THE USE OF CLOSED CIRCUIT TELEVISION AS AN IMPLEMENT OF INDUSTRIAL SECURITY

THESIS

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By

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The problem of this study was to determine to what extent industry was making use of closed circuit television as an implement of industrial security. The data for this study were provided by a group of thirty-two security chiefs of industry, and by another group of fifteen law enforcement officials in the Dallas and Fort Worth Metropolitan area.

Of those industrial concerns making use of closed circuit television as an aid to security, a majority use the medium for surveillance of controlled access areas, with theft control and control of plant access following closely behind. For the most part, all surveyed thought that closed circuit television was very efficient.

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INTRODUCTION

Television, the electronic marvel whereby pictures and sound may be transmitted over the airwaves for many miles, is fast becoming a medium of many facets. Television, coupled with video tape recorders, is becoming commonplace in the classroom, as predicted by Elkins in 1954: "Educators do not possess the choice of whether or not this giant of electronic miracles (television) shall enter into the field of education: they only choose to what extent they may presently make use of it" (2, p. 1). National Educational Television presently brings many outstanding and educational programs into the home at prime viewing hours. It may readily be seen that television is well entrenched in the field of education.

Commercial television, too, is quickly burgeoning into a tremendous business. The advent of Ultra-High Frequency programming into the commercial television scene has opened new areas of interaction between broadcasting companies to bring more and better programs to the medium. At the present time, it would be safe to state that nearly eighty-five per cent of the homes in the United States contain at least one television receiver and many have two or more.

It is not surprising, therefore, that television should enter into the scene in industry as a valuable tool of security. A search around the ceilings of many retail stores will, in all probability, reveal at least one strategically placed television camera.

Statement of the Problem

The problem of this study was, therefore, to determine to what extent closed circuit television was being used by industry as an implement of industrial security. Answers to the following questions were sought in order to solve the problem as stated:

1. Does industry make use of closed circuit television to enhance existing security measures?

2. In what ways does industry make use of closed circuit television security systems to best advantage?

3. Does closed circuit television help to reduce theft in a commercial establishment?

4. Is closed circuit television surveillance in industrial plants and retail stores economical?

5. Is closed circuit television surveillance considered efficient by those making use of it?

6. What is the cost of closed circuit television surveillance in relation to reduced or unneeded manpower?

Background and Significance of the Study

Prior to the advent of closed circuit television as a security measure, a large guard force was required to maintain order within an industrial facility. Any facility that has access to United States government classified material is required by law to maintain strict control over plant access. At earlier times when a plant covered a large area a large guard force had to be maintained. With the advent of closed circuit television and other advanced electronic devices, industrial security departments were able to reduce the size of their guard force and provide more adequate control over the plant.

The retail industry--such businesses as department stores, drug stores, and banks--has also seen the possibilities that closed circuit television has to offer. Closed circuit television cameras placed in strategic points throughout a store allow one person, sitting at a television monitor, to survey the activities taking place within the store. Shoplifters may thus be spotted more easily by the guard at his monitor than by a squad of floorwalkers. The information gathered by a closed circuit television system can be immediately relayed to a second guard on the floor, who, in turn, apprehends the shoplifter. The use of video tape recording in conjunction with the television camera and monitor allows a permanent record to be made of the thief in the act of stealing an article.

Many banks presently make use of closed circuit television as a means of deterring would-be bank robbers. A bank robber who knows that positive identification is easy by means of a recorded picture will possibly think twice before taking such a risk. An example of this type of identification can be seen in the recent case of the heiress who was supposed to have been kidnapped, but who was identified as an accessory to a bank robbery by pictures taken by the bank's surveillance system. An immediate identification of this young lady and the others with her was made and police were soon on their trail.

Industry also makes use of the television camera and monitor as a method of surveillance of plant entrances. Some industrial facilities utilize television in conjunction with other sophisticated electronic devices connected to a central console as a complete plant security system. These methods allow one guard to monitor the entire plant for such things as employee access, intruders, prowlers, smoke and fires. The use of the central console approach allows for a smaller guard force while promoting greater efficiency.

The use of closed circuit television by industrial security agencies can, in many cases, be justified by the economies which can be derived from an installation. An editorial in one of the security trades magazines gave the following example of the kind of economies available to the forward looking security administrator: "If an 18,000

dollars a year fixed-cost security system can be exchanged for a one-time-cost system that runs some 14,000 dollars less, it stands to reason that such a system deserves close examination by the budget-minded security executive" (1, p. 20). The author was referring to a twenty-four-hour access gate which requires three guard shifts of one man per shift whose base salary is $6,000 per year. If this gate can be operated by means of a closed circuit television system which has a one-time cost of only $4,000, a savings of $14,000 may be reported in the first year of operation. It is savings like these that have drawn many security agencies to the use of closed circuit television as a tool of industrial security.

It was, therefore, the intention of this study to gather information in a manner that might be useful to those who should have a need for information concerning methods used in industry to implement the use of closed circuit television as a tool of industrial security.

Limitations of the Study

For the purpose of this study it was necessary to set the following limitations:

1. This study was limited only to situations in which industry makes use of closed circuit television to safeguard lives, property, or classified or proprietary information.

2. This study was further limited to industrial concerns in the Dallas and Fort Worth Metropolitan area which use closed circuit television.

3. This study was limited to selected members of the North Texas Chapter of the American Society for Industrial Security.

4. A further limitation was that only one representative of any one company was surveyed, and that no private security agencies were surveyed.

5. This study was limited to opinions expressed by selected law enforcement officials in the Dallas and Fort Worth Metropolitan area.

6. This study was further limited to personal interviews with various security chiefs of industry.

Definition of Terms

For the sake of clarity and brevity, the following terms were defined:

1. The term Closed Circuit Television designates a television station whereby the camera and all monitors in use are connected by means of a coaxial cable not available for use by the general public. In other words a single use, private television station.

2. C.C.T.V. is a standard abbreviation for closed circuit television.

3. Industrial Security is a term meaning to safeguard previate property, lives, or information in an industrial environment.

4. An Industrial Security Agency refers to a group of people whose job function is to safeguard private property, lives, or information in an industrial concern.

5. A Law Enforcement Official is an officer in a public agency whose job is to enforce public laws.

6. Video Tape Recording is a process whereby visual information picked up by a television camera may be recorded on magnetic tape for future use.

7. A V.T.R. is a video tape recording machine.

Related Studies

The search for related studies turned up no directly related work.

A study by Elkins in 1954 (2, pp. 92-93) was concerned with a study of television and its applications in education, particularly industrial arts. In this study it was found that television could make a great contribution to the field of education by allowing all students to have a chance to view the instruction from the comfort of their chairs.

