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A COOPERATIVE APPROACH TO CARGO SECURITY IN THE TRUCKING INDUSTRY

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Department of Transportation
Office of Transportation Security
Washington, D.C. 20591

INTRODUCTION

This report is being published by the Department of Transportation (DOT) to assist the transportation industry in achieving more effective protection of cargo from theft and pilferage. Although this information will be of primary interest to motor carriers, the concept described may be adapted to other modes and other situations in the transportation industry.

The participation of the Department in the project resulting in this report was prompted by our interest in making use of the growing knowledge of the nature and extent of theft-related cargo losses. This project presented a natural opportunity to verify and expand on earlier study efforts which revealed such facts as: (1) the total cost of cargo theft and pilferage exceeds $1 billion a year- with the trucking industry experiencing the largest percentage of that total; (2) that about 85 percent of stolen cargo goes out the "front gates" of transportation facilities during normal operating hours in the possession of persons and in vehicles authorized to be on facility premises for legitimate purposes; and (3) that the Northern New Jersey/New York metropolitan area is one of the worst in the nation in terms of reported cargo theft losses.

Early in 1972, seven interstate motor carriers each having terminals in the same high loss area of Northern New Jersey engaged in a collective security program in an effort to reduce cargo theft and

pilferage losses. DOT's role was that of an observer who contracted for the preparation of this report on the results of the experiment. The seven participating motor carriers had regular security officers based at corporate headquarters located considerable distances from the problem terminals. The local security organization hired by the carriers first performed security surveys at each terminal and made many recommendations to improve the security posture of these facilities -- most of which were adopted and implemented by terminal officials. New or strengthened operating and supervisory procedures were placed into effect and the day-to-day direction of terminal security, including the provision of guard service, became the responsibility of the local security organization.

Although each of the participating companies could have proceeded independently, the data and conclusions reported seem to clearly support the concept of collective security. For example, it shows that additional security expenditures of $67,669 produced a $283,516 reduction in claims paid for theft-related losses during 1972. Theft-related claims for the seven participating terminals decreased from $527,409 in 1971 to $243,983 in 1972. These findings are listed in Table 1.3 which is the only table reporting actual full year data. All other tables were based on seven months data, expanded to full year totals and showing the impact on total cargo loss claims paid for all causes (a decrease from $741,895 in 1971 to $446,453 in 1972). While this may not have been the primary purpose of the project, we believe these results show that effective security programs aimed primarily at theft-related losses can and should

impact favorably on broader aspects of a company's operation.

Readers who may be interested in applying the concepts contained in this report to their own cargo theft problem areas should develop strengthene and more effective accountability procedures for high-value/high-risk commodities. Such procedures will enable transportation management to "target" prevention programs on what is being stolen when it is being stolen and from where it is being stolen.

National and industry-wide statistics clearly demonstrate the need for and the potential benefits of such action. While theft-related losses account for about 40% of all cargo losses for all causes in the trucking industry, some 80% of all theft-related losses are categorized as "shortages' with only about 20% reported as theft and pilferage or hijacking losses. This is true even though it is generally recognized that these "shortages" are in fact "stolen". This report does not provide a breakdown of theft-related losses; however, there is no evidence indicating that the experience of the seven terminals involved differs significantly from the national picture.

Strengthened accountability controls should identify the time and point of losses and provide for timely and tailored prevention programs along with documented audit trails for effective law enforcement response. The accountability and control procedures recommended in this report (pages 4.5 - 4.8) are a start in the right direction, but it is essential that management assess their individual problems and establish tailored accountability systems fully responsive to known and current theft loss experience.

The following are the major conclusions of this project and are discussed in detail throughout the report:

1. The most effective single deterrent to cargo theft is good management and security awareness on the part of the terminal manager;

2. The application of improved security techniques brings about reduction in theft-related losses and has an impact on all other cargo losses, and

3. Transportation terminals located in close proximity can achieve better security at lower cost through the use of a collective security program.

The Department of Transportation believes that the results of this project reinforce the contention that the key to dramatic reduction in theft-related cargo losses is prevention -- making it less easy for people to steal. It is also clear that the initiative for prevention must come from transportation management. This is a point we enthusiastically endorse, with the hope that the information contained in this report will spur even greater concern and trigger more action programs to respond to the problem of theft-related cargo losses.

FINAL REPORT

PHASE I

A COOPERATIVE APPROACH TO CARGO SECURITY

IN THE TRUCKING INDUSTRY

Prepared for

U.S. Department of Transportation
Office of Transportation Security

by

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CHAPTER 1

EXECUTIVE SUMMARY

1.1 INTRODUCTION

This is the final report for Phase I of A Cooperative Approach to Cargo Security in the Trucking Industry performed by Executive Services, Inc. (ESI) for DOT. Phase I covers the period January-July 1972, the first 7 months of the operation of the program. Most of the analysis is presented for this period; total claim payment and theft claim payments for the 12 months of 1972 are also discussed.

Seven trucking terminals participated in the program. Under individual contracts with each terminal, ESI conducted security surveys, recommended security improvements and provided audits and reviews of the improved security programs. At each terminal ESI provided guard service, tailored to each terminal.

Cargo security was greatly improved at all terminals. The overall results are summarized as follows:

- During the period January-July 1972
  - At terminal ONE a major theft ring was broken resulting in firing, suspending or the resignations of 15 employees. In August and September cargo claims were reduced to 48% of their previous level. Present OS&D reports indicate claims will remain at this lower level.
  - During the first 7 months, at terminals TWO through SEVEN cargo claims were reduced saving $129,331 in claims payments for a total cost of added security equal to $36,771. Thus gross profits increased by $92,560.
- During calendar year 1972
  - Total claims were reduced by $295,442 (39.8%); theft-related claims were reduced by $283,516 (53.6%).

1.2 SUMMARY OF PROGRAM PHILOSOPHY

This material was prepared in the hope that other transportation companies will benefit from this program. Most of the procedures used are applicable to other companies.

The original program was developed using seven trucking companies in a small geographic area as part of the pilot program. Each company agreed to have ESI provide security supervisors on a continuing basis for six months and, wherever possible, to implement security recommendations. Each company paid a fee, which was included in the guard service. The hours of guard service ranged from 48 hours per week to 168 hours. The terminals varied in size, physical problems, internal problems and management problems, so security had to be tailored to each terminal. This was done through a comprehensive survey of each terminal. A written report of the survey findings with recommendations for improvement was prepared for each terminal.

Improvements to physical security, particularly fencing, lighting, and a pass and log system, were recommended and implemented in each terminal. In each terminal, it was found that some aspect of the paper control system was inadequate and the possibility of theft of paper and freight did exist. The magnitude of the problems found ranged from one inadequate procedure in one of the terminals to almost completely inadequate systems in two of the terminals.

We were of the opinion, and the results of this program proved, that with only a minimum expenditure of money over what was already being expended, claims could be drastically cut. We have provided in this report several measures of cost benefits derived from the program. One measure shows the total cost of security and claims at each terminal on an annual basis. Another shows the

cost of the additional security under this program compared to claims reduction. For each security dollar spent on this program, the savings were impressive. We realize that seven months time is not enough for complete measurement, since a one-to-nine month lag in claims filed exists. However, the trend does show improvement and additional improvement can be expected.

We also realize that when movement of freignt is involved, there will be claims, but we also believe that excessive claims are not necessary and are only a drain on profit dollars. Each claim dollar is "off the top" of profits and, therefore, a zero claim ratio is a better goal than being close to the "national average."

The program described in the report is based on the following concepts of good security for a company or an individual terminal:

A. Top management is dedicated to a loss prevention program and will carry this dedication to the terminal-level management.

B. A completely sound program of paper controls is developed, implemented, and audited.

C. Adequate physical security and facilities are provided to deter entry of thieves and to control flow of traffic.

D. Adequate pre-employment screening procedures are instituted to prevent the hiring of undesirables.

E. A program of identification of losses by terminal, commodity, shipper, and consignee be instituted and "target" freight be handled through special procedures. "Unless we can identify the problem, we can't solve it" is the approach under this section of our program.

Even if a company is not presently spending a large sum on security, with the outlines of this program, mainly through strong management and controls, impressive profit dollars can result. This program proved beyond any doubt that good security can be attained at reasonable costs with a substantial savings of claim loss. It also proved that the collective approach is less expensive and can be used together by several companies without compromising the integrity of any company.

1.3 SUMMARY OF QUALITATIVE RESULTS

The major security events at each terminal and the new security procedures and techniques introduced to improve security are discussed in Chapter 2 and summarized in this section.

At each terminal, the procedures introduced were based on the following philosophy, listed in order of greatest importance:

- Strong, security-minded management is essential to good security.
- Cargo handling and control procedures must fix responsibility for exceptions.
- Fences, lighting and physical security are required to deter unauthorized entry and control authorized traffic. Alarm systems enhance security and may be required in severe environments.
- Employee screening procedures are required to prevent hiring undesirables.
- Guards may be required based on geographic and operating environments.

These principles were used to design an effective security program for each terminal. Emphasis was placed on building a strong management team and developing effective paper control systems. Recommendations for improved physical security were made and guards were provided for all terminals.

The results are summarized in Table 1.1 which shows the major security events at each terminal.

1.4 SUMMARY OF QUANTITATIVE RESULTS

The effectiveness of the improved security programs was measured by the reduction in claim payments. The cost benefits derived from the programs were measured by comparing claim payment reductions to the cost of the added security. These evaluations are discussed in Chapter 3 and summarized here.

