working relationship between the police, subscribers and the industry.

2. Ask the security industry in Seattle to put on a special three day seminar/display for the business community. This will allow the businessman the opportunity to learn the basics of alarm systems and physical security equipment, and a chance to see the various types of systems and hardware available. A pamphlet should be given to each attendee that would have information in it similar to that described in Section II of this work plan on Pages 39-40. A seminar/display of this type will not only assist the alarm industry market in Seattle, but it will also make a more informed buyer who will be able to intelligently purchase or lease security equipment and, hopefully, avoid buying inadequate equipment.

3. It may be beneficial to provide training to police officers on the basics of alarm systems and how they can be identified. Thus, when responding to an alarm, they may be able to better identify possible causes of the alarm by knowing how the system works. For instance, if they arrive on the

scene and are aware that frayed wiring can cause false alarms due to age and wear, they can take a quick look around after gaining entry to the protected premise and be able to determine the cause more accurately than they do now. A handout that very briefly describes alarm systems and possible causes of false alarms could be given to each officer.

4. The police Department could provide crime statistics on a monthly basis to the alarm industry limited to burglary and robbery data by census tract only. Included in this data should be information on points of entry and types of property taken. This would, perhaps, foster a better working relationship between the police and the industry that could result in a reduction of the false alarm rate due to better designed and installed alarm systems.

5. Consideration should be given to forming a committee similar to the Portland (Oregon) Alarm Industry Information Sharing Group. They work out problems regarding police response to alarm systems, alarm ordinance coordination, and the sharing of statistics that help not only the alarm industry but also the police department in better serving the community. The AIISG also provides a kind of self-policing out of that element that is causing a bad name for the industry and causing an excessive drain on police manpower responding to their poorly installed, inadequate, and unserviced alarm systems.

Another approach taken by the Fort Collins (Colorado) Area Alarm Committee is similar to the Portland group. The FCAAC's function is to make recommendations to the City and to each other for the improvement of all alarm systems. Problems which had previously resulted in frustration and hostility between the police, the alarm industry, and others were discussed and working relationships among all concerned improved rapidly. The discussions also included problems related to the installation and maintenance of various types of equipment, and the quality of various components which resulted in certain brands of alarm equipment not being used because they created so many false alarms. The Alarm Committee also drafted a comprehensive ordinance relating to the licensing of alarm users, alarm companies and their agents, installers, answering services, and service contracts for systems.

6. Should it be necessary to amend the current False Alarm Ordinance (which really does need amending), there are several methods that can be taken to do so effectively. After all of the data has been collected and analyzed, it should be included in a presentation to be given to the City Council. The presentation should include a review of similar ordinances in other cities and the results they have had in reducing the false alarm rate, the findings of the RFAP study, and a list of amendments that should be made to the

current ordinance, including an alternative to each suggestion. The suggested amendments should be in line with those cities whose ordinances have been effective, such as Pasadena, in reducing the false alarm rate.

These are only examples of various solutions and how they may implemented. The RFAP study findings will undoubtedly uncover many more that can be effective in reduction of the false alarm problem in Seattle. Those solutions implemented, tested, and found to be effective must be incorporated into a long-range planning document that must also be carried out by the City over the coming years to constantly allow for the control of false alarms.

PHASE VI - EVALUATION AND REPORTS

The Seattle LJPO research and evaluation staff will conduct an evaluation of the Reduction of False Alarms Project to determine its achievements on three different levels -- monitoring, assessment, and impact. The evaluation design will be completed immediately after it is determined (by the results of Phase I, Task I) how the RFAP study will be carried out. Modifications to the evaluation design may be necessary if the project activities alter significantly.

RFAP Evaluation

The three levels of evaluation can be described as follows:

- Monitoring Evaluation. This is the process of reviewing project tasks and activities to determine whether or not they are being completed on time and in the manner mutually agreed upon during the initial orientation meeting with the

LJPO RFAP team and SPD Security Unit officers. The result of this monitoring evaluation process will be documented in monthly progress reports which are designed to communicate project progress, plans, and problems.