Professional journals in the security field have proven to be the best source of related material. One of the articles (3, pp. 42-44) describes the coordination required at the General Dynamics Plant in Fort Worth, Texas. Articles

such as this point out the value of closed circuit television as an aid to industrial security.

Other articles gave accounts of the use of closed circuit television in such applications as museum security, hospital security, industrial plant security, and retail store security systems. The latest advances in industrial security television devices were also treated in many articles.

Sources of Data

Data for this study were obtained from the following sources:

1. Checklists completed by selected members of the North Texas chapter of the American Society for Industrial Security. These members were selected at random from the directory of the North Texas Chapter of the American Society for Industrial Security with the limitation that no two persons from the same company would be selected and that no private security agencies would be surveyed.

2. Opinionnaires completed by officials of city, county, state, and federal law enforcement agencies. The selection of law enforcement agencies was accomplished by polling only police departments in the various cities in the Dallas and Fort Worth Metropolitan area. The sheriff's offices in Dallas and Tarrant counties were surveyed, as well as the Texas Department of Public Safety, The Federal

Bureau of Investigation, and the enforcement branch of the United States Treasury Department.

3. Information available from various professional publications in the security field.

4. Unpublished works such as theses and dissertations which are closely related to or directly concerned with the use of television.

5. Personal interviews with certain security chiefs within industry.

6. Personal interviews with selected law enforcement officers familiar with the uses of closed circuit television by industrial security agencies.

Procedure of the Study

The procedures used in the preparation of this study are as follows:

1. Selection of the groups surveyed to gather information for the basic areas covered in the study. The selection was accomplished by applying the parameters set forth in the sources of data.

2. Development of instruments, a checklist and an opinionnaire, with which the required data were gathered to satisfy the statement of the problem.

3. The instruments were then mailed out to those groups selected, and the data were returned by mail.

4. These data were then compiled into a useful format.

5. The data were then compared and basic statistical concepts were applied in the presentation of these data.

6. Presentation and interpretation were made of data received.

7. Summarize the findings, draw conclusions, and make recommendations for further study.

Organization of the Study

In order to study the many facets of the study as set forth in the statement of the problem, the following organization was utilized:

Chapter I presents an introduction to the problem, statement of the problem, background and significance of the study, limitations of the study, definition of terms, related studies, sources of data, procedure of the study, and organization of the study.

In Chapter II, instruments, a checklist and an opinionnaire, were developed with which to gather the desired information.

Chapter III presents the data gathered by the checklist mailed out to industrial security departments. Both commercial and industrial firms were represented in this chapter.

Chapter IV presents opinions of the expanding use of closed circuit television by various law enforcement officials. These data were gathered by use of the opinionnaire.

Chapter V presented a summary, the findings of the study, and conclusions. Recommendations based on the findings of the study were made for possible further study.

The Appendix contains sample copies of the checklist, opinionnaire, cover letters, and lists of those persons surveyed in the course of this study.

CHAPTER BIBLIOGRAPHY

1. Bennett, Charles C., "A Case for Closed Circuit Television," Industrial Security, IX (January, 1965), 20.

2. Elkins, Claude C., "Television and Its Applications to Education with Special Reference to Industrial Arts," unpublished master's thesis, Department of Industrial Arts, North Texas State University, Denton, Texas, 1954.

3. Hale, I. B., "In an Emergency, Coordination Counts," Occupational Hazards, XXXII (September, 1970), 42-44.

CHAPTER II

DEVELOPMENT OF INSTRUMENTS

The decision to make use of instruments to collect the data for this study was made because of the nature of the material being studied. Since there has been very little study made of the use of closed circuit television by industrial security agencies, a survey of the organizations making use of this medium was necessary.

The only directly related material uncovered was in the form of articles and editorials published in the various trade journals. These articles were of single interest. The instruments utilized in the research for this paper were formulated with the intention of gathering information of a general nature that may be used as a guideline by any organization considering the installation of a C.C.T.V. security system.

Two instruments were developed for use in this study. The first instrument was a checklist mailed to various organizations which make use of C.C.T.V. as a tool of their security departments. The second instrument was a device to gather opinions from law enforcement sources about the use of C.C.T.V. by industrial security departments. The first instrument was an attempt to ascertain the following basic information:

1. To what extent is C.C.T.V. used as a tool of industrial security?

2. What functions does C.C.T.V. serve in its capacity as a tool of industrial security?

3. What are the pro's and con's of the use of C.C.T.V.?

4. What are the economic justifications encountered by the users of C.C.T.V.?

5. What do the users of C.C.T.V. security systems think of their systems?

The same instrument, the checklist, was mailed to both commercial establishments and industry since essentially the same information was desired from both.

The second instrument was in the form of an opinionnaire. This instrument consisted of a series of questions regarding the use of C.C.T.V. as a tool of industrial security. These questions were presented to selected officials of various law enforcement agencies asking for their opinions concerning the value of C.C.T.V. as presently being used by industry. This instrument was administered via personal interviews with those involved.

Development of Checklist

This checklist consisted of an explanatory paragraph with space provided for name, title, company, and address, and the number of closed circuit television installations presently in use at the location.

The checklist was carefully devised to provide answers to the questions brought out in the introduction to this study. Each question was formulated in such a manner as to allow for easy marking.

Questions one, two, three, and four dealt with the extent of use of closed circuit television as an aid to industrial security. Question one proposed to determine whether C.C.T.V. was being used by the security department of the facilities under study. Question two was devised to determine if additional C.C.T.V. circuits might be forthcoming at the particular location. The third question was to determine whether the C.C.T.V. circuits were being used only as a fill in during off hours, or if they were being used as a full time guard post. Question four was designed to determine the relative importance placed on the functions of C.C.T.V. as used by the agency being surveyed. Five basic functions were listed, and space was made available for additional functions to be added by the person filling out the list.

The efficiency of C.C.T.V. security systems was the subject of questions five, six, seven, and eight. Question five was intended to determine whether C.C.T.V. was considered to be conducive to increased employee efficiency within the organization. The intent of question six was to determine the relative degree of importance placed on the common drawbacks of C.C.T.V. installations. There were six choices

given in this question and included the most common disadvantages to the use of C.C.T.V. as an aid to industrial security. Question seven asked whether the C.C.T.V. system actually does live up to all expectations of those who designed the system. Question number eight was included to determine whether C.C.T.V. has proven to be a true deterrent to theft. If losses due to theft have shown any marked decrease since the installation of C.C.T.V., then it would appear that the system is actually a good deterring factor.