Table 1.1

Major Security Events at Terminals

EVENTS	MONTHS							
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG
Terminal ONE								
1. Appoint new terminal manager, asst. terminal manager, operations manager, OS&D clerk, inbound foreman, outbound foreman			X					
2. Implement new paper control system			X					
3. 5 theft gang members fired				X				
4. 5 drivers suspended for theft of time				X				
5. All employees fingerprinted, 4 resign					X			
6. Theft of ovens, driver fired								X
TERMINAL 1 HAS THE MOST SEVERE PROBLEM. EFFECTS OF IMPROVED SECURITY BEGINNING TO BE SEEN.								
Terminal TWO								
1. Escort prevents hijacking	X							
2. Two supervisors replaced			X					
3. Detection and arrest of 5 burglars			X					
4. Trailer break-in prevented			X					
5. Fire bombs extinguished by guard					X			
RECOMMEND FURTHER PHYSICAL IMPROVEMENTS. CLAIM DATA NOW BEING COMPUTERIZED.								
Terminal THREE								
1. Fence and lighting improved		X		X				
2. Wire lock program initiated		X						
3. Line haul dispatch improved				X				
4. Employee parcel check initiated					X			
5. New employee parking area installed								X
ALL PROCEDURES REMAIN EFFECTIVE COMPANY PLEASED WITH SECURITY								

Table 1.1 (Cont'd)

EVENTS	MONTHS							
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG
Terminal FOUR								
1. Four managers replaced		X						
2. Internal procedures improved		X						
3. Gate control initiated		X						
4. Break-in prevented by guard						X		
STRONG COMMITMENT BY NEW MANAGEMENT INSTRUMENTAL IN CLAIM REDUCTION								
Terminal FIVE								
1. Break-in prevented by guard	X							
2. Entrance control initiated		X						
3. Automobile identification system initiated		X						
4. Additional OS&D supervisor hired				X				
5. New line-haul dispatch and control system initiated					X			
EXCELLENT MANAGEMENT HAS OVERCOME PROBLEMS DUE TO PHYSICAL DETERIORATION OF FACILITY								
Terminal SIX								
1. Surveillance of high-value loads initiated	X							
2. Fence and lighting improved			X		X			
3. Weekend dispatch improved					X			
COMPANY PLANS TO CONTINUE PRESENT SECURITY PLAN								
Terminal SEVEN								
1. Physical repairs accomplished		X	X	X	X			
2. 2 supervisors replaced		X						
3. Internal procedures improved				X				
4. 6 drivers suspended				X (4)			X (2)	
6. Driver fired for theft of time							X	
EXCELLENT MANAGEMENT COOPERATION RELUCTANT TO COMMIT FUNDS--MERGER								

Table 1.2 summarizes results. Two new parameters were developed by ESI and used to evaluate the program. These are

1) Cost Benefit Radio (CBR)

$$\text{CBR} = (\text{claims saved}) \div (\text{cost of added security})$$

2) Claim Ratio Reduction Factor (CRRF)

$$\text{CRRF} = (\text{this year's claim ratio}) \div (\text{last year's claim ratio}) \times 100\%$$

The CBR is a measure of the amount of claim dollars saved relative to the cost of security. For example, a CBR of 2.50 means the company saved $2.50 in claims for every additional dollar spent on security.

The CRRF is a measure of the percent reduction in claims ratio (CR). For example, a CRRF of 50% means that this year's claims are 50% of last year's claims.

Table 1.2 shows the results with terminals ranked by last year's CR. Terminal ONE, because of the major theft ring, required more extreme measures than the other terminals and is therefore listed separately. As noted on the table, that problem has now been corrected and claims are being reduced. Terminal SEVEN, listed first, had the largest CR last year and thus had the most severe problem of the remaining terminals.

Generally, the terminals with the more severe security problems obtained better results as evidenced by the higher CBR, lower CRRF and greater claim + security cost savings. They spent more money on security to obtain these results and experienced greater improvements <u>at greater cost benefit</u>.

Table 1.2

Summary of Results of Improved Security
January - July 1972

TERMINAL	LAST YEAR'S CR	THIS YEAR'S CR	CBR	CRRF	CLAIM + SECURITY COST SAVINGS	CLAIMS SAVED	COST OF ADDED SECURITY
SEVEN	4.97	3.92	2.56	79%	$31,917	$18,585	$7,250
TWO	4.83	1.45	10.87	30%	$89,551	$74,125	$7,849
FIVE	2.52	1.23	2.49	49%	$10,110	$18,346	$7,355
THREE	1.88	1.59	1.60	85%	$5,241	$10,713	$6,677
FOUR	1.33	1.0	1.23	75%	$785	$6,345	$5,160
SIX	0.87	0.75	0.49	86%	-$1,817	$1,217	$2,480
Total					$135,760	$129,331	$36,771
ONE	3.35	4.93	-20.35	147%	-$2,740	-$41,701	$2,050

Note: In August and September Terminal ONE claims have been reduced to 61% of their January-July level. This includes a payment of $5100 for a loss which occurred in October, 1971. If claims continue at the present level, they will run at 48% of the January-July level for the rest of the year.

Table 1.3 shows the reduction in total claims and theft-related claims achieved in 1972. Total claims for the seven terminals were reduced from $741,895 to $446,453; a reduction of $295,442 (39.8%). Theft-related claims (all shortage, known theft and hijackings) were reduced from $527,409 to $243,893; a reduction of $283,516 (53.6%). Note that most of the claim reduction achieved was in theft-related claims.

1.5 CONCLUSIONS

The success of the security programs is obvious. Thieves and dishonest employees were discovered and arrested, fired, suspended or they resigned.

At all terminals, claims have been significantly reduced by implementing procedures which are not costly. Therefore, an overall increase in profits has been achieved.

The security procedures used were summarized in Section 1.2 and are described in more detail in the remainder of this report. These procedures are applicable to any transportation company with a terminal-like operation for moving cargo.

The collective approach has been demonstrated to be effective and cost beneficial. Security requires professional on-site supervision which is often too expensive for a smaller operation to obtain on an individual basis. By the collective approach, these services can be provided.

Table 1.3

Comparative Increases and Decreases in Cargo Loss - 1971-1972

Terminal	All Claims 1971	All Claims 1972	Decrease		*Theft Claims 1971	*Theft Claims 1972	Decrease	
			Amount	%			Amount	%
ONE	$184,416	$111,493	$ 72,923	39.5%	$149,377	$ 80,163	$ 69,214	46.3%
TWO	166,815	87,771	79,044	47.5%	105,093	43,886	61,207	58.2%
THREE	117,000	84,550	32,450	27.7%	74,880	43,121	31,759	42.4%
FOUR	42,174	38,214	3,960	9.4%	25,304	14,903	10,401	41.4%
FIVE	52,706	25,667	27,039	51.3%	30,306	12,782	17,524	57.8%
SIX	15,897	13,446	2,451	15.4%	6,438	4,249	2,189	34.0%
SEVEN	162,887	85,312	77,575	47.6%	136,011	44,789	91,222	67.0%
Total	$741,895	$446,453	$295,442	39.8%	$527,409	$243,893	$283,516	53.6%
Average	$105,985	$ 63,779	$ 42,206	39.8%	$75,344	$ 34,842	$ 40,502	53.6%

*Theft - All Shortages, known thefts and hijackings

CHAPTER 2

QUALITATIVE DISCUSSION OF RESULTS

2.1 INTRODUCTION

Results of improved security operations during the period January-July 1972 are described qualitatively in this chapter. As discussed in the preceding chapter, quantitative results can be summarized by noting that terminals TWO through SEVEN saved $129,331 in claims with an added expenditure of only $36,771. At terminal ONE a major theft ring was broken, new management installed and claims are beginning to decrease.

Qualitatively, the results are described by summarizing the major security events and new procedures implemented. This is followed by more detailed discussions of the findings of the security surveys, the recommendations made and the recommendations implemented by the respective terminals.

2.2 DISCUSSION OF RESULTS AT EACH TERMINAL

The narrative discussions in this Section describe the security problems found at each terminal and summarize the services provided by ESI to improve security.

Table 2.1 summarizes the major security events that occurred at each terminal during January-July 1972.

2.2.1 Security Improvements at Terminal ONE

Terminal ONE is a new terminal, having been completed in January 1971. There was nothing left to be desired from a physical security standpoint with the exception of fence alarms and T.V. control, which were not deemed necessary when the terminal was constructed.

Table 2.1

Major Security Events at Terminals

EVENTS	MONTHS							
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG
Terminal ONE								
1. Appoint new terminal manager, asst. terminal manager, operations manager, OS&D clerk, inbound foreman, outbound foreman			X					
2. Implement new paper control system			X					
3. 5 theft gang members fired				X				
4. 5 drivers suspended for theft of time				X				
5. All employees fingerprinted, 4 resign					X			
6. Theft of ovens, driver fired								X
TERMINAL 1 HAS THE MOST SEVERE PROBLEM. EFFECTS OF IMPROVED SECURITY BEGINNING TO BE SEEN.								
Terminal TWO								
1. Escort prevents hijacking	X							
2. Two supervisors replaced			X					
3. Detection and arrest of 5 burglars			X					
4. Trailer break-in prevented			X					
5. Fire bombs extinguished by guard					X			
RECOMMEND FURTHER PHYSICAL IMPROVEMENTS. CLAIM DATA NOW BEING COMPUTERIZED.								
Terminal THREE								
1. Fence and lighting improved		X		X				
2. Wire lock program initiated		X						
3. Line haul dispatch improved				X				
4. Employee parcel check initiated					X			
5. New employee parking area installed								X
ALL PROCEDURES REMAIN EFFECTIVE COMPANY PLEASED WITH SECURITY								

Table 2.1 (Cont'd)

EVENTS	MONTHS							
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG
Terminal FOUR								
1. Four managers replaced		X						
2. Internal procedures improved		X						
3. Gate control initiated		X						
4. Break-in prevented by guard						X		
STRONG COMMITMENT BY NEW MANAGEMENT INSTRUMENTAL IN CLAIM REDUCTION								
Terminal FIVE								
1. Break-in prevented by guard	X							
2. Entrance control initiated		X						
3. Automobile identification system initiated		X						
4. Additional OS&D supervisor hired				X				
5. New line-haul dispatch and control system initiated					X			
EXCELLENT MANAGEMENT HAS OVERCOME PROBLEMS DUE TO PHYSICAL DETERIORATION OF FACILITY								
Terminal SIX								
1. Surveillance of high-value loads initiated	X							
2. Fence and lighting improved			X		X			
3. Weekend dispatch improved					X			
COMPANY PLANS TO CONTINUE PRESENT SECURITY PLAN								
Terminal SEVEN								
1. Physical repairs accomplished		X	X	X	X			
2. 2 supervisors replaced		X						
3. Internal procedures improved				X				
4. 6 drivers suspended				X (4)			X (2)	
6. Driver fired for theft of time							X	
EXCELLENT MANAGEMENT COOPERATION RELUCTANT TO COMMIT FUNDS--MERGER								

The company originally had three terminals in the Northern New Jersey area and decided to combine all three into the present terminal. This brought about several classic internal security problems. There were immediately three different labor unions fighting for position. Management problems were numerous, since the foremen had not worked together and the terminal manager selected was strong in sales rather than operations. Finally, the systems and procedures were not standardized, but some from each terminal were used. All of the above worked for the benefit of the criminal element with the result of extremely high loss of freight through willful damage and theft.