- Assessment Evaluation. This involves determining whether or not the completed tasks and activities actually meet the requirements of the project's objectives. Assessment evaluation will consist of evaluating how effective the tasks and activities have been toward achieving the stated objectives. The assessment observations will be contained in a quarterly progress report.
- Impact Evaluation. This is considered to be the highest form of evaluation. Impact evaluation involves the:

  1. Use of valid test instruments.
  2. Review and use of relevant prior research.
  3. Application of conventionally accepted statistical tests to determine the significance of the RFAP study results.
  4. Criteria for measuring project impact which will make it possible to determine the success of the project.

  The impact evaluation will determine to what degree the goal of the RFAP study was achieved and will be contained in the final report of the project.

RFAP Reports Required

The Reduction of False Alarms Project will have three types of reports prepared to document its activities as follows:

- Monthly Progress Reports. These reports will be prepared monthly by the RFAP Project Manager and contain information

on the past month's activities by task, and plans for the next month. The Monthly Progress Report will appear (by task) similar in outline to the following:

-- Progress Abstract
-- Planned Activity Abstract
-- Problems
-- Action Items

The period covered by each Monthly Progress Report will end on the last day of each month and will be submitted to the RFAP Project Director two weeks later. A copy of each report will be forwarded to the LJPO Director and RFAP Project Coordinator.

- Quarterly Progress Reports. These reports will contain a summary of the Monthly Progress Reports and a determination of how effective the tasks and activities are meeting the objectives of the project. The Quarterly Progress Reports will be developed by the RFAP Project Coordinator and the RFAP Project Director, and will appear (by phase) similar in outline to the following:

  -- Phase Abstract
  -- Objective Abstract
  -- Methodology Abstract
  -- Alternative Strategies (if necessary)
  -- Assessment

  There will be two Quarterly Progress Reports prepared and submitted to the LJPO Director and a copy to the RFAP Project Manager.

- Final Report. This report will consist of a summary of those components listed under each phase of this Work Plan

and will contain a copy of each Monthly and Quarterly Progress Reports. It will be prepared by all three RFAP staff members and LJPO research and evaluation staff. The Final Report will contain a long-range plan for reducing the false alarm rate over the next few years in Seattle, and an outline for continued control of the false alarm problem. The Final Report will appear (by phase and by task) similar to the following outline:

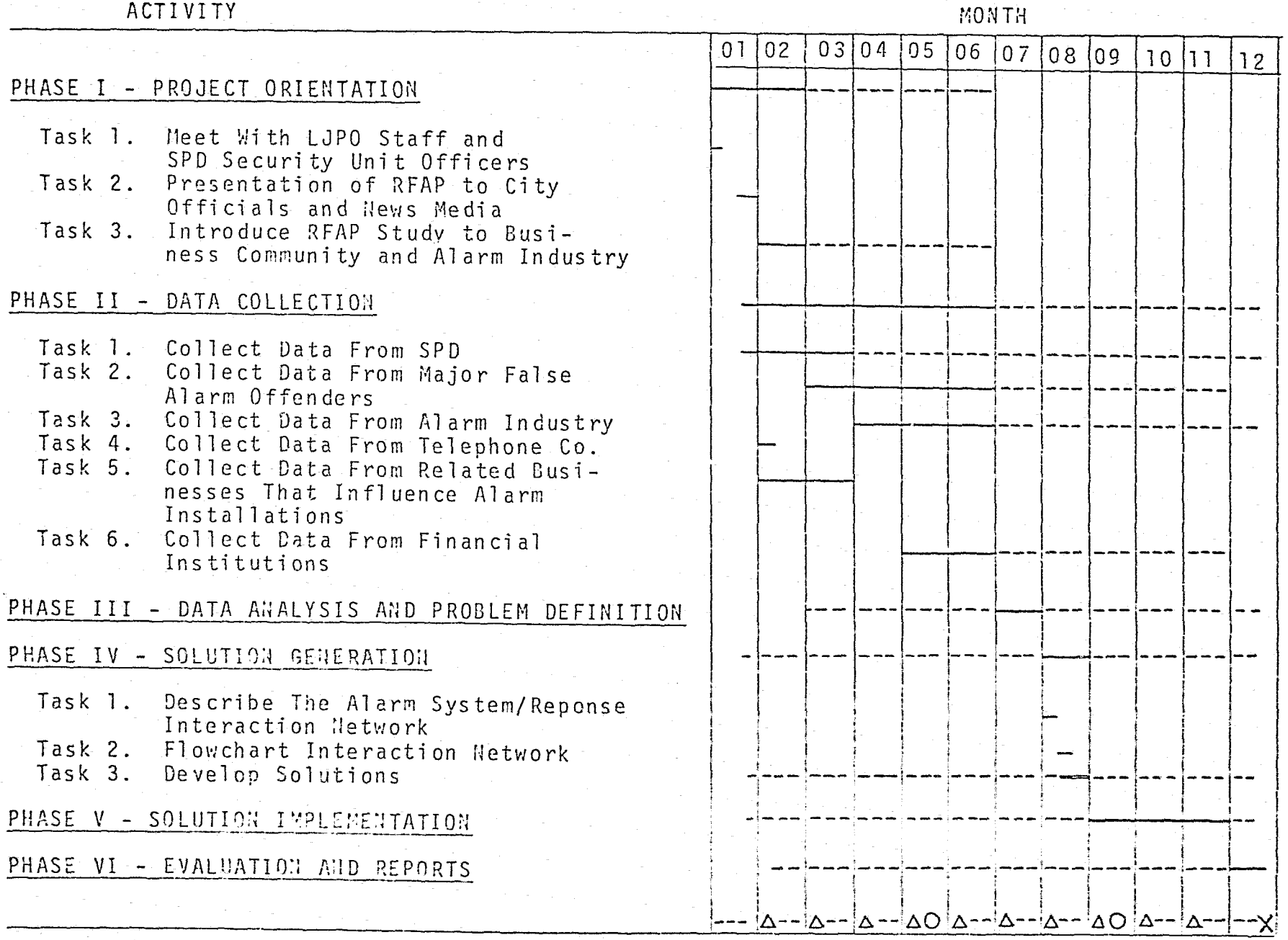
-- Executive Summary
-- Introduction (project description)
-- Phase I
  Task 1
  Task 2
  Task 3
-- Phase II (etc.)
-- Recommendations
-- Long-range Plan

The Final Report will contain any necessary recommendations and will be submitted to the LJPO Director during the last week of the RFAP study.

RFAP TIME FRAME

The time frame for each phase and each task is presented on the next page. The time frames have been estimated and may vary depending upon the activities carried out during the course of the project. It should be obvious that the RFAP Project Manager will be quite busy in attempting to carry out the tasks and activities delineated in this Work Plan. It can be accomplished, however, and it is expected that the Reduction of False Alarms Project will be successful.

RFAP TIME FRAMES FOP PHASES AND TASKS



APPENDIX B

REDUCTION OF FALSE ALARMS PROJECT

GRANT APPLICATION

GRANT APPLICATION

LAW AND JUSTICE PLANNING OFFICE

STATE OF WASHINGTON
OFFICE OF COMMUNITY DEVELOPMENT
INSURANCE BUILDING
OLYMPIA, WA 98504
(206) 753-2235

APPLICATION IS HEREBY MADE FOR A GRANT AWARD IN THE AMOUNT AND FOR THE PURPOSES SET FORTH IN THIS APPLICATION.