Questions nine, ten, eleven, twelve, thirteen, and fourteen were designed to determine the economic factors of C.C.T.V. as an aid to industrial security. Question nine asked what the person being surveyed considered to be the most important economic justifications for the use of C.C.T.V. in his security organization. Five of the more apparent economies offered by C.C.T.V. were listed, and provisions were made for additional economies which the individual felt might be possible. Provision was made for weight to be given each item. By use of a weighted question it was possible to determine the relative importance of each type of economy to those surveyed.

Question ten was included to determine whether, in the opinion of those surveyed, the installation of closed circuit television has proven economically sound. Questions eleven, twelve, and thirteen were directly related to the reductions in payroll directly attributable to the installation of

C.C.T.V. surveillance systems. Question eleven asked only if a reduction in personnel had been made since the advent of C.C.T.V. into the security organization. Questions twelve and thirteen were to be answered only if the answer to question eleven was affirmative. Question twelve sought to learn whether the guard force had been reduced because of the addition of C.C.T.V. Question thirteen requested that a dollar figure be placed on the reduction. Ranges were provided to enable the person filling out the checklist to check the appropriate box in answering these two questions.

Question fourteen was included in order to determine the approximate first year savings made possible by the inclusion of electronics into the company's security system. This question asked for an approximate dollar figure to be attached to the cost of installation of the C.C.T.V. system. Here again, ranges were provided to make it easy to mark the checklist. A copy of the findings of this study was made available to those persons who participated in the study.

Development of Opinionnaire

The instrument used in gathering data from law enforcement sources was in the form of an opinionnaire. This instrument posed questions which would produce an opinion, or series of opinions.

The participants in the study were asked whether they were aware of the expanding uses of C.C.T.V. as a security aid. They were also asked what they thought of C.C.T.V.'s

value as a security aid. Another question was presented to determine the possibility that C.C.T.V. might, in the near future, become a valuable tool of public law enforcement agencies as well as of private industrial security organizations.

An attempt was made to interpret the value of C.C.T.V. as placed on it by those surveyed. An indication of the intrinsic value of the instrument was the prime concern of this phase of the study.

CHAPTER III

INDUSTRIAL USES OF CLOSED CIRCUIT TELEVISION AS AN AID TO INDUSTRIAL SECURITY

The uses of closed circuit television as used in this study consist of the methods by which industrial and commercial business establishments use C.C.T.V. to deter theft, vandalism, and loss of sensitive information.

Many banks use C.C.T.V. surveillance to monitor activities in lobbies, vaults, and other areas. These C.C.T.V. hookups are often used in conjunction with video tape recording equipment to insure a permanent record of all activities within the bank.

Retail stores also make use of C.C.T.V. to deter shoplifting and theft. C.C.T.V., in conjunction with uniformed guards, convex mirrors, viewing rooms, and other sophisticated methods, is becoming commonplace in many types of stores. Clothing stores make use of closed circuit television to observe crowded display areas, dressing rooms, aisleways, and other places where shoplifting might easily take place.

Industrial establishments that actually do no public business also require security not only against theft and vandalism, but also against the loss of sensitive materials. Many industrial plants employ a large guard force to protect

the company's or government's secret information. One of the tools employed by these companies is C.C.T.V.

There are different opinions of the worth of electronic surveillance equipment. The effectiveness of C.C.T.V. has been questioned. Kaufman, in his book, Combating Shoplifting, had the following observation:

> In regard to camera surveillance, large sums of money are also being expended in this field. Some stores use it mainly as a deterrent, others to aid in making apprehensions. The combination of both has been found to be the most effective.
>
> Presently, there are several leading companies in the camera detection field. These installations are expensive for larger stores--and to be effective must be combined with a total in-store communications system.
>
> Some cameras can cover a 360° area, which is a patented feature. Each camera has 5 lenses, but usually only one is operative. Zoom lenses are available at extra cost.
>
> In a related field of camera observation, a supermarket chain is shortly introducing a new camera reported to be an 8 mm color film camera, ceiling mounted, that will photograph each register transaction at 32 checkout locations in three stores. These food markets claim that 60% of their shortages occur at checkouts, causes by under-rings, errors and purposely failing to charge correct prices (2, p. 10).

On the other hand, Curtis, in his book, made the following statement, which would seem to negate the worth of closed circuit television uses by retail establishments:

> Certain devices, including convex mirrors, uniformed guards, T.V. cameras, observation booths, signs, and educational films, may be helpful at first but then turn and work against the store. These devices usually function as psychological bluffs which are eventually called by the shoplifter and which increase the thief's hostility toward the store. The result is an increase in shoplifting losses.
>
> Studies have shown that T.V. cameras, mirrors, and guards are effective in cutting down shoplifting for periods of up to three months, but if they are continued beyond that, they become liabilities to the store

> and result in greatly accelerated shoplifter activity. . . . Television cameras, whether real or dummy, often inspire the same reaction as do uniformed guards. They stimulate thefts by people who view them as a hostile and threatening act on the part of management (1, pp. 49-50).

The two quotations above, of course, are diametrically opposed. Kaufman told us that many great things were being done with cameras in business establishments, while Curtis told us that television, guards, mirrors, and all the other devices utilized by business are only stopgap measures that will slow down theft for a maximum of three months. After people get used to the equipment, shoplifting and other types of theft will increase with renewed vigor. Curtis also stated that studies had been made that refuted the usefulness of C.C.T.V. as a theft deterrent in retail stores, but he did not cite any sources.

For the purpose of this study, forty-eight checklists were mailed to forty-eight companies whose security chiefs are members of the American Society for Industrial Security. These companies are all located in the Dallas-Fort Worth Metropolitan area. Of the forty-eight checklists mailed, thirty-two were filled out and returned--a 67 per cent rate of return. The findings of the study, therefore, were based on the material available. All percentages found in the body of this paper were calculated using thirty-two as 100 per cent.

The first question, "Is closed circuit television presently in use in your facility as an aid to security?"

was responded to by fifteen, or 47 per cent, affirmatively, while the remainder, or 53 per cent, either responded with a "no" answer or declined to answer at all because of security rules in effect at their locations.

Question number two was a weighted question: "To what extent do you make use of closed circuit television to enhance other security measures within your facility?" The data received in response to this question are presented in Table I.

TABLE I

THE EXTENT OF CLOSED CIRCUIT TELEVISION USE IN INDUSTRY

Companies	Use of C.C.T.V.			
	Extensively	Moderately	Rarely	Never
Number	2	11	2	17
Percentage	6.3%	34.4%	6.3%	53.0%

The trend shown by the table shows that of the original 47 per cent that use C.C.T.V., 73.3 per cent make moderate use of it, with 13.3 per cent equally divided between extensive and rare use of their C.C.T.V. systems.