Prior to completion of the original survey, ESI met with top management of the company and advised them that several terminal management changes would be necessary, and a complete change in systems and procedures would be necessary before the theft problem could be corrected. Management agreed and appointed a new terminal manager, assistant terminal manager, operations manager, OS&D clerk, one inbound foreman and one outbound foreman. This was completed on March 1, 1972.

Management, with ESI assistance, developed a completely new paper control system with a four-way freight checking system which was installed and supervised by a group from the home office. These changes were objected to by the unions which caused some delay in their implementation. After a few weeks, however, the new procedures were accepted. These changes were completed on March 17, 1972.

It was obvious that even with new managenent, improved control of the paper, and some cooperation from the union officials, the terminal was still infiltrated with the thieves from the three original terminals. It was

determined that an undercover agent would be necessary, and on February 28, 1972, one was placed at the terminal as a janitor. The effect was almost immediate, since the undercover agent determined that the union president's son was involved in the thefts with approximately 10 other individuals, including eight dockmen and two drivers. The agent also determined how their operation worked. To substantiate our gent's work, we prevailed on the County Prosecutor's Office to also place an undercover agent in the terminal. His particular job was to observe a large gambling operation in addition to the thefts. A lieutenant was placed in the terminal on April 3, 1972. Based on information from these two agents, five of the ringleaders were fired on April 7, 1972. The case is still under union arbitration but looks very encouraging. The reason arrests were not made was due to an inadvertent discussion by a supervisor which was overheard. The gambling game was also discontinued.

During this time, we were conducting driver surveillance on suspected drivers and night surveillance of the terminal. The duration of the surveillances was from March 6 through April 21, 1972, and resulted in suspension of five drivers for theft of time.

It was now becoming obvious to all employees that the company would no longer put up with the large monthly losses at the terminal and that management was determined to take whatever steps necessary to stop these losses. This was reinforced in May of 1972 when the company decided that all employees must be fingerprinted and photographed. This was accomplished with the assistance of the Department of Law and Public Safety, Division of Alcoholic Beverage Control.

This resulted in four employees deciding to seek employment elsewhere. The overall effect is difficult to access except that psychologically it appeared to be effective.

The program has been entirely satisfactory, and of the seven terminals, Terminal ONE had the most severe problems, required the most severe action and, with full management cooperation, achieved the most outstanding results. The only reported and known theft at the terminal between June 1, 1972, and August 30, 1972, was three infra-red ovens with a total value of $840.00. The driver of this unit has been fired and the case is under arbitration. All control documentation and the dockmen interviewed showed that the ovens were on the driver's unit.

2.2.2 Security Improvements at Terminal TWO

The original survey of Terminal TWO pointed out the vulnerability of the terminal because of its physical location, particularly because of the proximity of the housing projects behind the terminal.

Historically, Terminal TWO had been plagued with many individuals entering the terminal by cutting the back fence, opening trailers, and stealing freight. It was determined during this survey that weekends were times of particular vulnerability, and it was recommended in January, 1972 that an additional guard be placed in the back of the lot during weekends.

During the survey it was further recommended that several changes be made in the freight checking systems and procedures and that a number of vulnerable points in the fence be closed. A complete new procedure on handling returned freight was developed during the survey. We also recommended that the main gate be motorized so that it could be kept closed during normal working hours.

The survey also pointed out that due to the number of trailers that had been stolen, all hot loads should be placed opposite the guard shack. It was also recommended that additional lights be installed and a new seal system be implemented.

In January 1972, we instituted a new control sheet and pass system for the terminal. As a result of this system, gate checks revealed a number of units with incorrect trailers or tractors.

In February 1972, we recommended that one supervisor be replaced due to his unwillingness to accept the recommended changes. This was accomplished in March 1972.

In January 1972, we recommended that certain high-value loads be escorted from pick up back to the terminal, since three trailers had previously been lost through armed hijacking. This decision paid off on January 26, 1972, when an escort prevented trailer #423603 from being hijacked on Manhattan Avenue in Jersey City.

On Sunday, March 18, 1972, a guard on duty noticed an individual in the yard. Upon approaching him, the guard saw that there were five males stealing cigarettes from a trailer and throwing them over the fence.

A call to the Jersey City Police Department resulted in the arrest of all five. Three of the five were juveniles and there was a warrent for robbery through the Jersey City Police Department for the other two.

On March 26, 1972, at 5:45 a.m., one of the guards noticed two men parked alongside the fence and watched them enter the yard and open one of the

trailers. They started putting cartons of cigarettes into their car. A call was placed to the Jersey City Police Department, but one of the men spotted the guard, took the cigarettes out of the car, dropped them on the ground, and fled.

Effective handling of these two incidents within a week's time obviously has paid off. To date, no additional entrance into the terminal has been noted.

On February 1, 1972, a completely new seal control for local and line haul units was implemented at Terminal TWO. We hope this system will also be implemented at other Company TWO terminals because a uniform system is better. So far, however, the Vice President of Operations has been reluctant to do so.

On April 10, 1972, arrangements were made for the three top executives of the company to meet with Mayor Paul Jordan of Jersey City along with Fuller H. Brooks of ESI for additional help from the precinct squad cars in controlling any possible riot at the terminal. It should be noted, that on May 14, 1972, four fire bombs were thrown into the yard but were extinguished by the guard on duty in the rear.

Problems with area residents may continue and extra vigilence will be required to minimize this problem.

In May of 1972, a procedure was instituted whereby any car coming into the terminal was subjected to a search upon exit. In early June 1972, a procedure was established whereby any foreign vehicle including interline tractors or trailers was subjected to search upon exiting the terminal. It was believed that this was responsible for some improvement at the terminal.

This is one of the few companies that does not keep claim records, such as number of claims filed, dollar amount of claims filed or exact salvage recovery. However, it should be pointed out that they are in the process of collecting and loading this information into a computer.

In summary, the replacement of one supervisor, institution of a new return freight system, changing of some systems and procedures, addition of one guard on the weekends at the rear of the terminal, and overall emphasis on security has made the improvement of the terminal operation possible.

2.2.3 Security Improvements at Terminal THREE

During 1970 and 1971, Terminal THREE had been the subject of several large thefts from the terminal yard and off the highway. Pilferage had gotten completely out of hand. In June of 1971 the company made a complete management change and brought in a strong terminal manager, an operations manager, and a new OS&D supervisor.

In August of 1971, the inbound and outbound supervisors were changed. These early changes were effective; the terminal claim ratio for 1971 was only 1.8.

It should be noted at this point that the company President has for many years been a strong advocate of good security at the terminal level.

Our survey in January and February of 1972 still revealed that some change in terminal management would be necessary and that internal controls of a system and procedure nature should be reinforced. The external security at the terminal showed that several changes were necessary. There was a need for repairing the fence in several areas and adding fence near the garage area. Additional lighting was needed and also construction of a new parking area. The additional fence was added during the survey and additional lights were added in April of 1972. A new parking area was started in August of 1972 and is now being completed with an 8-foot double barbed wire top and excellent lighting. This will make entrance and exit at the terminal and the control of the units much easier.

In February, 1972, a completely new wire lock program was placed into effect with a new dispatch system. This has resulted in the discovery of a large number of trailers which had been dispatched to the wrong terminal. The wire lock device has also materially decreased the number of trailers left open with subsequent cargo loss.

In April 1972, a trip card for each line haul unit was developed to verify the trailer number and driver's name. The result of this particular program was very difficult to measure. However, we have been advised that the number of mistakes have been greatly diminished.

In May 1972, a new program for checking employee bags, lunch boxes and parcels on entering or leaving the terminal was implemented. All cars were included in this program, with the back seat and trunk being examined by the guard upon leaving the terminal.

During the period of January through August 1972, the internal systems and procedures were reviewed several times and small changes were made.

However, the present local management felt that they did not desire any additional checking.

All the other internal controls still are effective and the manager of Terminal THREE believes the program to be exceptional for their particular terminal.

2.2.4 Security Improvements at Terminal FOUR

Terminal FOUR was of particular interest because it presented the opportunity to determine whether or not a combination of good systems and procedures with strong terminal management could be effectively instituted at an isolated terminal.

The terminal borders a swamp and river and is at a dead-end street in an industrial complex with no other trucking terminals within one-half mile.

The survey showed their systems and procedures to be adequate but the terminal management was weaker than desired. A suggestion that the terminal management be reviewed resulted in four quick changes placing strong managers in each position. This resulted in the management being able to implement the suggested changes in the systems and procedures. All changes in systems and procedures were accomplished prior to March 1, 1972; in the meantime, the terminal management started holding weekly sessions with supervision concerning security matters.

A pass system and gate control log was instituted on February 14, 1972. This also included a seal control system for all units, including empties. This was necessary because of the number of empty trailers moved back and forth between company terminals.

On Sunday, July 30, 1972, a guard prevented two men from entering the yard. However, another one had entered the yard and had thrown several cartons over the fence from a trailer. All three ran, and nothing was lost from the trailer.

During the seven-month period, there was a significant reduction in claims and according to management better results are expected for the rest of the year.

In summary, the changes in personnel and the total commitment of new management to claims reduction, the changes of some systems and procedures all worked together for the reduction in claims. It should be noted, however, that Terminal FOUR did not make certain changes in the physical facility, particularly the dock lights, dock doors, and fences as suggested in each Progress Report (submitted on May 23, 1972; May 25, 1972; July 14, 1972; and September 1, 1972). This would probably not have materially affected the claims picture, except possibly the damage of freight on the dock.

2.2.5 Security Improvements at Terminal FIVE

Terminal FIVE is an example of a deteriorated physical facility, but a terminal where excellent management systems and procedures have overcome these obstacles.

It was noted in our original survey that the systems and procedures at the terminal are above average, and were implemented by an above average management team. During this survey, it was recommended that an additional OS&D supervisor be hired, and this was done in April 1972. This, of course, aided in the control of freight. On February 1, 1972, we instituted a regular pass and control sheet for entrance and exit in the terminal. Due to a special problem at this terminal, we also developed a master control sheet for use by the terminal manager.

We recommended in early January that the hours of guard service be changed to a 24 hour armed guard on the gate rather than having two guards, one in the front of the terminal and one in the rear from 6:00 p.m. to 6:00 a.m. each night. This, of course, resulted in an even control throughout the 24 hour, 7 day week. The effectiveness of this action was demonstrated on January 22, 1972, when the guard on duty caught two male youths climbing the fence and his presence frightened them away from the terminal.

On February 5, 1972, we instituted an automobile identification system for employees permitted to park in the office area. This procedure enhanced the flow of traffic so that each car did not have to stop to be identified. Early in the survey, agreements were reached by the management and guard service relating to logs, sealing of trailers, visitors, and the local P&D trucks.