(FOR LJPO USE ONLY -- DO NOT FILL IN)

APPLICATION NUMBER _____

PROGRAM AREA _____

LJPO COORDINATOR _____

1. PROJECT TITLE

REDUCTION OF FALSE ALARMS

2. APPLICANT

CITY OF SEATTLE

3. PROJECT COORDINATOR FOR APPLICANT

DENNIS J. LOEB
GRANT ADMINISTRATOR
SEATTLE LAW & JUSTICE PLANNING OFFICE
600 ARCTIC BUILDING
SEATTLE, WASHINGTON 98104
(206) 583-6592

4. IMPLEMENTING AGENCY

SEATTLE LAW AND JUSTICE
PLANNING OFFICE

5. PROJECT DIRECTOR FOR IMPLEMENTING AGENCY

BILL BROWN
SEATTLE LAW AND JUSTICE PLANNING OFFICE
600 ARCTIC BUILDING
SEATTLE, WASHINGTON 98104
(206) 583-4328

6. FINANCIAL OFFICER

C.G. ERLANDSON
CITY COMPTROLLER
101 MUNICIPAL BUILDING
SEATTLE, WASHINGTON 98104

7. GRANT AMOUNT REQUESTED $ 23,498

STATE BUY-IN $ 1,306

APPROPRIATED FUNDS $ 1,305

TOTAL PROJECT COST $ 26,109

8. PROPOSED PROJECT PERIOD November 1, 1975 TO October 31, 1976

PROJECT WILL/WILL NOT REQUIRE LEAA SUPPORT FOR ____ ADDITIONAL YEARS.

NOTE: PLEASE READ INSTRUCTIONS CAREFULLY PRIOR TO PREPARING THIS APPLICATION.

9. SUMMARY OF PROJECT (NOT MORE THAN 200 WORDS)

This project is a response to the problem of false burglar alarms which occur in the City. By false alarms occupy police time best spent elsewhere, and this project will provide information on current alarm systems available in the City and identify the most and least reliable alarm systems, in addition to detailing how and why false alarms occur and suggesting potential regulatory or other solutions to the problem.

10. REGIONAL PLANNING COMMENTS

The Seattle Law and Justice Planning Office certifies approval of this project.

NAME AND ADDRESS OF AGENCY AND STAFF REPRESENTATIVE

Lawrence G. Gunn
Director
LAW AND JUSTICE PLANNING OFFICE
600 Arctic Building
Seattle, Washington 98104

SIGNATURE _____

11. APPLICANT'S AGREEMENTS AND ASSURANCE OF COMPLIANCE WITH CIVIL RIGHTS ACT OF 1964.

A. It is understood and agreed by the applicant that: (1) any allocation or grant made as a result of this application shall be subject to a Grant Award Contract; (2) funds allocated are to be expended only in accordance with the applicant's approved plan and budget; (3) appropriate records and accounts will be maintained and available for state and federal examination and audit; (4) funds awarded pursuant to this application will be used to supplement and not supplant local or state funds otherwise available for law enforcement programs (and, to the extent practical, will be used to increase such funds); and, (5) applicant will comply with all applicable provisions of the Omnibus Crime Control and Safe Streets Act, as amended, the rules and regulations of the Law Enforcement Assistance Administration of the United States Department of Justice and the Law and Justice Planning Office of the Washington Office of Community Development and the Law and Justice Planning Office Fiscal Manual. Applicant acknowledges having received a copy of the Law and Justice Planning Office Financial Guidelines.

B. The applicant will comply with and will insure compliance with Title VI of the Civil Rights Act of 1964 and all requirements imposed by or pursuant to regulations of the Department of Justice (28 C.F.R. Part 42) issued pursuant to that title, to the end that no person shall, on the grounds of race, color, creed, sex or national origin, be excluded from participation in, be deprived of the benefits of, or be otherwise subjected to discrimination under any program or activity for which the applicant receives financial assistance from or through the Law Enforcement Assistance Administration or the State of Washington Law and Justice Planning Office.

C. CERTIFICATION OF EQUAL EMPLOYMENT OPPORTUNITY PROGRAM.

I, Wes Uhlman, Mayor, (person signing the application) certify that the Seattle Police Department (implementing agency) has formulated an equal employment opportunity program in accordance with 28 C.F.R. 42.301, et seq., subpart E, and that

It is on file in the office of Captain P. Knapp (name), Seattle Police Department (address), Director of Personnel (title), for review or audit by officials of the Office of Community Development or the Law Enforcement Assistance Administration, as required by relevant laws and regulations.