Forty-six and six-tenths per cent of those responding affirmatively to question number one also answered

affirmatively when asked if they had any plans to add additional closed circuit television circuits in the near future, with eight, or 53.4 per cent, negative answers.

The average number of circuits in use overall of those surveyed was 3.21 television circuits per company. One organization had a total of nineteen circuits in use and seventeen companies had none at all in operation, or refused to give any statistics. The actual breakdown appears in Table II, below.

TABLE II

THE NUMBER OF CLOSED CIRCUIT TELEVISION CIRCUITS IN USE BY COMPANIES

Number of Circuits	Number of Companies with Circuits
19	1
12	1
10	1
9	2
8	1
7	1
6	1
5	1
3	4
2	2
0	17

By comparing only those businesses currently using closed circuit television, it was found that the average number of circuits in use rose to 6.9 circuits per company. It is significant that the average number of sets per company overall was 3.2 circuits, and the largest number of

companies using sets showed three to be the number of circuits in use.

Table III shows the uses to which each of the businesses responding put their closed circuit television surveillance systems.

TABLE III

THE FUNCTIONS OF CLOSED CIRCUIT TELEVISION IN INDUSTRIAL SECURITY

Function	Use					
	Yes		Occasionally		No	
	Number	%	Number	%	Number	%
Access Control	6	40	1	7	4	27
Perimeter Security	3	20	0	0	6	40
Theft Control	9	60	1	7	2	13
Personnel Surveillance	6	40	1	7	4	27
Closed Area Surveillance	11	73	0	0	3	20
Bank Lobby	1	7				

Most of those responding use C.C.T.V. to watch over controlled access areas, 73 per cent of those who responded affirmatively to question number one use the tool to watch these type areas. Theft control is next in importance with 60 per cent of the companies using C.C.T.V. to provide this function. The control of plant access and the surveillance

of personnel at work rate the same with 47 per cent of the responses going to each of these areas. Only one of those responding stated that his bank made use of C.C.T.V. to watch over a bank lobby, although there were several banks involved in this study.

Question six required a subjective answer from those surveyed. Of those responding, 40 per cent thought that C.C.T.V. was definitely conducive to greater efficiency in their security organization. Of those persons who actually use C.C.T.V., only two, or 13 per cent, did not answer positively to question number six, and those simply did not answer the question at all.

One of the most important questions in this survey was question number seven. The subject of the question was the important economic justifications for the use of C.C.T.V. in each situation. Table IV contains the results of this survey as regards this question. For the purposes of comparison, only those companies actually using C.C.T.V. were considered for this table.

In the view of the majority of those surveyed, better utilization of existing personnel was the foremost economic justification. Tying for second place were reduced size of guard force and reduced hours of operation of remote guard posts. All three of the top justifications center on the more efficient use of manpower. It would then appear to be true that labor is the most expensive thing that a company

TABLE IV

ECONOMIC JUSTIFICATIONS OF CLOSED CIRCUIT TELEVISION

Justification	Responses					
	Yes		Probably		No	
	No.	%	No.	%	No.	%
Reduced Guard Force	10	67	4	27	1	6
Better Utilization of Personnel	11	73	2	13	3	14
Reduced Hours of Operation of Remote Guard Post	10	67	3	20	2	13
Less Possibility of Theft	7	47	5	33	3	20
Personnel Incentive	2	13	6	40	7	47

can put into a product or service. Whether physically reducing the size of the guard force, or by merely making more efficient use of the existing manpower, many dollars may be saved by making use of all the methods at the company's disposal. These methods include closed circuit television.

Eighty per cent of those responding affirmatively to question number one also stated that their closed circuit television installations meet all their expectations. This means that, for the most part, C.C.T.V. is doing an acceptable job. Forty per cent of the responses indicated the C.C.T.V. installations came up to 100 per cent of the expectations, and an equal number stated that 75 per cent of their expectations had been fulfilled, while 20 per cent believed the

systems had been less than 50 per cent of what they had expected.

Losses due to theft should, in most cases, be reduced by the use of C.C.T.V., but only 67 per cent of those surveyed stated so. Twenty-seven per cent of them said no reductions in theft losses had been experienced, while the remaining 6 per cent said that no statistics were available.

Arguments against the use of closed circuit television are presented in Table V.

TABLE V

ARGUMENTS AGAINST THE USE OF CLOSED CIRCUIT TELEVISION

Argument	Response					
	Yes		Probably		No	
	No.	%	No.	%	No.	%
Initial Installation Cost	2	13	6	40	7	47
Maintenance Cost	2	13	3	20	10	67
Downtime	3	20	1	6	11	74
Peak Traffic Periods	2	13	3	20	10	67
Picture Resolution	3	20	3	20	9	60
Morale Problems with Personnel	3	20	2	13	10	67

In by far the largest percentage of the answers, the items were not considered to be valid arguments against the use of closed circuit television. "Initial installation costs" was the one item most thought to be valid. Thirteen

per cent of those answering said "yes," with 40 per cent saying that probably initial installation costs would be considered by them to be a valid argument against the use of C.C.T.V. Fifty-three per cent of the responses, therefore, showed some attention to installation cost as a justification and an argument against the use of C.C.T.V. Maintenance costs, peak traffic period problems, picture resolution, and the possibility of morale problems with personnel each received 33 per cent of the responses as being valid arguments against the use of closed circuit television.

Closed circuit television was considered to be an economically sound investment by 80 per cent of those responding.

One-half of those surveyed stated they had been able to reduce the size of their guard force since they had installed closed circuit television surveillance measures. One of those answering "no" did state, however, that due to a new building and installation, the guard force had been designed with the C.C.T.V. system in mind. Another stated that although no layoffs of personnel had been experienced, no additional personnel had been hired, even with expansion of duties, since better utilization of personnel had been made.

There were only three responses to questions fourteen and fifteen. One of those responding stated that the guard

force had been reduced by from four to six guards at an annual savings of between $18,000 and $36,000. The other two who responded stated that thier force had been reduced by seven or more guards at a cost savings of from $18,000 to $36,000 per year.

Seven of those responding to the instrument answered that their C.C.T.V. systems had cost more than $4,000 to install.

CHAPTER BIBLIOGRAPHY

1. Curtis, Bob, Security Control: External Theft, New York, Chain Store Age Books, 1971.

2. Kaufman, Arthur C., Combating Shoplifting, New York, National Retail Merchants Association, 1974.

CHAPTER IV

THE OPINIONS OF LAW ENFORCEMENT CONCERNING CLOSED CIRCUIT TELEVISION SECURITY

The law enforcement officers surveyed in this study were, for the most part, more cooperative than their industrial counterparts. All of those surveyed either responded or referred to another individual more knowledgeable of the subject.