In May of 1972, through the efforts of the guard service and terminal management, a new program of affixing responsibility on line haul units was made. This included a seal procedure and dispatching of the line haul units. This resulted in less delay of the driver and provides the ability to determine date, seal number and whether the seal is intact on arriving units.

During the survey and in each Progress Report, we have pointed out to top management and local management that the physical facility was in a deteriorated condition, particularly the back fence, which was completely vulnerable. The front gate could be entered by anyone even when locked, since it did not close properly. Many of the dock doors would not close, the lighting of several areas was totally inadequate, and the guard shack needed to be replaced.

During January through August of 1972, the only repair made to the physical property was a new guard shack. It should be noted that the failure to respond to suggestions of improvement was not due to the local management's failure but the failure of the top management in the company to approve the necessary repairs.

The Progress Reports have been submitted to top company management and they are aware of the continuing problem.

2.2.6 Security Improvements at Terminal SIX

Terminal SIX was selected for the pilot program due to their desire to have guard service only on the weekends. This would give the program an answer as to whether or not guard service 24 hours a day would be of value. Another reason for this selection was that in April of 1971 ESI performed an in-depth security survey which uncovered an almost total mismanagement and many poor systems and procedures.

The recommendation contained in the original survey was implemented between April 1971 to January 1972, when the present program started. During the survey of January and February 1972, a complete change in attitude of management at the terminal, and new systems and procedures had been instituted. It was noted in our survey that the principle items to be corrected pertained primarily to the physical property, such as fencing, lighting, and gate control.

In March of 1972, after the report was received by the company, they immediately fixed part of the fence which needed repair and installed a number of 1,000 watt bulbs in the yard. This, in effect, gave them good physical security.

In May of 1972 the fence was repaired. In the area of internal security, Terminal SIX set up a procedure for weekend control of dispatch and logging in and logging out loads and drivers. A sign-in and sign-out sheet was developed by ESI and the company and is presently in use.

The August 1972 progress report indicated that tractors had hit the fence in several places. Since that report, the fence has been repaired. Officials of Terminal 6 have indicated that there has been good progress made in the area of theft prevention, particularly truck thefts and this can be attributed to armed surveillance of high-value loads which was instituted in January 1972. Another factor was a dispatch system for pick-up and delivery units which does not allow the hot load to remain at the terminal for any extended period of time.

Company officials further pointed out that the number of small shipments handled at the terminal had increased and less truck loads were being handled, which should have adversely affected the claims ratio; however, this was not the case. They stated that this was a definite improvement and they plan to continue the security program as presently constituted.

2.2.7 Security Improvements at Terminal SEVEN

Terminal SEVEN is the typical 20-year-old terminal with years of neglect. Inadequate lighting, poor fences, pot holes in the asphalt, poor dock lighting, and doors that do not work are just part of the problem. The company rents the property and is reluctant to spend any appreciable amount of money on the physical property.

It should be noted that in February 1970, ESI conducted a survey at this terminal, and appreciable work was done at that time on the physical property

and internal controls. Twenty-one individuals were identified at that time as having extensive theft records.

On January 2, 1972, ESI took over the security program at the terminal. The security survey showed that externally additional lighting was required, fences needed to be repaired, and gate controls were very lax. Internally, we determined that although the paperflow and controls had been set down on paper and most supervisors were aware of their existence, the procedures were not being followed. This failure on the part of the supervisors allowed an extensive theft problem to exist.

We discovered in February 1972 that two of the supervisors were fighting any improvements on the dock, particularly on return freight and in OS&D procedures. We recommended they be interviewed by management and if their attitudes did not improve, they be replaced. They were replaced in late February, 1972. We then recommended that someone with corporate power put into effect the new return freight procedure, OS&D procedure, install a new OS&D crib with appropriate controls, and initiate gate control. We also suggested that since two yards were used at the terminal, a yard layout for each area be used, which was accomplished in April 1972.

During February, March and April, 1972, numerous surveillances were conducted of certain drivers, which resulted in the suspension of four drivers for theft of time.

Driver X, who was a known thief, was surveilled on numerous occasions, which resulted in his being fired on July 29, 1972, for theft of time.

Some repairs were made during February, March, April and May 1972, to the lighting, yard potholes, dock bumpers, and fence, which made the physical security come up to minimum standards. Fence alarms and TV coverage of the

back of the terminal and auxiliary parking log would improve physical security.

The interest of top management and local terminal management has been excellent, which has resulted in the overall reduction of claims. However, because of an impending merger, they have been reluctant to spend any appreciable amount of money.

An overall summary of Terminal SEVEN indicates that their security has been drastically improved. However, had they been willing to make certain management changes, as recommended during this seven-month period, and been willing to spend an additional amount of money, even better results would have been achieved.

2.3 SECURITY SURVEY FINDINGS

The discussion in the preceding Section summarized and described results and major security events at each of the terminals during the first 7 months of improved security operations. In this section a more detailed discussion of the specific findings of the security surveys is presented.

Table 2.2 summarizes ESI evaluation (adequate or inadequate) of 21 items and security procedures for each terminal. Further information describing these problems can be found in the Security Survey Report presented to each terminal. Copies of these reports were also delivered to DOT.

In addition to the 21 items summarized in Table 2.2, ESI also provided each terminal with design recommendations and hardware specifications for perimeter and/or internal security alarm systems. Although ESI did not strongly recommend that such systems be installed, they can help to extend the senses and detection capabilities of the guards and could enhance security.

In the Sub-sections which follow, a generalized summary of the findings is presented. These discussions illustrate typical problems and corresponding corrective actions recommended by ESI.

Table 2.2

Summary of Security Survey Findings

FINDINGS	TERMINAL 1	2	3	4	5	6	7
PERSONNEL IDENTIFICATION AND CONTROL							
Employee Screening	+	+	+	+	+	-	-
Identification Systems	-	-	-	-	-	-	-
Visitor Control	-	-	-	-	-	-	-
Service and Maintenance	-	+	-	+	-	+	-
Package Control	+	+	+	-	+	+	-
CONTROLLED AREAS							
Limited Areas	-	+	+	+	+	+	-
Vehicle Control	+	-	-	+	-	+	+
BARRIERS							
Fencing	-	-	-	-	-	-	-
Entrances	-	-	-	-	-	-	-
LIGHTING							
Yard	-	-	-	-	-	-	-
Dock and Office	-	+	-	-	-	-	-
GUARDS							
Qualifications	-	-	-	-	-	-	-
Requirements	+	+	+	+	-	+	+
CARGO HANDLING							
Inbound Procedures	-	-	+	+	+	+	+
Outbound Procedures	-	-	+	+	+	+	+
Seals	-	-	-	-	+	-	+
High Value Loads	-	-	+	+	+	+	-
GENERAL TERMINAL MANAGEMENT							
Security Awareness	-	+	+	+	+	+	+
Dock/Office Housekeeping	-	-	+	+	-	+	-
Yard Housekeeping	-	-	-	-	-	-	-
Directives	-	+	+	+	+	+	+
No. Inadequate	18	13	11	10	12	10	14
% Inadequate	86%	62%	52%	48%	57%	48%	67%

Legend: + ADEQUATE
- INADEQUATE

The initial security surveys revealed many deficiencies at all the terminals which needed correction. A close review of Table 2.2 does not indicate any particular pattern of problems from which could be drawn valid conclusions as to the single most pressing problem at any or all terminals. Rather, it becomes apparent that many recommendations can be made at every terminal and that each terminal must be considered as a unique system requiring a unique security system.

2.3.1 Personnel Identification and Control

Generally speaking, the employee screening procedures were determined to be relatively sound with major weakness found in the hiring of casual drivers and dock workers and obtaining necessary background information. The employee and visitor identification systems were equally poor and relied mainly on management or security guards to recognize familiar faces and vehicles or accept almost any type of casual identification from visitors or foreign drivers. Trash pick-up and cleaning crews were provided through service maintenance organizations and very little effort was made to determine if these employees should be allowed access to the terminal area. Evidence of package control problems were observed at several terminals where truck drivers made it a practice to stop at their privately owned autos when leaving from or returning to the terminal.

2.3.2 Controlled Areas

The terminal areas were designed to be limited areas bounded by fencing. Employees have considerable freedom of movement within the terminal area. With only minor exceptions, this freedom of movement did not seem to interfere with the terminals' operation nor add to its security problems. The terminals which allowed their employees to park their cars on the premises invariably

had some control problems caused primarily by the terminal management failure to enforce parking regulations.

2.3.3 Barriers

The fencing at all terminals was bad and provided very little resistance to anyone who wished to gain access to the terminal or for those employees who wished to transfer cargo to an outside accomplice. In those areas where the fencing was in reasonably good repair, it was often found below acceptable standards required for an effective barrier. Every terminal had a manually operated main gate which remained open during terminal operating hours.

2.3.4 Lighting

The yard lighting was inadequate at every terminal. Deficiencies noted included the need for more light fixtures, repositioning fixtures, adding perimeter lighting, fixture repair and replacement of burned out bulbs. Office and dock lighting was reasonably adequate, with most terminals requiring fixture repair and burned out bulb replacement.

2.3.5 Guards

The security guard service was provided by professional guard service organizations. However, the guards were not specifically trained in terminal and trucking security. Their operating instructions and supervision usually came from the terminal management rather than from their employer. In several cases the guards were unarmed and without uniform. Most of the terminals had guard service for 24 hours a day and seven days a week.

2.3.6 Cargo Handling and Paper Control

Outbound and inbound procedures and practices were relatively effective. Affixing, breaking and recording seals tended to be handled carelessly at most

terminals. High value load protection needed improvement and almost all terminals lacked proper locking or key control procedures for their trucks.

2.3.7 General Terminal Management

Although many of the terminal managers were aware of some of their security problems, they had not shown much initiative in correcting the deficiencies that were present. In those cases where new or improved procedures or systems were installed, there was often a lack of follow-up to insure that changes were being made and followed. Yard housekeeping was essentially terrible, especially from littering. Dock and office space were generally in good condition in most terminals.

2.4 RECOMMENDATIONS FOR IMPROVED SECURITY

As a result of the findings of the Security Surveys, ESI provided corporate and/or terminal management with specific recommendations for improving security. These recommendations are summarized in Table 2.3. The table is self explanatory and study of the table indicates the specific problem solutions recommended by ESI.

At the bottom of the table the number of recommendations and the percentage of the total possible which were made are summarized for each terminal. The percentage of recommendations is a gross measure of the magnitude of the security problem at each terminal.