D. NON-SUPPLANTING CERTIFICATION.

1. The undersigned hereby certifies that the federal funds which are distributed under the grant will be used to supplement and not to supplant funds otherwise available for law enforcement activities in this jurisdiction.

2. Non-federal expenditures (local funds only) for law enforcement, for the annual period covered, are at least as great as for the preceding year plus the average annual increase for the past 2, 3, 4 or 5 years. (Number of years is at the option of the grantee.)

The following must be completed FOR NON-FEDERAL FUND EXPENDITURES:*

a. Expenditure Certification

(1)	Expenditures during immediately preceding calendar or fiscal year	$29,180,762(1)
(2)	Average annual increase for previous 2 3 4 5 years (circle number of years used)	$ 2,344,291(2)
(3)	Total of (1) and (2)	$31,525,053(3)
(4)	Total budget for present calendar or fiscal year (must be at least equal to the total on Line a[3])	$32,054,998(4)

3. Where the certification in paragraph 2 cannot be given and there is a reduced or unchanged investment in law enforcement, explain why the reduced or unchanged commitment would have been necessitated even if federal financial support under Title I had not been made available.

E. OFFICIAL AUTHORIZED TO SIGN.

NAME, TITLE AND ADDRESS

WES UHLMAN, MAYOR
CITY OF SEATTLE
1200 MUNICIPAL BUILDING
SEATTLE, WA 98104

SIGNED _____

DATE SUBMITTED _____

*General Revenue Sharing funds are characterized as non-federal funds for purposes of calculation to assure compliance with the non-supplanting provisions of the Crime Control Act.

12. BUDGET

A. SUMMARY (ENTER TOTALS FROM BUDGET PAGES 5A THRU 5F)

BUDGET CATEGORY	APPROPRIATED FUNDS	STATE BUY-IN	TOTAL MATCH	GRANT REQUEST	TOTAL
(A) PERSONNEL COMPENSATION	1,305	1,306	2,611	15,635	18,246
(B) CONSULTANTS				1,000	1,000
(C) TRAVEL				1,120	1,120
(D) EQUIPMENT				0	0
(E) SUPPLIES AND OPERATING EXP				5,743	5,743
(F) CONSTRUCTION				0	0
TOTALS	1,305	1,306	2,611	23,498	26,109

12. BUDGET (CONTINUED)

B. BUDGET DETAILS

CATEGORY (A) PERSONNEL COMPENSATION					
EMPLOYEES (LIST EACH POSITION)	ANNUAL SALARY	APPRO-PRIATED FUNDS	STATE BUY-IN	GRANT REQUEST	TOTAL COST
Program Coordinator II	15,866	231	0	15,635	15,866
EMPLOYEE BENEFITS, FICA, ETC.	2,380	1,074	1,306	0	2,380
TOTAL PERSONNEL COMPENSATION		1,305	1,306	15,635	18,246

JUSTIFICATION AND EXPLANATION:

Program Coordinator II: This person will conduct the data gathering, analysis and solution generation functions of the project.

12. BUDGET (CONTINUED)

B. BUDGET DETAILS

CATEGORY (B) CONSULTANTS					
CONSULTANTS (LIST BY INDIVIDUAL OR TYPE)	RATE PER DAY	APPRO-PRIATED FUNDS	STATE BUY-IN	GRANT REQUEST	TOTAL COST
Students to hand pull data				1,000	1,000
TOTAL CONSULTANTS				1,000	1,000

JUSTIFICATION AND EXPLANATION:

Students: Work study students will be employed to retrieve and collate data from the records of the Seattle Police Department and the alarm industry at pay rates of $3 per hour.