One hundred per cent of those surveyed were, at least, vaguely familiar with the use of closed circuit television as used by industrial security departments. Of the fifteen persons surveyed, 80 per cent thought that the advantages of closed circuit television were great enough to warrant the expense incurred by a company when installing a system, while 13 per cent said that it would depend on the circumstances, and 7 per cent said that in no way was it worthwhile.

The intrinsic value of any surveillance system is measured by the amount of money it saves in reduced manpower costs or reduction of theft or wasted time. Item number three asked the question: "Do you think that closed circuit television surveillance of business establishments such as banks and retail stores actually reduces the amount of theft that generally goes on in these places?" Ninety-three

per cent of the law enforcement officers surveyed stated that, in their opinion, total theft was reduced in businesses making use of C.C.T.V., with 7 per cent stating that possibly theft was reduced, but no statistics were available with which to corroborate those statements. All of those surveyed were aware of closed circuit television surveillance measures and none of them gave a negative response to this question.

The uses being made of closed circuit television by law enforcement agencies brought about varied responses from those surveyed. The spokesman for the Dallas Police Department said that he did not think that it was feasible to make use of C.C.T.V. in their situation, while the Dallas County Sheriff's office stated that extensive use was being made of this tool in the county system. Many of the smaller police departments in the Dallas-Fort Worth metropolitan area said that they made use of C.C.T.V. in their jails, interrogation rooms, and other areas of the physical plant. Carl Booth of the Alcohol, Tobacco, and Firearms Division of the Internal Revenue Service, United States Treasury Department, said that extensive use of closed circuit television is made in the United States Federal Courts Building, 1100 Commerce Street, Dallas, Texas. This equipment supplements the normal security force on duty in the building by enabling one person, at a console, to monitor a great number of strategic points throughout the building. The cameras do

not require a coffee break, nor do they require time off for normal bodily functions as does a human guard (1).

All of those surveyed stated that closed circuit television could replace manpower in both private industry and law enforcement only in cases where one individual was able to watch over a large number of monitors at one time, with instant access to a human guard or officer.

When asked if they would make use of closed circuit television in their realm of activities if available, most (67 per cent) said "yes" definitely, with 26 per cent undecided and 7 per cent saying "no."

Asked to what specific use they would put their C.C.T.V. systems, jail surveillance ranked first, with complete recording of the arrest procedure following closely behind. Eighty per cent of those surveyed said jail surveillance would be one of the functions, with 67 per cent mentioning arrest recording.

Other areas of use to which C.C.T.V. was put included video type recording of traffic violations and video tape recording of the arrest or ticketing procedure. The instant replay capability used in television sports events is useful in law enforcement. The use of this method had many possibilities in cases where police brutality is claimed, or when a prisoner is injured or killed by others in the jail.

An article in Parade Magazine told the story of a police department in Missouri and showed their use of closed

circuit television and video tape recording equipment in their patrol cars to provide a record of violations to the offender.

> "The best thing about the method," says Kisling, "is the deterrent effect. The word is out in these parts--don't break a traffic regulation in Creve Coeur. They've got a camera car. Don't speed. Don't run a red light or stop sign. That's the important thing and it's bound to save lives" (2, p. 6).

These police officers seem to have the right idea. If this C.C.T.V. and video tape were used more widely to prove to people that they really had done what the police said they had, there might be fewer problems with speeders. Likewise, if a visual record of the arrest procedure were made, possibly both parties, the arresting officer as well as the person being arrested, would be protected against unfounded claims of brutality. Both officer and subject would also tend to behave themselves more if a permanent record were being made of all arrest procedures (2, p. 6).

In the jails, C.C.T.V. could be used to watch over holding tanks where much of the violence takes place. C.C.T.V. could also be used to watch over the exercise yard and latrines. This would allow one officer to keep a constant eye on several areas at once, while other officers could tend to more urgent business. The guard watching the monitors could have instant access to a guard on the floor to quell any sudden disturbances. With proper use, perhaps some of the beatings and killings that take place in our overcrowded jails could be averted (1).

CHAPTER BIBLIOGRAPHY

1. Statement by Carl R. Booth, Regional Supervisor, Alcohol, Tobacco, and Firearms Division, Internal Revenue Service, United States Treasury Department, September 29, 1976.

2. Rogers, John G., "Run a Red Light and You'll Be on Instant Replay," Parade Magazine supplement to The Dallas Times Herald, October 17, 1971.

CHAPTER V

SUMMARY, FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

Summary

This study was introduced with some background material. The problem was stated, which was to determine to what extent closed circuit television was being used by industry to aid industrial security. Several questions were posed and answers to these questions were sought. The background and significance of the study were discussed and reasons for the study were given. Some of the significant reasons for the study were

1. The most costly item in any company's operation is manpower.

2. There is a need to reduce theft losses in business while not overloading the company with security guards.

3. The availability of a permanent record of any thefts or robberies that happen to take place.

4. The more efficient use of existing manpower by allowing one person to monitor several areas at one time while sitting comfortably at a C.C.T.V. central control console.

It was the intention of this study to gather data about the use of closed circuit television by industrial security

agencies and to present these data in a manner that would be useful to anyone needing this information.

The study was limited to situations in which industry makes use of closed circuit television to safeguard lives, property, or classified or proprietary information. Another limitation was that only businesses in the Dallas and Fort Worth metropolitan area were asked for answers to the questions. A further limitation posed was that only selected members of the North Texas Chapter of the American Society for Industrial Security were surveyed. Law enforcement officials from the Dallas-Fort Worth metropolitan area were also surveyed about their opinions on the use of closed circuit television as a tool of industrial security. Personal interviews were also held with selected individuals in the security field and in law enforcement.

A search for related studies was made, as well as a search for published material that would pertain to the study. These sources of data were defined and outlined, as well as the fact that checklists and opinionnaires would be utilized to further the cause of this study. Other sources of data used included professional publications in the security field and unpublished works such as theses and dissertations closely related to the use of television in industry. Personal interviews were also utilized.

The procedure was set forth for the preparation of the study, and the study was organized into segments which would

become chapters in the completed study. A rough outline was developed for each chapter, with a short statement of what was to be accomplished in each phase of the study.

In Chapter II, the instruments, with which data were sought, were developed. These instruments consisted of a checklist of fourteen questions which were sent out to a selected group of security chiefs of industry and an opinionnaire consisting of seven questions which were asked of law enforcement officials in the Dallas-Fort Worth metropolitan area. The groups selected for the purpose of this study were based on the parameters set forth in Chapter II. The application of these instruments and the data gathered thereby, furnished the basis for the findings and conclusions of this study.