In the Sub-sections which follow a generalized discussion of recommendations is presented. These discussions illustrate the nature of solutions to the security problems.

2.4.1 Personnel Identification and Control

Employee Screening: Many of the terminals had not established minimum safeguards for hiring casual employees. It was recommended that a record be

Table 2.3

Survey Recommendations

Legend: + indicates recommendation was made

RECOMMENDATIONS	TERMINAL						
	1	2	3	4	5	6	7
PERSONNEL IDENTIFICATION AND CONTROL							
Employee Screening							
Casual Employees	+	+	+		+		+
More Background Information	+				+	+	+
Polygraph Supervisors	+			+			
Physical Exam	+						
Seniority List Polygraph	+		+	+	+		
Photograph All Applicants	+	+				+	+
Full and Complete Application							+
Fingerprint							+
Identification System							
Adopt Pass and ID	+	+	+	+	+	+	+
Maintain Log	+	+	+	+	+	+	+
Visitor Control							
Adopt Pass and ID	+	+	+	+	+	+	+
Maintain Log	+	+	+	+	+	+	+
Service and Maintenance							
Inspect Trash/Supervise Pickup	+		+	+	+		+
Check Background	+		+	+	+	+	+
Supervise Cleaning Crew					+		
Return Keys							+
Package Control							
Vehicle Inspection	+						
Check Truck Cabs			+				
Driver Stopping at POA			+				+
CONTROLLED AREAS							
Limited Areas							
Lock Dispatch Door			+		+		
Come and Go Main Gate Only							+
Vehicle Control							
Parking Decals	+	+	+		+		
Paint Parking Areas	+						
Enforce Regulations		+					
Designate Parking Area			+		+		
Number Vehicle Passes		+			+		

Table 2.3 (Cont'd)

Legend: + indicates recommendation was made

RECOMMENDATIONS	TERMINAL						
	1	2	3	4	5	6	7
BARRIERS							
Fencing							
Repair Entire Fence	+						+
Repair Bumpers	+						+
Protect Exterior		+				+	+
Repair Barbed Wire		+		+			+
General Repair			+	+		+	
Ground Level Repair		+					+
Install New Sections			+				+
Double Fence Parking Lot			+				
Replace Sections				+	+	+	+
Entrances							
Install Power Gate	+	+	+	+	+	+	+
Seal Door			+				
Lighting							
Yard							
Add Light Fixtures	+		+		+		
Light Guard Area	+		+				
Perimeter Lights		+	+				+
Repair Fixtures		+					
Reposition Lights				+		+	+
Increase Wattage						+	
Dock and Office							
Replace Fixtures			+	+		+	+
Replace Bulbs	+			+	+		+
Regular Inspection				+	+		
Maintain Bulb Supply					+		
GUARDS							
Qualifications							
Trained	+	+	+	+	+	+	+
Armed		+	+	+	+		+
Continuing Supervision	+	+	+	+	+	+	+
Requirements							
24 hour/7 day					+		

Table 2.3 (Cont'd)

Legend: + indicates recommendation was made

RECOMMENDATIONS	TERMINAL						
	1	2	3	4	5	6	7
CARGO HANDLING							
Inbound Procedures							
Revise Completely	+						
Retain Control Copy		+		+			
Exception Report						+	
Improve OSD Procedure					+		
Outbound Procedures							
Complete Study	+						
Retain Copy Control		+					
Seal Number Noted			+				
Pro Number Noted				+			
Maintain Control					+		
Seals							
Fix Responsibility	+	+					
Improve Inbound		+					
Improve Inbound Procedure				+	+		
Improve Outbound Procedure			+			+	
High Value Loads							
New System Required	+						+
Relocate Area		+					
Install Poles		+					
Improve Procedure				+			
Pin Locks Required					+		+
GENERAL TERMINAL MANAGEMENT							
Security Awareness							
Improve Security	+						
Audit Systems			+	+	+		+
Dock/Office Housekeeping							
Enforce OSD Procedure	+						+
Chalk Freight	+			+			+
Remove Trash		+			+		+
Repair Doors					+		
Lubricate Doors					+		
Hire OSD Personnel							+
Audit Procedures							+
File Papers							+
Paint							+

Table 2.3 (Cont'd)

Legend: + indicates recommendation was made

RECOMMENDATIONS	TERMINAL						
	1	2	3	4	5	6	7
GENERAL TERMINAL MANAGEMENT (Cont'd)							
Yard Housekeeping							
Improve Surface	+				+	+	+
Clean and Prevent Litter	+	+	+	+	+	+	
Repair and Replace Bumpers	+	+	+	+		+	+
Fire Warnings at Gas Pump		+	+		+		+
Kill Weeds				+		+	+
Clean Perimeter		+		+	+	+	
Directives							
Follow Established System	+						
Issue New Directives	+						
Notify Police						+	
No. of Recommendations Made	35	29	31	29	36	25	43
Percentage of Possible Recommendations Made	39%	33%	35%	33%	40%	28%	48%

kept of each casual employee hired, phone calls be made to previous employers, and fingerprints and photographs be taken of the applicants.

Employee and Visitor Identification System: To establish a positive control system, it was recommended that a standard pass system be adopted which would include date, time, tractor number, trailer number, seal or lock number and dispatcher signature. In addition, all visitors and foreign vehicles entering the terminal should be issued a pass indicating time, visitor's name, company, license number, reason for visit, departure time and signature of person visited. It was further recommended that a single log be maintained to control movement of drivers and visitors.

Service and Maintenance: It was recommended that the trash containers be checked periodically by the terminal management and that a supervisor be present when trash is removed or when cleaning is performed. Background checks should be made of companies hired to perform these services and a check should be made of their personnel.

2.4.2 Controlled Areas

Parking Decals: Employees permitted to park within the terminals should be issued a parking decal to assist identification of authorized vehicles and identification of unauthorized vehicles which may be found in the area.

2.4.3 Barriers

Powered Main Gate: To provide maximum security, the main gates at all the terminals should be electrically powered and controlled from the guard shack. This would allow the gate to be closed at all times except during peak hours.

2.4.4 Guards

Armed, uniformed, trained and supervised guards were recommended to be employed at each terminal. Specific guard requirements depend on geographic area, exposure to risk and operating conditions of the terminal.

2.4.5 General Terminal Management

The major recommendation made to the terminal management was to make sure that systems and procedures established to improve security management be followed consistently and that a continuing audit be performed to gain this assurance.

Numerous recommendations were made to improve housekeeping and cleanliness of yards, docks and offices. Well kept, clean facilities aid security and indicate to employees that management expects excellence in all matters.

2.5 TERMINAL IMPLEMENTATION OF SECURITY RECOMMENDATIONS

The recommended security improvements which were implemented by each terminal are summarized in Table 2.4. This table shows the recommendations previously shown in Table 2.3; those recommendations actually implemented are circled.

The implementation of some recommendations occurred nearly simultaneously with the initiation of the surveys. The basic contract between the terminals and ESI was to survey the terminals and provide continuing security guard service. Consequently, with the employment of the Brooks Protection Service guards the implementation of the personnel and visitor identification and control systems was initiated.

As expected, most implementations of the recommendations occurred where little or no additional cost was associated with correcting the deficiency; i.e., almost all procedural problems were corrected in cargo handling, but not all recommendations for improvement of physical security and facilities were implemented.

The implementation process was reviewed over a period of approximately five months by ESI personnel during the scheduled supervision of the security

Table 2.4

Implementation of Recommendations

IMPLEMENTATION OF RECOMMENDATIONS	TERMINAL	1	2	3	4	5	6	7
PERSONNEL IDENTIFICATION AND CONTROL								
Employee Screening								
Casual Employees		⊕	+	⊕		⊕	+	+
More Background Information		⊕				⊕	+	⊕
Polygraph Supervisors		+			+			
Physical Exam		+						
Seniority List Polygraph		+		+	+	+		
Photograph All Applicants		⊕	+				+	⊕
Full and Complete Application								⊕
Fingerprint								⊕
Identification System								
Adopt Pass and ID		⊕	⊕	⊕	⊕	⊕	⊕	⊕
Maintain Log		⊕	⊕	⊕	⊕	⊕	⊕	⊕
Visitor Control								
Adopt Pass and ID		⊕	⊕	⊕	⊕	⊕	⊕	⊕
Maintain Log		⊕	⊕	⊕	⊕	⊕	⊕	⊕
Service and Maintenance								
Inspect Trash/Supervise Pickup		+		+	+	+		⊕
Check Background		+		+	+	+	+	+
Supervise Cleaning Crew						+		
Return Keys								+
Package Control								
Vehicle Inspection		⊕						
Check Truck Cabs				⊕				
Driver Stopping at POA				⊕				⊕
CONTROLLED AREAS								
Limited Areas								
Lock Dispatch Door				+		+		
Come and Go Main Gate Only								⊕
Vehicle Control								
Parking Decals		⊕	⊕	+		⊕		
Paint Parking Areas		⊕						
Enforce Regulations			⊕					
Designate Parking Afea				+		⊕		
Number Vehicle Passes			⊕			⊕		

Table 2.4 (Cont'd)

IMPLEMENTATION OF RECOMMENDATIONS	TERMINAL	1	2	3	4	5	6	7
BARRIERS								
Fencing								
Repair Entire Fence		⊕						+
Repair Bumpers		+						+
Protect Exterior			⊕				+	+
Repair Barbed Wire			⊕		+			+
General Repair				⊕	+		⊕	
Ground Level Repair			⊕					+
Install New Sections				+				+
Double Fence Parking Lot				+				
Replace Sections					+	+	+	+
Entrances								
Install Power Gate		+	+	+	+	+	+	+
Seal Door				+				
LIGHTING								
Yard								
Add Light Fixtures		⊕		⊕		+		
Light Guard Area		⊕		⊕				
Perimeter Lights			⊕	⊕				+
Repair Fixtures			⊕					
Reposition Lights					+		⊕	+
Increase Wattage							⊕	
Dock and Office								
Replace Fixtures				⊕	+		+	+
Replace Bulbs		⊕			+	⊕		+
Regular Inspection					+	+		
Maintain Bulb Supply						+		
GUARDS								
Qualifications								
Trained		⊕	⊕	⊕	⊕	⊕	⊕	⊕
Armed			⊕	⊕	⊕	⊕		⊕
Continuing Supervision		⊕	⊕	⊕	⊕	⊕	⊕	⊕
Requirements								
24 hour/7 day						⊕		

Table 2.4 (Cont'd)