12. BUDGET (CONTINUED)

B. BUDGET DETAILS

CATEGORY (C) TRAVEL AND SUBSISTENCE				
TRAVEL (ITEMIZE TRANSPORTATION AND SUBSISTENCE BY MAJOR TRIPS OR TYPES OF TRAVEL)	APPRO-PRIATED FUNDS	STATE BUY-IN	GRANT REQUEST	TOTAL COST
Reimbursement for travel in personal car				
@ 14¢ per mile @ 8,000 miles			1,120	1,120
TOTAL TRAVEL			1,120	1,120

JUSTIFICATION AND EXPLANATION:

Travel: Data gatherers and project coordinator will require extensive local travel to reach alarm sites.

12. BUDGET (CONTINUED)

B. BUDGET DETAILS

CATEGORY (D) EQUIPMENT				
EQUIPMENT (ITEMIZE ANY MAJOR PURCHASE OR LEASE)	APPRO-PRIATED FUNDS	STATE BUY-IN	GRANT REQUEST	TOTAL COST
N/A				
TOTAL EQUIPMENT				

JUSTIFICATION AND EXPLANATION:

12. BUDGET (CONTINUED)

B. BUDGET DETAILS

CATEGORY (E) SUPPLIES AND OPERATING EXPENSES				
SUPPLIES AND OPERATING EXPENSES (ITEMIZE BY CATEGORY)	APPRO-PRIATED FUNDS	STATE BUY-IN	GRANT REQUEST	TOTAL COST
Computer time			1,000	1,000
Computer tapes			500	500
Alarm repair miscellaneous supplies			3,000	3,000
Administrative Fee - City of Seattle			1,243	1,243
TOTAL SUPPLIES AND OPERATING EXPENSES			5,743	5,743

JUSTIFICATION AND EXPLANATION:

Computer time: for data analysis

Computer tapes: data storage device

Alarm repair supplies: includes crystals for several different frequencies that are commonly used in alarm installations, lease of some minor tools for troubleshooting systems, and leaseable technological items.

Administrative Fee: indirect costs, City of Seattle - 5% fee to Law and Justice Planning Office per established practice

12. BUDGET (CONTINUED)

B. BUDGET DETAILS

CATEGORY (F) CONSTRUCTION				
CONSTRUCTION EXPENSES (ITEMIZE BY CATEGORY)	APPRO-PRIATED FUNDS	STATE BUY-IN	GRANT REQUEST	TOTAL COST
N/A				
TOTAL SUPPLIES AND OPERATING EXPENSES				

JUSTIFICATION AND EXPLANATION:

Construction expenses and costs of remodeling (when in excess of $5,000 for the project must be included in the appropriate budget categories and summarized on this page.

FULL STATEMENT OF PROJECT

A. Rationale

The crime of burglary has been identified as a priority crime for the City of Seattle. A convenient classification of the burglary problem is in terms of residential versus non-residential targets. Seattle's problem viewed in these terms follows the national trend--that is, the ratio of commercial (non-residential) burglaries to residential burglaries is decreasing. The fact remains, however, that substantial numbers of commercial burglaries occur in the City, 3,505 in 1974.

A variety of responses to the commercial burglary are possible. These range from anti-fencing strategies to expanded investigations, to the use of portable police-owned alarm systems. Several of these responses are being pursued through demonstration programs planned or currently in implementation by the Seattle Police Department.

This project, however, focuses upon a strategy which is inherent in the business community. This strategy is the self-motivated use of alarm systems by commercial subscribers for the purpose of burglary prevention.

The City's interest in this strategy stems primarily from the idea that substantial opportunity costs are currently being incurred. These costs stem primarily from the fact that false alarms grossly outnumber valid alarms and result in the following:

1. the dissipation and waste of police resources in responding to false alarms;

2. a complacent police response produced by the lulling effects of an extremely high false-to-valid alarm ratio;

3. possible loss of apprehension opportunities as a result of non-priority response to alarms, necessitated by large numbers of alarms, most of which are false.