Chapter III consists of a compilation of the data furnished by those surveyed. Basic statistical procedures were utilized in the presentation of these data.

In Chapter IV, opinions were sought and presented from a selected group of law enforcement officers from the Dallas-Fort Worth metropolitan area. In this sampling, as with the industrial security survey, no two persons from the same agency were surveyed, and the survey included no private security agencies. Included in the survey were representatives of law enforcement agencies on the federal, state, county, and local levels. As with Chapter III, basic statistical principles were applied to the data received.

The study was summarized, findings presented, conclusions drawn, and recommendations for possible further study were made in the final chapter, Chapter V. The Appendix contains copies of the instruments used, copies of the cover letters used in conjunction with the instruments, and a listing of those persons surveyed in both the industrial security segment and the law enforcement segment of the study.

Findings

In this study, an attempt was made to determine the extent to which closed circuit television was being used by industry as an aid to industrial security. The following questions were answered.

1. Does industry make use of closed circuit television to enhance existing security measures? This question was answered in the affirmative, although less than one-half, or 47 per cent, of those responding to the survey stated that they made use of C.C.T.V. for surveillance.

2. In what ways does industry make use of closed circuit television security systems to best advantage? Many different uses were made of this versatile tool. The most popular uses was for surveillance of controlled access areas, with theft control being second in importance according to the survey sample. Other uses to which C.C.T.V. was being put included control of plant access, perimeter

security, surveillance of personnel at work, and surveillance of bank lobbies.

3. Does closed circuit television help to reduce theft in a commercial establishment? In examining the literature it was found that certain statements were in disagreement with the findings of this study as supported by the data. The majority, or 67 per cent, of the industrial security chiefs surveyed thought that theft had been reduced extensively. Law enforcement officials surveyed were in complete agreement that theft was dramatically reduced in establishments after the introduction of closed circuit television security systems.

4. Is closed circuit television surveillance economical? In the vast majority, or 80 per cent, of cases among those surveyed, the utilization of C.C.T.V. was considered as quite economical. Only a small percentage, 13 per cent to be exact, considered costs to be a valid argument against the use of closed circuit television in an industrial environment. Forty per cent of those responding said that costs might possibly be a factor but would not be the major consideration when deciding on a closed circuit television surveillance system.

5. Is closed circuit television surveillance efficient? Here again, the vast majority, 87 per cent, of those making use of C.C.T.V. agreed that closed circuit television surveillance systems are efficient, or conducive of greater

efficiency within an organization. Possible reductions in the size of the guard force, better utilization of existing personnel, and the reduced possibility of theft tend to justify greater efficiency in an industrial concern.

6. What is the cost of closed circuit television surveillance in relation to reduced or unneeded manpower? There was a split among those who responded to the survey. One-half of the responses were affirmative when the question was asked whether the guard force size had been reduced with the addition of C.C.T.V., while the other one-half responded negatively. Of those who made an estimate of the number by which the guard force had been reduced, the annual cost estimate was between $18,000 and $36,000 per year. All of those who responded to the question concerning the cost of their C.C.T.V. system said that it had an initial cost in excess of $4,000. These figures would tend to make credible the assumption that a considerable cost savings over the long run could be made by a company installing C.C.T.V. surveillance and control systems. Even those who stated that no actual reduction in guard force size had been made said that no additional guard personnel had been hired to cover expanding responsibilities. In other cases, the guard force size had been designed to use C.C.T.V. to handle some of the controlled areas and areas in need of constant surveillance.

Conclusions

Based on the firms who participated, the following conclusions are made:

1. It is the conclusion of this study that closed citcuit television is being used in industry and in law enforcement to provide a means of accomplishing the surveillance of many areas of responsibility with a minimum of personnel.

2. Closed circuit television is considered highly efficient to most of those persons using it.

3. Costs have been reduced, in many cases drastically, by those involved with industrial security who make use of closed circuit television for surveillance purposes.

4. Manpower has been freed for more effective use in other places. The routine tasks of surveillance may now be handled with an absolute minimum of personnel. There must, however, be access to roving personnel for fast response to any emergency.

5. Theft in commercial firms has been reduced dramatically by inclusion of closed circuit television surveillance measures in the display areas and also in fitting rooms, thus doing away with many of the avenue shoplifters use.

6. A correlation of these facts would seem to show that with savings from reduced guard force size, or not having to increase guard force size, would make the installation costs recoverable during the first year of operation.

In conclusion, it would seem that with better understanding among those who use C.C.T.V., there could be almost unlimited uses of this medium among security minded officials. More department stores could help to reduce shoplifting by making it known that anyone might be observed on camera at any given instant. Banks could make use of closed circuit television coupled to a video tape recorded to maintain a permanent record of all people entering and leaving the bank, along with all happenings within the bank. These recordings would afford immediate playback capability in the event of a robbery. Unlike still cameras that only work when activated by a person, C.C.T.V. could work independently of people on the business floor, with only a guard in a locked booth required to monitor the system. With a C.C.T.V. system, an alarm could be sounded by a sharp-eyed viewer even before any action had occurred. Industrial establishments could make use of this equipment to operate remote controlled access gates, watch over vital document areas, oversee the parking lots, and keep an eye on security areas.

In a cost-effective security program, the use of closed circuit television surveillance measures is mandatory. Probst stated, "As with almost everything, Carey's security solutions were circumscribed somewhat by budget limitations, by legal requirements, by design parameters. By combining guards with electronic security devices, Carey gets

reliability plus flexibility, plus immediate response to any alarm situation" (1, p. 18). The efficient use of manpower is a major factor in cost effective security management.

Law enforcement is even beginning to come around to the realization that no longer can trustee labor be used to oversee the tanks and alert a guard when something happens. The crime analyst for one of the smaller cities in the Dallas-Fort Worth area stated that the police department and other city departments make use of closed circuit television to monitor the parking lots around the city hall, to watch over areas in the jail, and, in conjunction with video tape recording equipment, to monitor the arrest and booking procedure they also use C.C.T.V. to monitor the records section (2).

Recommendations

There are many areas that could be topics for further study in this and related fields. The following recommendations are made for further study:

1. How do law enforcement agencies make use of closed circuit television techniques for the advancement of law and order. These areas might include surveillance of jail cell blocks, holding tanks, recording of the booking procedure, interrogation procedures, the recording of incriminating evidence, and a myriad of other functions.

2. The use by colleges and universities of closed circuit television for extension of the campus to industrial

locations for graduate work. An example of this type of use is TAGER (The Association for Graduate Education and Research).

3. The use of closed circuit television surveillance techniques by private security agencies to gather information and carry out the function of their business charter.