IMPLEMENTATION OF RECOMMENDATIONS	TERMINAL	1	2	3	4	5	6	7
CARGO HANDLING								
Inbound Procedures								
Revise Completely		⊕						
Retain Control Copy			+		⊕			
Exception Report							⊕	
Improve OSD Procedure						⊕		
Outbound Procedures								
Complete Study		⊕						
Retain Copy Control			+					
Seal Number Noted				⊕				
PRO Number Noted					⊕			
Maintain Control						⊕		
Seals								
Fix Responsibility		⊕	⊕					
Improve Inbound			⊕					
Improve Inbound Procedure					⊕	⊕		
Improve Outbound Procedure				⊕			⊕	
High Value Loads								
New System Required		⊕						⊕
Relocate Area			+					
Install Poles to Prevent Opening Trailers			+					
Improve Procedure					⊕			
Pin Locks Required						⊕		⊕
GENERAL TERMINAL MANAGEMENT								
Security Awareness								
Improve Security		+						
Audit Systems				+	+	+		+
Dock/Office Housekeeping								
Enforce OSD procedure		⊕						⊕
Chalk Freight		⊕			+			⊕
Remove Trash			⊕			⊕		⊕
Repair Doors						+		
Lubricate Doors						+		
Hire OSD Personnel								⊕
Audit Procedures								⊕
File Papers								⊕
Paint								+
Yard Housekeeping								
Improve Surface		⊕				+	⊕	+
Clean and Prevent Litter		⊕	⊕	⊕	⊕	⊕	+	
Repair and Replace Bumpers		+	+	+	+		+	+
Fire Warnings at Gas Pump			+	+		⊕		+
Kill Weeds					⊕		+	+
Clean Perimeter			⊕		⊕	⊕	⊕	

Table 2.4 (Cont'd)

IMPLEMENTATION OF RECOMMENDATIONS	TERMINAL	1	2	3	4	5	6	7
	Directives							
Follow Established System		⊕						
Issue New Directives		⊕						
Notify Police							+	

TERMINAL	1	2	3	4	5	6	7	TOTAL
Number of Recommendations Made	35	29	31	29	36	25	43	228
Number Implemented	26	22	19	14	22	13	22	138
Percent Implemented	74%	76%	61%	48%	61%	52%	51%	61%

guard force and during the terminal audits. Some of the corrections will be made during this calendar year. The full evaluation of the effect of most of the recommendations can only be measured over a fairly long period of time by observing trends in loss ratios, net profits, operating revenues and other available data. Further evaluations will be presented in the report for Phase II of this program.

Although some of the recommendations requiring a continuing effort were implemented for several months, there was considerable evidence that a disciplined approach to these types of problems was not present, since the deficiencies noted in January often returned by June. Cleaning and preventing litter were the most frequently noted recurring deficiency at all terminals.

At the bottom of Table 2.4 the number of recommendations made, the number implemented and the percentage of those made which were implemented is summarized for each terminal. These percentages provide a gross measure of the responsiveness of the terminals and will be correlated with quantitative results in Chapter 3.

2.6 SUMMARY OF RECOMMENDED PROCEDURES AND RESULTS

As can be seen from the preceding discussion, ESI recommended to each terminal many detailed procedures for improving security. A broad summary of the basic security philosophy followed by ESI is given below, in order of greatest priority.

- Develop a strong management team; replace inadequate management. No security program can succeed without strong security-conscious management.
- Implement sound cargo handling and paper control procedures to fix responsibility for exceptions.

- Provide secure fences, adequate lighting and improve facilities to deter entry of thieves and control flow of traffic during working hours. Alarm system enhance security and may be required in severe environments.
- Improve employee screening procedures.
- Utilize guards, as needed, based on geographic and operating environment.

In summary, the success of the security programs can be seen by noting the following:

- At all terminals claims have been reduced.
- No large thefts were committed at any terminal.
- No terminal experienced a hijacking.
- The attitude of management and employees is greatly improved.

CHAPTER 3

QUANTITATIVE EVALUATION OF SECURITY PROGRAMS

3.1 INTRODUCTION

Terminals TWO through SEVEN spent $36,771 on added security and saved $129,331 in claims for an increase of $92,560 in gross profits. For these terminals the total combined cost of claims and security are projected to drop by $135,760 in 1972.

Terminal ONE broke a major theft ring and in August and September claims were reduced to 61% of what they had been. They are expected to continue at about 48% of the previous level. Thus Terminal ONE will finish 1972 with greatly reduced claims and a security system that will just about pay for itself.

These two statement best summarize results of the early operation of improved security at the test terminals. Other results and a more detailed discussion of these results are presented in this Chapter.

Cost of security and monthly claims paid are analyzed to determine the effectiveness and cost benefits of the security program at each terminal.

3.2 COST OF SECURITY IMPROVEMENT

The costs for improved security procedures are shown monthly for each terminal in Tables 3.1a-g.

The first eight items included in the tables are the cost of improved procedures and improvements to the physical plant. The total cost of other special security services such as surveillance and background checks are also included.

Total cost added in 1972 as a result of contracting for ESI services and implementing ESI recommendations are shown at the bottom of each Table. The security survey was part of each package and represents no additional cost.

Table 3.1a

Summary of Cost of Improved Security

Terminal ONE

PROCEDURE	JAN	FEB	MAR	APR	MAY	JUN	JUL	TOTAL
1. Personnel ID & Control								
2. Controlled Areas								
3. Barriers								
4. Lighting								
5. Alarms & Commo								
6. Guards	78	78	78	78	78	78	78	546
7. Cargo Handling								
8. Gen. Term. Management								
9. Special Security Services		600	1000	450				2050
Total Cost Added in 1972	78	678	1078	528	78	78	78	2596
Total Other Guard Cost in 1972	3822	3822	3822	3822	3822	3822	3822	26754
Total Cost 1972								29350

Table 3.1b

Summary of Cost of Improved Security
Terminal TWO

PROCEDURE	JAN	FEB	MAR	APR	MAY	JUN	JUL	TOTAL
1. Personnel ID & Control							NOT AVAILABLE	
2. Controlled Areas								
3. Barriers		90		180				270
4. Lighting			114					114
5. Alarms & Commo								
6. Guards	700	700	700	700	700	700		4200
7. Cargo Handling								
8. Gen. Term. Management								
9. Special Security Services	260	390	365	345	395	480		2235
Total Cost Added in 1972	960	1180	1179	1225	1095	1180		6819
Total Other Guard Cost in 1972	2962	2962	2962	2962	2962	2962		17772
Total Cost 1972 (6 months)								24591

Table 3.1c

Summary of Cost of Improved Security
Terminal THREE

PROCEDURE	JAN	FEB	MAR	APR	MAY	JUN	JUL	TOTAL
1. Personnel ID & Control								
2. Controlled Areas							3900	3900
3. Barriers			357				1650	2007
4. Lighting								
5. Alarms & Commo								
6. Guards	110	110	110	110	110	110	110	770
7. Cargo Handling								
8. Gen. Term. Management								
9. Special Security Services								
Total Cost Added in 1972	110	110	467	110	110	110	5660	6677
Total Other Guard Cost in 1972	3124	3124	3124	3124	3124	3124	3124	21868
Total Cost 1972								28545

Table 3.1d

Summary of Cost of Improved Security

Terminal FOUR

PROCEDURE	JAN	FEB	MAR	APR	MAY	JUN	JUL	TOTAL
1. Personnel ID & Control								
2. Controlled Areas								
3. Barriers		240					210	450
4. Lighting		150	80					230
5. Alarms & Commo								
6. Guards	640	640	640	640	640	640	640	4480
7. Cargo Handling								
8. Gen. Term. Management								
9. Special Security Services								
Total Cost Added in 1972	640	1030	720	640	640	640	850	5160
Total Other Guard Cost in 1972	2285	2285	2285	2285	2285	2285	2285	15995
Total Cost 1972								21155

Table 3.1e

Summary of Cost of Improved Security

Terminal FIVE

PROCEDURE	JAN	FEB	MAR	APR	MAY	JUN	JUL	TOTAL
1. Personnel ID & Control								
2. Controlled Areas								
3. Barriers							1800	1800
4. Lighting			90	215				305
5. Alarms & Commo								
6. Guards	400	400	400	400	400	400	400	2800
7. Cargo Handling								
8. Gen. Term. Management				350	700	700	700	2450
9. Special Security Services								
Total Cost Added in 1972	400	400	490	965	1100	1100	2900	7355
Total Other Guard Cost in 1972	3391	3391	3391	3391	3391	3391	3391	23737
Total Cost 1972								31092

Table 3.1f

Summary of Cost of Improved Security

Terminal SIX

PROCEDURE	JAN	FEB	MAR	APR	MAY	JUN	JUL	TOTAL
1. Personnel ID & Control								
2. Controlled Areas								
3. Barriers		270	310					580
4. Lighting		245						245
5. Alarms & Commo								
6. Guards								
7. Cargo Handling								
8. Gen. Term. Management								
9. Special Security Services	240	265	195	215	240	260	240	1655
Total Cost Added in 1972	240	780	505	215	240	260	240	2480
Total Other Guard Cost in 1972	1084	1084	1084	1084	1084	1084	1084	7588
Total Cost 1972								10068

Table 3.1g

Summary of Cost of Improved Security

Terminal SEVEN

PROCEDURE	JAN	FEB	MAR	APR	MAY	JUN	JUL	TOTAL
1. Personnel ID & Control								
2. Controlled Areas								
3. Barriers		450						450
4. Lighting		210	90	70				370
5. Alarms & Commo								
6. Guards	550	550	550	550	550	550	550	3850
7. Cargo Handling								
8. Gen. Term. Management								
9. Special Security Services		340	600	750		240	650	2580
Total Cost Added in 1972	550	1550	1240	1370	550	790	1200	7250
Total Other Guard Cost in 1972	3241	3241	3241	3241	3241	3241	3241	22687
Total Cost 1972								29937

The cost of guards shown in item 6 is the additional cost of the new guard service. When added to "total other guard cost in 1972" the full cost of the guard service is obtained.

It should be noted that cost data only through the month of July are included in this report. Similarly, claim data will be presented through July; that is, for the first seven months of improved security operation.

3.3 TERMINAL 1972 CLAIM DATA

Tables 3.2a-g show the claim experience of the respective test terminals during the period January-July 1972. These are the basic data from which the effectiveness and cost benefits of the various security techniques were derived.