It can be successfully argued that police units responding to an alarm where no intrusion has occurred has less public safety value than other directed police activity. Further, our assessment of current attitudes indicates that police expect, because of experienced probabilities, that most of the time they will be responding to false alarms. Consequently, police officers may be subjecting themselves to undue risk and possibly forgoing apprehension opportunities by responding to alarms with less than desirable precision and care.

On the other hand, several studies have shown that alarms do represent an opportunity to prevent burglary, as well as an

opportunity for police to make on-scene apprehensions. One study, "Installation, Test and Evaluation of a Large Scale Burglar Alarm System for a Municipal Police Department," conducted in Cedar Rapids, Iowa, showed that unalarmed businesses systematically selected as comparable to alarmed counterparts were about three times as likely to be burglarized. Further, on-scene apprehensions by police were between four and eight times as likely in alarmed premises. Prevention attributes of alarms may be negated by displacement of burglary; however, this attribute practically guarantees further proliferation of privately owned commercial alarm systems.

The Cedar Rapids study cited above was conducted under ideal circumstances. In that study, police actually purchased and installed alarm equipment. This project will attempt to work with the current self-perpetuated "system" of alarms which derives its impetus from the profit motive and individual business owners' desire to prevent burglary.

The current situation can be summed up as follows:

1. There were 3,505 reported commercial burglaries in 1974.

2. There are approximately 3,000 silent commercial alarms operating in Seattle.

3. The false alarm ratio (number of false alarms to total number of alarms) is greater than .95.

4. False alarms are caused by human (operator) error, equipment malfunction, inappropriately selected sensors, improper installation, weather, voltage fluctuations, spurious radio interference, etc.

5. Relatively few alarms are actually reports that intrusion has taken place.

6. The police response has, over time, been degraded to the point that alarm-generated dispatches are not priority calls.

The rationale for this proposal is that both public and private resources are being expended on a burglary prevention/apprehension strategy with relatively little payoff. In fact, some actually view the use of commercial alarms as a public safety liability. Unless the City adopts a proactive stance, the situation described above is expected to worsen because individual business owners will continue to be convinced of the prevention value of alarms.

This project will seek out pragmatic solutions to the false alarm problem. Expected is a mix of procedural and operational, technical and regulatory remedies. Since the City already has a precedent for legislative control of false alarms, the project will also develop material for establishing policy on proliferation of commercial alarms in the City.

B. Crime/System Impact

This project will seek out incremental reductions in the current false alarm ratio. If a significant reduction can be brought about, it is conceivable that more on-scene apprehensions of commercial burglars will be made by police.

Further, if the false alarm ratio were reduced to the point where the commercial alarm "system" could be viewed as a public safety asset by the City, policy to encourage proliferation of the "system" could be implemented. On the other hand, should we be unsuccessful in affecting significantly the current situation, the City will have developed a strategy to minimize the dissipation of public safety resources on this strategy.

C. Supporting Resources

The Law and Justice Planning Office (LJPO), a division of Seattle's Office of Policy Planning (OPP), is experienced in conducting inquiries into problems existing in the criminal justice system and in developing feasible solutions to such problems. LJPO's problem solving methodology is applicable to this project; however, we lack the necessary technical expertise to proceed. Consequently, we are requesting simultaneously short-term technical assistance from a nationally recognized expert in the field of commercial alarm system operations and false alarm problems. This expert will assist LJPO in the development of a precise work plan and in defining the qualifications of a director who will be hired for this project.

The project will rely heavily on the experience and historical data of the Seattle Police Department's Security Unit. That unit currently is responsible for administering the City's false alarm ordinance and has, as a result, developed a broad data base that will be of significant value in isolating establishments that have historically experienced a high false alarm rate. That unit has also developed a broad base of knowledge on the causes and circumstances of false alarms.

Organizationally, the project will be operated by LJPO. LJPO/OPP has horizontal access to the executive departments (Police, Fire, City Light, Department of Licenses and Consumer Affairs and the Law Department) which, depending upon project recommendations,

may be called upon for changes in operating policy, advice, data and participation.