CHAPTER BIBLIOGRAPHY

1. Probst, Tom, "Electronic Security Protects Art Museum," Industrial Security, IX (December, 1965), 18.

2. Interview with Lt. Robertson, Crime Analyst, Arlington Police Department, Arlington, Texas, October 1, 1976.

APPENDICES

APPENDIX A

ALPHABETICAL LIST OF SECURITY CHIEFS

SELECTED FOR THE STUDY

1. Armstrong, Robert L., Jr.
   Corporate Director
   Cullum Companies, Inc.

2. Arnett, George C.
   Director of Security
   Jas. I. Wilson Company

3. Ballew, Joe B.
   Director, Security Investigations
   Continental National Bank

4. Bently, Paul L.
   Vice President & Security Administrator
   First National Bank in Dallas

5. Bertrand, Charles H.
   Security/Safety Director
   K-Mart Stores

6. Bishop, S. David
   Assistant Vice President
   National Bank of Commerce

7. Bolding, Durward C.
   Manager, Corp. Security
   Mostek Corporation

8. Bowlin, Leonard Dean
   Director of Sales
   Datotek, Inc.

9. Boyd, Douglas N.
   Personnel and Security Manager
   Associated Spring Corp.

10. Bullard, Vaughn D.
    Manager, Protective Services
    Collins Radio Group

11. Camp, Harold D.
Supervisor, Security Administration
LTV Aerospace Corporation

12. Chandler, James H.
Security Administrator
Texas Instruments, Incorporated

13. Chesshir, Dennis A.
Manager of Industrial Security
General Dynamics Corporation

14. Coullard, Raymond A.
Regional Security Manager
J. C. Penney Co., Inc.

15. Cunningham, E. L.
Director of Safety and Security
Baylor University Medical Center

16. Dyson, Arthur S.
Corp. Security Director
Kimbell, Inc.

17. Farris, Thad L.
Security Manager
Neiman-Marcus

18. Frazier, W. M.
Chief of Plant Protection
Thiokol Corporation

19. Freeman, Walter A.
Director, Consulting
Data Processing Security, Inc.

20. Griggs, Johnny M.
Security Supervisor
General Telephone Co. of the Southwest

21. Director of Security
Dallas/Fort Worth Regional Airport

22. Hiltz, Kenneth M., Jr.
Fire Prevention & Safety Engineer
American International Group Companies

23. Hoffman, Robert J.
Security Officer
Airport Marina Hotel

24. James, Richard W.
Supervisor, Plant Protection
Campbell Soup Company

25. Jimison, John G.
Director of Personnel and Administration
Slaughter Industries, Inc.

26. Jungjohan, Gerald E.
Division Security Director
The Kroger Co.

27. Kyle, John E.
Security Guard
E-Systems, Inc., Greenville Div.

28. Lahti, Arnold W.
Chief of Security
Kimbell Art Museum

29. Mathis, Frank J.
Industrial Security Specialist
Day and Zimmerman, Inc.

30. McCoy, B. Tim
Security Officer in Charge
Preston State Bank

31. Moriarty, James A., Jr.
Manager, Industrial Security Dept.
Bell Helicopter Company

32. Neff, Edward C.
Security Officer
Mason & Hanger - Silas Mason Co.

33. Pritchett, William M.
Vice President
Federal Reserve Bank of Dallas

34. Puckett, John E.
Supervisor, Security Services
E-Systems, Inc., Garland Division

35. Russell, Woodson Reid
Chief of Security
Dallas Market Center

36. Sanders, Robert D.
Security Administrator
Republic National Bank

37. Sherrill, Leroy
Security Officer
First National Bank of Fort Worth

38. Sims, Carroll A.
Security Director
Fort Worth National Bank

39. Stocklos, Robert L.
Audio-Visual Designs
Irving, Texas

40. Studebaker, Robert L.
Security Coordinator
Dallas Power and Light Co.

41. Swafford, Clint A.
Security Officer
Mercantile National Bank

42. Taylor, Thomas J.
Director of Security
Marriot Corp.

43. Tidwell, John J.
President
National Bank of Grand Prairie

44. Vaughn, James M., Jr.
Security Manager
Southwestern Bell Telephone Co.

45. Weda, Tony A.
Security Director
Eckerd Drug Co.

46. Whitaker, Thomas E.
Administrative Assistant
Hunt International Petroleum Co.

47. Williams, Kenneth R.
Security Officer
American Bank and Trust

48. Wray, William L.
Security Supervisor
Southwestern Bell Telephone Co.

APPENDIX B

SAMPLE LETTER TO INDUSTRIAL SECURITY CHIEFS

4114 Sweetbriar Dr.
Garland, Texas 75042

Dear

I am a graduate student at North Texas State University, seeking a Master of Science degree in Industrial Arts. At present, I am attempting to gather data pertinent to the subject of my master's thesis, which involves the use of closed circuit television as a tool of industrial security.

Since your organization makes use of this tool in your security arrangements, I have taken the liberty of sending you a checklist to fill out at your convenience. The questions asked are of a general nature, and any other thoughts you might have on the subject would be appreciated. After the checklist is completed, please return it to me via the enclosed envelope.

Let me assure you that your answers to the questions contained in the checklist will be used in such a manner that you and your company will remain anonymous.

Your interest and cooperation in this study will be very helpful.

Sincerely,

E. F. Kirkpatrick
Graduate School
NTSU
Denton, Texas

APPENDIX C

A STUDY OF THE USE OF CLOSED CIRCUIT TELEVISION

AS AN IMPLEMENT OF INDUSTRIAL SECURITY

INFORMATION CHECKLIST

Your Name:_____ Title:_____

Company Name:_____

Company Address:_____

INSTRUCTIONS

The following questions should be answered according to your own judgment concerning the order of magnitude of importance of each item. Those items which concern themselves with monetary values should be answered within the ranges provided.

1.	Is closed circuit television presently in use in your facility as an aid to security?	YES	NO

If yes, answer question #2.