3.4 EVALUATION CRITERIA

The traditional way of evaluating cargo security program is to examine monthly cumulative net claims paid and monthly cumulative claims ratio (CR). These can be compared to security costs to determine whether or not the program is cost effective. These criteria will be used to analyze the individual terminal security programs. In addition, the parameters defined below will be introduced and used for program evaluation:

1. Cost Benefit Ratio (CBR) defined as the cumulative claim costs saved divided by the cumulative additional cost of security operations. Specification of the CBR is thus equivalent to stating "I saved X dollars in claims for every dollar spent on the new security program." It measures the cost benefits derived this year from joining the security consortium. Mathematically,

$$\text{CBR} = (\text{claims saved}) \div (\text{added security costs})$$

Note that if added security costs are zero, the CBR is undefined, mathematically. The usual situation with some claim costs saved and

Table 3.2a

1972 Claim Experience
Terminal ONE

	JAN	FEB	MAR	ARP	MAY	JUN	JUL	AUG	SEP
Claims Paid	$14,882	$29,767	$15,999	$22,332	$14,133	$12,588	$20,229	$8,758	$14,018
Revenue	$376,707	$379,196	$447,155	$369,656	$376,171	$343,836	$341,000	$411,386	$399,622
Claim Ratio (CR)	3.95	7.85	3.58	6.04	3.76	3.66	5.93	2.13	3.52
Cum Rev	$376,707	$755,903	$1,203,059	$1,572,715	$1,948,886	$2,292,722	$2,633,722	$3,045,108	$3,444,730
Cum Claims	$14,882	$44,649	$60,648	$82,980	$97,113	$109,701	$129,930	$138,688	$152,706
Cum CR	3.95	5.91	5.04	5.28	4.98	4.78	4.93	4.55	4.43

Note: August and September claims have been substantially reduced now that the theft ring has been broken. The September claims shown include $5100 from a loss which occurred in October, 1971. Thus, claims are expected to continue at about $9000/month.

Table 3.2b

1972 Claim Experience
Terminal TWO

	JAN	FEB	MAR	APR	MAY	JUN	JUL*
Claims Paid	$4,850	$4,990	$5,975	$5,740	$4,875	$5,418	
Revenue	$327,550	$331,410	$360,200	$384,855	$401,480	$388,563	
Claim Ratio (CR)	1.48	1.51	1.66	1.49	1.21	1.39	
Cum Rev	$327,550	$658,960	$1,019,160	$1,404,015	$1,805,495	$2,194,058	
Cum Claims	$4,850	$9,840	$15,815	$21,555	$26,430	$31,848	
Cum CR	1.48	1.49	1.55	1.54	1.46	1.45	

*July data not available.

Table 3.2c

1972 Claim Experience
Terminal THREE

	JAN	FEB	MAR	APR	MAY	JUN	JUL
Claims Paid	$8,840	$9,245	$9,110	$8,377	$8,110	$7,611	$7,178
Revenue	$498,954	$506,985	$519,950	$539,321	$547,382	$542,851	$524,561
Claim Ratio (CR)	1.77	1.82	1.75	1.55	1.48	1.40	1.37
Cum Rev	$498,954	$1,005,939	$1,525,889	$2,065,210	$2,612,592	$3,155,443	$3,680,004
Cum Claims	$8,840	$18,085	$27,195	$35,572	$43,682	$51,293	$58,471
Cum CR	1.77	1.80	1.78	1.72	1.67	1.63	1.59

Table 3.2d

1972 Claim Experience
Terminal FOUR

	JAN	FEB	MAR	APR	MAY	JUN	JUL
Claims Paid	$6,722	$3,116	$1,448	$2,116	$2,723	$1,836	$958
Revenue	$246,968	$276,473	$324,391	$281,254	$281,498	$276,393	$212,541
Claim Ratio (CR)	2.72	1.13	0.45	0.75	0.97	0.66	0.45
Cum Rev	$246,968	$523,441	$847,832	$1,129,086	$1,410,584	$1,686,977	$1,899,518
Cum Claims	$6,722	$9,838	$11,286	$13,402	$16,125	$17,961	$18,919
Cum CR	2.72	1.88	1.33	1.19	1.14	1.06	1.00

Table 3.2e

1972 Claim Experience
Terminal FIVE

	JAN	FEB	MAR	APR	MAY	JUN	JUL
Claims Paid	$1,875	$2,580	$2,740	$2,645	$2,605	$2,450	$2,605
Revenue	$189,565	$193,622	$201,990	$207,500	$211,380	$212,995	$205,405
Claim Ratio (CR)	0.99	1.33	1.36	1.27	1.23	1.15	1.27
Cum Rev	$189,565	$383,187	$585,177	$792,677	$1,004,057	$1,217,052	$1,422,457
Cum Claims	$1,875	$4,455	$7,195	$9,840	$12,445	$14,895	$17,500
Cum CR	0.99	1.16	1.23	1.24	1.24	1.22	1.23

Table 3.2f

1972 Claim Experience
Terminal SIX

	JAN	FEB	MAR	APR	MAY	JUN	JUL
Claims Paid	$1,095	$943	$1,817	$841	$2,429	$572	$197
Revenue	$151,065	$166,712	$157,149	$152,815	$147,471	$142,448	$129,614
Claim Ratio (CR)	0.72	0.57	1.16	0.55	1.65	0.40	0.15
Cum Rev	$15,065	$317,777	$474,926	$627,741	$775,212	$917,660	$1,047,274
Cum Claims	$1,095	$2,038	$4,855	$4,696	$7,125	$7,697	$7,894
Cum CR	0.72	0.64	0.81	0.75	0.92	0.84	0.75

Table 3.2g

1972 Claim Experience
Terminal SEVEN

	JAN	FEB	MAR	APR	MAY	JUN	JUL
Claims Paid	$6,957	$8,626	$11,609	$13,858	$10,596	$9,365	$8,084
Revenue	$259,589	$263,792	$276,405	$234,088	$249,919	$252,430	$227,965
Claim Ratio (CR)	2.68	3.27	4.20	5.92	4.24	3.71	3.55
Cum Rev	$259,589	$523,381	$799,786	$1,033,874	$1,283,793	$1,536,223	$1,764,188
Cum Claims	$6,957	$15,583	$27,192	$41,050	$51,646	$61,011	$69,095
Cum CR	2.68	2.98	3.40	3.97	4.02	3.97	3.92

added security expense results in a numeric CBR with positive algebraic sign. A high numeric value for the CBR is desirable, since it represents more dollars saved at lower security costs. If claim costs have risen, the claims saved is expressed as a negative number and the CBR becomes negative.

2. The CBR measures the short term cost benefits accrued in the first year of improved security by relating changes in security costs and claim costs. To determine the overall effectiveness of a security program total costs, as opposed to differential costs, can be examined. Therefore, the operation at each terminal will also be evaluated by comparing the combined total cost of claims and security (CSC) in 1971 and 1972 (projected). If CSC is reduced in 1972, then a worthwhile saving has been achieved. Indeed, the total security program pays for itself if CSC is reduced.

3. Claim Ratio Reduction Factor (CRRF) defined as the cumulative CR this year divided by last year's CR and expressed as a percent. Specification of the CRRF is equivalent to stating "I reduced my CR to X percent of last year's."

   Mathematically,

$$\text{CRRF} = (\text{CR this year}) \div (\text{CR last year}) \times 100\%$$

   A lower CRRF is better because it represents a greater reduction in CR.

To determine claim performance and to calculate the CBR and CRRF, cumulative data and other factors must be calculated from the basic data presented in Sections 3.2 and 3.3. These data are presented below.

3.5 CUMULATIVE TERMINAL PERFORMANCE DATA

On a cumulative or year-to-date basis, terminal security performance was measured by analyzing cumulative claims ratio and cumulative claim costs saved. Cumulative claim ratio is easily calculated each month from cumulative revenue and cumulative claims paid. Cumulative claims saved was calculated from claims paid this year minus equivalent claims paid last year. Equivalent claims paid last year were calculated from this year's revenue times last year's CR; this is a measure of what claims would have been paid this year if last year's CR had been maintained.

Mathematically

claims saved = equiv. claims last year - claims this year
equiv. claims last year = this year's revenue x last year's CR

Tables 3.3a-g summarize these data for each terminal.

Tables 3-4 and 3.5 show the CBR and CRRF, respectively, for the seven terminals and also show the average for each factor. Figures 3.1 and 3.2 show bar graphs of the CBR and CRRF achieved by Terminals TWO through SEVEN.

Table 3.6 shows the CSC for 1971 and 1972. Projections for 1972 annual costs were taken from Table 3.3 year-to-date data and extrapolated for 12 months. Note that this is a conservative estimate because no further improvement was projected for any terminal. The CSC savings projected for 1972 are shown in the last column of Table 3.6a.

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ITEM	DESCRIPTION	SOURCE OR METHOD OF CALCULATION	JAN	FEB	MAR	APR	MAY	JUN	JUL
a	Cumulative Revenue	Table 3.2a	$376,707	$755,903	1,203,059	1,572,715	1,948,886	2,292,722	2,633,722
b	Cumulative Claims Paid	Table 3.2a	$14,882	$44,649	$60,648	$82,980	$97,113	$109,701	$129,930
c	Cumulative Claim Ratio (CR)	b ÷ a	3.95	5.91	5.04	5.28	4.98	4.78	4.93
d	Last Year's CR	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35
e	Cumulative Claims @ Last Year's CR	a x d	$12,619	$25,322	$40,302	$52,685	$65,287	$76,806	$88,229
f	Cumulative Claims Saved	e - b	-$2,263	-$9,327	-$20,346	-$30,295	-$31,826	-$32,895	-$41,701
g	Cumulative Added Security Cost	Table 3.1a	0	$600	$1,600	$2,050	$2,050	$2,050	$2,050
h	Cumulative Cost Benefit Ratio (CBR)	f ÷ g	N/A	-15.55	-12.72	-14.78	-15.52	-16.05	-20.34
i	Cumulative Claim Ratio Reduction Factor (CRRF)	c ÷ d	118%	176%	150%	158%	149%	143%	147%
j	Total Cost of Security 1972 (7 mo.)	Table 3.1a	$29,350						
k	Total Cost of Security 1971	3822 x 12	$45,864						

Table 3.3a

Cumulative Security Program Evaluation Factors
Terminal ONE

ITEM	DESCRIPTION	SOURCE OR METHOD OF CALCULATION	JAN	FEB	MAR	APR	MAY	JUN	JUL*
a	Cumulative Revenue	Table 3.2b	$327,550	$658,960	1,019,160	1,404,015	1,805,495	2,194,058	
b	Cumulative Claims Paid	Table 3.2b	$4,850	$9,840	$15,815	$21,555	$26,430	$31,848	
c	Cumulative Claim Ratio (CR)	b ÷ a	1.48	1.49	1.55	1.54	1.46	1.45	
d	Last Year's CR	4.83	4.83	4.83	4.83	4.83	4.83	4.83	
e	Cumulative Claims @ Last Year's CR	a x d	$15,820	$31,827	$49,225	$67,813	$87,205	$105,973	
f	Cumulative Claims Saved	e - b	$10,970	$21,987	$33,410	$46,258	$60,775	$74,125	
g	Cumulative Added Security Cost	Table 3.1b	$960	$2,140	$3,319	$4,544	$5,639	$6,819	
h	Cumulative Cost Benefit Ratio (CBR)	f ÷ g	11.42	10.27	10.06	10.18	10.77	10.87	
i	Cumulative Claim Ratio Reduction Factor (CRRF)	c ÷ d	31%	31%	32%	32%	30%	30%	
j	Total Cost of Security 1972 (6 mo.)	Table 3.1b	$24,591						
k	Total Cost of Security 1971	2962 x 12	$35,544						

*July data not available.