D. Project Operation: Phasing of Tasks, Objectives, Goals

Work Plan Development: As mentioned above, we expect to develop a precise work plan with the assistance of a national expert through a short-term Technical Assistance Grant. Envisioned is a one-week intensive planning session to describe the problem as well as possible and to identify gaps in our knowledge and data elements necessary to fill those gaps. Concurrently, we will develop selection criteria for the project director and advertise and select this person, using established City procedures.

The work plan will contain, at minimum, the following work elements:

Problem Definition

An attempt will be made to describe precisely the nature and extent of the falsing problem. A review will be made of the technical aspects of alarms that contribute to falsing. There are many different types of alarm systems, including sonic systems, lightbeam systems, contact systems, heat sensing systems and others. Technically, one type may be more efficient than others, or for different types of installations, one type may be preferable technically than others. A systems review will be taken to determine from actual experience which set of alarm type--installation type--in combination create falsing problems.

Another element of the problem definition phase will be to consider in detail how the human operational factor impacts on falsing. This is, an attempt will be made to determine if there is a particular set, and if so, a description of that set, of human actions that contribute to falsing. For example, if false alarms occur most frequently at opening and closing times of businesses, as suspected, the project will attempt to determine what actions by business personnel cause the alarms.

The project will also attempt to analyze and describe the procedural interaction of the parties involved in the "alarm system." These parties include the alarm industry, the police department, the individual business, the Corporation Counsel, the Building Department and others. Each of these parties has a role in the alarm installation operations and response network.

Solution Generation

After assembling and analyzing the information and data discussed above, an attempt will be made to generate a solution to

Purpose/Use: Data tapes will be used to provide consecutive 14-day period summaries of the following:

1. number of alarms dispatched as burglaries

2. number of alarm-dispatched calls resulting in SPD case number assignment (a valid alarm)

3. response time as measured by the following:

   a. time of receipt of call to dispatch

   b. dispatch to unit arrival time

4. number of arrests resulting from alarm based upon MIR disposition code.

Evaluation: Data are routinely recorded as part of the normal functioning of the Seattle Police Department dispatch operation. Upon completion of this project, the Seattle LJPO research and evaluation staff will request the specific data cited above. Analyses to be performed will consist of time-series or trend analyses using either correlational or analysis-of-variance techniques.

It should be noted that evaluation of the success of the project depends upon as yet unspecified actions. As these specific activities are engaged in by project personnel and/or changes are made within commercial alarm systems, these will be qualified and included within the analyses which will be performed. The purpose of such a procedure will be to determine if the observed changes are being caused by project activities and efforts or other non-project influences.

the false alarm problem. To generate a solution, it is expected there will be a need to consider a mix of issues containing technical considerations, procedural considerations, operational matters, regulatory matters and overall City policy considerations that address the question of alarm proliferation.

Solution Implementation

The implementation of the developed solution to the alarm problem will probably involve several groups, including the alarm industry, private businesses, the City Council and other City departments including the Police Department, Building Department and the Department of Licenses and Consumer Affairs.

1. Goal

The goal of this project is to cause a long-term reduction in the number and rate of false alarms, and to increase the public safety utility of privately owned commercial alarms.

2. Objectives

a. Objective 1: to decrease the false commercial alarm rate in Seattle.

b. Objective 2: to decrease the police response time to commercial alarms.

c. Objective 3: to increase the arrests in response to commercial alarms.

3. Tasks

a. Receive expert technical assistance through LEAA to assist LJPO in developing a detailed project work plan.

b. Hire a project manager for the project.

c. Execute detailed work plan.

E. Evaluation

Data Base: Information to evaluate project objectives will be obtained from SELECT data tapes (the Seattle Police Department's computerized dispatch system). Data on these tapes include the reason for initiating a dispatch (alarm, victim or witness call, etc.), response time, disposition (whether the alarm was valid), and whether an on-scene arrest occurred. The SELECT computer tapes provide an available data base including the period January, 1975, to present, in consecutive 28-day intervals. During each of these periods, the taped data cover a minimum of 66 percent of all SPD dispatched calls.

END