2.	To what extent do you make use of closed circuit television to enhance other security measures within your facility?	Extensively	Moderately	Rarely	Never

3.	Do you plan to install additional television circuits in the near future?	YES	NO

4.	What is the number of closed circuit television circuits presently in use?	

5.	Does closed circuit television serve the following functions in your facility?	YES	OCCASIONALLY	NO
	a. Control of plant access?			
	b. Perimeter security?			
	c. Theft control?			
	d. Surveillance of personnel at work?			
	e. Surveillance of controlled access areas?			
	f. Other? (Specify)_____ _____			

6.	Does your closed circuit television system tend to be conducive to greater efficiency within your organization?	YES	NO

7.	Would you consider the following to be important economic justifications for the use of closed circuit television in your situation?	YES	PROBABLY	NO
	a. Reduced size of guard force?			
	b. Reduced possibility of theft?			
	c. Better utilization of existing personnel?			
	d. Reduced hours of operation of remote guard post?			
	e. Incentive for personnel to do more and better work?			
	f. Other? (Specify)_____ _____			

8.	Does your closed circuit television installation live up to your expectations?	YES	NO

9.	If the answer to question #8 was yes, to what extent does it meet your expectations in percentage?	100%	75%	50%	less

10.	Have losses due to theft been reduced since the installation of closed circuit television?	YES	NO

11.	Would you consider the following to be valid arguments against the use of closed circuit television?	YES	PROBABLY	NO
	a. Initial installation costs?			
	b. Maintenance costs?			
	c. Amount of down time?			
	d. Peak traffic periods?			
	e. Picture resolution?			
	f. Morale problems with personnel?			
	g. Other? (Specify)_____ _____			

12.	Do you consider your closed circuit television system to be an economically sound investment?	YES	NO

13.	Have you been able to reduce the size of your guard force since the installation of closed circuit television?	YES	NO

If the answer to question #13 is no, disregard questions 14 and 15.

14.	By how many employees have you been able to reduce your guard force?	1 - 3	4 - 6	7 & up

15.	By how much were you able to reduce your annual guard force payroll?	$0-18K	$18K-36K	More than $36K

16.	What was the approximate capital outlay for your closed circuit television system?	Less then $2K	2K-4K	More than $4K

Any comments or suggestions you would care to make shall be greatly appreciated.

_____

_____

_____

_____

Would you care to receive a copy of this checklist for your files? YES_____ NO_____

Would you care to receive a copy of the findings of this study for your own information? YES_____ NO_____

Please complete the checklist at your earliest convenience and return it to me in the enclosed envelope.

I would like to thank you in advance for your interest and cooperation in this study.

Edwin F. Kirkpatrick
4114 Sweetbriar Drive
Garland, Texas 75042

APPENDIX D

ALPHABETICAL LIST OF LAW ENFORCEMENT AGENCIES SELECTED FOR THE STUDY

1. Arlington Police Department
   Arlington, Texas
2. Carrollton Police Department
   Carrollton, Texas
3. Dallas County Sheriff's Office
   Dallas County, Texas
4. Dallas Police Department
   Dallas, Texas
5. Farmer's Branch Police Department
   Farmer's Branch, Texas
6. Federal Bureau of Investigation
   Dallas, Texas
7. Fort Worth Police Department
   Fort Worth, Texas
8. Garland Police Department
   Garland, Texas
9. Grand Prairie Police Department
   Grand Prairie, Texas
10. Irving Police Department
    Irving, Texas
11. Mesquite Police Department
    Mesquite, Texas
12. Richardson Police Department
    Richardson, Texas
13. Tarrant County Sheriff's Office
    Fort Worth, Texas

14. Texas Department of Public Safety
Highway 30
Garland, Texas

15. United States Treasury Department
Alcohol, Tobacco, and Firearms Devision
Dallas, Texas

APPENDIX E

A STUDY OF THE USE OF CLOSED CIRCUIT TELEVISION AS AN IMPLEMENT OF INDUSTRIAL SECURITY

OPINION CHECKLIST

Instructions

The following group of questions was formulated as a means of gathering opinions from selected law enforcement officials concerning the use of closed circuit talavision in industrial security.

Please answer each question with your own opinion by checking one of the answers provided. If you do not find an answer that coincides with your opinion, please write your comments on page 2.

Your Name:_____ Agency:_____

Title:_____ Address:_____

1. Are you familiar with the use of closed circuit television as used by industrial security departments? YES_____, NO_____.

2. Do you think that the advantages of closed circuit television are great enough to warrant the expense incurred by a company when installing a system? YES_____, DEPENDS ON THE CIRCUMSTANCES_____, NO_____.

3. Do you think that closed circuit television surveillance of banks and retail stores reduces the amount of theft in such places? YES_____, POSSIBLY_____, NO_____.

4. Do you see any promise for the use of closed circuit television by law enforcement agencies as an aid in the performance of their function in the community? YES_____, HAVE NOT THOUGHT ABOUT IT_____, POSSIBLY_____, NO_____.

5. Do you believe that closed circuit television systems can replace manpower either in private industry or in public law enforcement? YES_____, IN CERTAIN CASES_____, NO_____.

6. Would you make use of closed circuit television in your realm of activities if it were available?
YES_____, UNDECIDED_____, NO_____.

7. To what specific use would you put your closed circuit television systems?

_____

_____

_____

8. Any comments or suggestions you would care to make shall be greatly appreciated and helpful.

_____

_____

_____

Please complete the opinionnaire at your earliest convenience and return to me in the enclosed envelop.

I would like to thank you in advance for your interest and cooperation in this study.

Edwin F. Kirkpatrick
4114 Sweetbriar Drive
Garland, Texas 75042

BIBLIOGRAPHY

Books

Curtis, Bob, Security Control: External Theft, New York, Chain Store Age Books, 1971.

Kaufman, Arthur C., Combating Shoplifting, New York, National Retail Merchants Association, 1974.

Articles

Bennett, Charles C., "A Case for Closed Circuit Television," Industrial Security, IX (January, 1965), 20.

Hale, I. B., "In an Emergency, Coordination Counts," Occupational Hazards, XXXII (September, 1970), 42-44.

"In the 70's--Ultra-sophisticated Systems Will Become a Commonplace," Occupational Hazards, XXXI (October, 1969), 127-129.

Probst, Tom, "Electronic Security Protects Art Museum," Industrial Security, IX (December, 1965), 18-21.

Rogers, John G., "Run a Red Light and You'll Be on Instant Replay," Parade Magazine supplement to The Dallas Times Herald, October 17, 1971.

"The Communications Revolution: Its Impact on Safety/Security Management," Occupational Hazards, XXXII (September, 1970), 37-40.

"These High-Powered Plants are Primed for Millisecond Response," Occupational Hazards, XXXII (June, 1970), 44-48.

Unpublished Materials

Elkins, Claude C., "Television and Its Application to Education with Special Reference to Industrial Arts," unpublished master's thesis, Department of Industrial Arts, North Texas State University, Denton, Texas, 1954.

Personal Interviews

Interview with Lt. Robertson, Crime Analyst, Arlington Police Department, Arlington, Texas, October 1, 1976.

Statement by Carl R. Booth, Regional Supervisor, Alcohol, Tobacco, and Firearms Division, Internal Revenue Service, United States Treasury Department, September 29, 1976.