Table 3.3b

Cumulative Security Program Evaluation Factors
Terminal TWO

ITEM	DESCRIPTION	SOURCE OR METHOD OF CALCULATION	JAN	FEB	MAR	APR	MAY	JUN	JUL
a	Cumulative Revenue	Table 3.2c	$498,954	$1,005,939	$1,525,889	2,065,210	$2,612,592	$3,155,443	$3,680,004
b	Cumulative Claims Paid	Table 3.2c	$8,840	$18,085	$27,195	$35,572	$43,682	$51,293	$58,471
c	Cumulative Claim Ratio (CR)	b ÷ a	1.77	1.80	1.78	1.72	1.67	1.63	1.59
d	Last Year's CR	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88
e	Cumulative Claims @ Last Year's CR	a x d	$9,380	$18,911	$28,686	$38,825	$49,116	$59,134	$69,184
f	Cumulative Claims Saved	e - b	$540	$826	$1,491	$3,253	$5,434	$7,841	$10,713
g	Cumulative Added Security Cost	Table 3.1c	$110	$220	$687	$797	$907	$1,017	$6,677
h	Cumulative Cost Benefit Ratio (CBR)	f ÷ g	4.91	3.75	2.17	4.08	5.99	7.71	1.60
i	Cumulative Claim Ratio Reduction Factor (CRRF)	c ÷ d	94%	96%	95%	91%	89%	87%	85%
j	Total Cost of Security 1972 (7 mo.)	Table 3.1c	$28,545						
k	Total Cost of Security 1971	3124 x 12	$37,488						

Table 3.3c

Cumulative Security Program Evaluation Factors

Terminal THREE

ITEM	DESCRIPTION	SOURCE OR METHOD OF CALCULATION	JAN	FEB	MAR	APR	MAY	JUN	JUL
a	Cumulative Revenue	Table 3.2d	$246,968	$523,441	$847,832	$1,129,086	$1,410,584	$1,686,977	$1,899,518
b	Cumulative Claims Paid	Table 3.2d	$6,722	$9,838	$11,286	$13,402	$16,125	$17,961	$18,919
c	Cumulative Claim Ratio (CR)	b ÷ a	2.72	1.88	1.33	1.19	1.14	1.06	1.00
d	Last Year's CR	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33
e	Cumulative Claims @ Last Year's CR	a x d	$3,284	$6,962	$11,276	$15,017	$18,761	$22,437	$25,264
f	Cumulative Claims Saved	e - b	-$3,438	-$2,876	-$10	$1,615	$2,636	$4,476	$6,345
g	Cumulative Added Security Cost	Table 3.1d	$640	$1,670	$2,390	$3,030	$3,670	$4,310	$5,160
h	Cumulative Cost Benefit Ratio (CBR)	f ÷ g	-5.37	-1.72	-0.004	0.53	0.72	1.04	1.23
i	Cumulative Claim Ratio Reduction Factor (CRRF)	c ÷ d	204%	141%	100%	89%	86%	80%	75%
j	Total Cost of Security 1972 (7 mo.)	Table 3.1d	$21,155						
k	Total Cost of Security 1971	2285 x 12	$27,420						

Table 3.3d

Cumulative Security Program Evaluation Factors
Terminal FOUR

ITEM	DESCRIPTION	SOURCE OR METHOD OF CALCULATION	JAN	FEB	MAR	APR	MAY	JUN	JUL
a	Cumulative Revenue	Table 3.2e	$189,565	$383,187	$585,177	$792,677	$1,004,057	$1,217,052	$1,422,457
b	Cumulative Claims Paid	Table 3.2e	$1,875	$4,455	$7,195	$9,840	$12,445	$14,895	$17,500
c	Cumulative Claim Ratio (CR)	b ÷ a	0.99	1.16	1.23	1.24	1.24	1.22	1.23
d	Last Year's CR	2.52	2.52	2.52	2.52	2.52	2.52	2.52	2.52
e	Cumulative Claims @ Last Year's CR	a x d	$4,777	$9,656	$14,746	$19,975	$25,302	$30,670	$35,846
f	Cumulative Claims Saved	e - b	$2,902	$5,201	$7,551	$10,135	$12,857	$15,775	$18,346
g	Cumulative Added Security Cost	Table 3.1e	$400	$800	$1,290	$2,255	$3,355	$4,455	$7,355
h	Cumulative Cost Benefit Ratio (CBR)	f ÷ g	7.25	6.50	5.85	4.49	3.83	3.54	2.49
i	Cumulative Claim Ratio Reduction Factor (CRRF)	c ÷ d	39%	46%	49%	49%	49%	48%	49%
j	Total Cost of Security 1972 (7 mo.)	Table 3.1e	$31,092						
k	Total Cost of Security 1971	3391 x 12	$40,692						

Table 3.3e

Cumulative Security Program Evaluation Factors
Terminal FIVE

ITEM	DESCRIPTION	SOURCE OR METHOD OF CALCULATION	JAN	FEB	MAR	APR	MAY	JUN	JUL
a	Cumulative Revenue	Table 3.2f	$151,065	$317,777	$474,926	$627,741	$775,212	$917,660	$1,047,274
b	Cumulative Claims Paid	Table 3.2f	$1,095	$2,038	$3,855	$4,696	$7,125	$7,697	$7,894
c	Cumulative Claim Ratio (CR)	b ÷ a	0.72	0.64	0.81	0.75	0.92	0.84	0.75
d	Last Year's CR	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
e	Cumulative Claims @ Last Year's CR	a x d	$1,314	$2,765	$4,132	$5,461	$6,744	$7,984	$9,111
f	Cumulative Claims Saved	e - b	$219	$727	$277	$765	-$381	$287	$1,217
g	Cumulative Added Security Cost	Table 3.1f	$240	$1,020	$1,525	$1,740	$1,980	$2,240	$2,480
h	Cumulative Cost Benefit Ratio (CBR)	f ÷ g	0.91	0.71	0.18	0.44	-0.19	0.13	0.49
i	Cumulative Claim Ratio Reduction Factor (CRRF)	c ÷ d	83%	74%	93%	86%	106%	97%	86%
j	Total Cost of Security 1972 (7 mo.)	Table 3.1f	$10,068						
k	Total Cost of Security 1971	1084 x 12	$13,008						

Table 3.3f

Cumulative Security Program Evaluation Factors

Terminal SIX

ITEM	DESCRIPTION	SOURCE OR METHOD OF CALCULATION	JAN	FEB	MAR	APR	MAY	JUN	JUL
a	Cumulative Revenue	Table 3.2g	$259,589	$523,381	$799,786	$1,033,874	$1,283,793	$1,536,223	$1,764,188
b	Cumulative Claims Paid	Table 3.2g	$6,957	$15,583	$27,192	$41,050	$51,646	$61,011	$69,095
c	Cumulative Claim Ratio (CR)	b ÷ a	2.68	2.98	3.40	3.97	4.02	3.97	3.92
d	Last Year's CR	4.97	4.97	4.97	4.97	4.97	4.97	4.97	4.97
e	Cumulative Claims @ Last Year's CR	a x d	$12,901	$26,012	$39,749	$51,384	$63,805	$76,350	$87,680
f	Cumulative Claims Saved	e - b	$5,944	$10,429	$12,557	$10,334	$12,159	$15,339	$18,585
g	Cumulative Added Security Cost	Table 3.1g	$550	$2,100	$3,340	$4,710	$5,260	$6,050	$7,250
h	Cumulative Cost Benefit Ratio (CBR)	f ÷ g	10.81	4.97	3.76	2.19	2.31	2.53	2.56
i	Cumulative Claim Ratio Reduction Factor (CRRF)	c ÷ d	54%	60%	68%	80%	81%	80%	79%
j	Total Cost of Security 1972 (7 mo.)	Table 3.1g	$29,937						
k	Total Cost of Security 1971	3241 x 12	$38,892						

Table 3.3g

Cumulative Security Program Evaluation Factors
Terminal SEVEN

Table 3.4

Cumulative Cost Benefit Ratio for Test Terminals
(CBR)

Terminal No.	Jan	Feb	Mar	Apr	May	Jun	Jul
1	Not Defined	-15.54	-12.72	-14.78	-15.52	-16.05	-20.34
2	11.42	10.27	10.06	10.18	10.77	10.87	N/A
3	4.91	3.75	2.17	4.08	5.99	7.71	1.60
4	-5.37	-1.72	-0.004	0.53	0.72	1.04	1.23
5	7.25	6.50	5.85	4.49	3.83	3.54	2.49
6	0.91	0.71	0.18	0.44	-0.19	0.13	0.49
7	10.81	4.97	3.76	2.19	2.31	2.53	2.56

This table shows the CBR on a month-by-month basis for each terminal. The data are taken from Table 3.3, item h.

Table 3.5

Cumulative Cost Ratio Reduction Factor for Test Terminals
(CRRF)

Terminal No.	Jan	Feb	Mar	Apr	May	Jun	Jul
1	118%	176%	150%	158%	149%	143%	147%
2	31%	31%	32%	32%	30%	30%	N/A
3	94%	96%	95%	91%	89%	87%	85%
4	204%	141%	100%	89%	86%	80%	75%
5	39%	46%	49%	49%	49%	48%	49%
6	83%	74%	93%	86%	106%	97%	86%
7	54%	60%	68%	80%	81%	80%	79%

This table shows the CRRF on a month-by-month basis for each terminal. The data are taken from Table 3.3, item i.

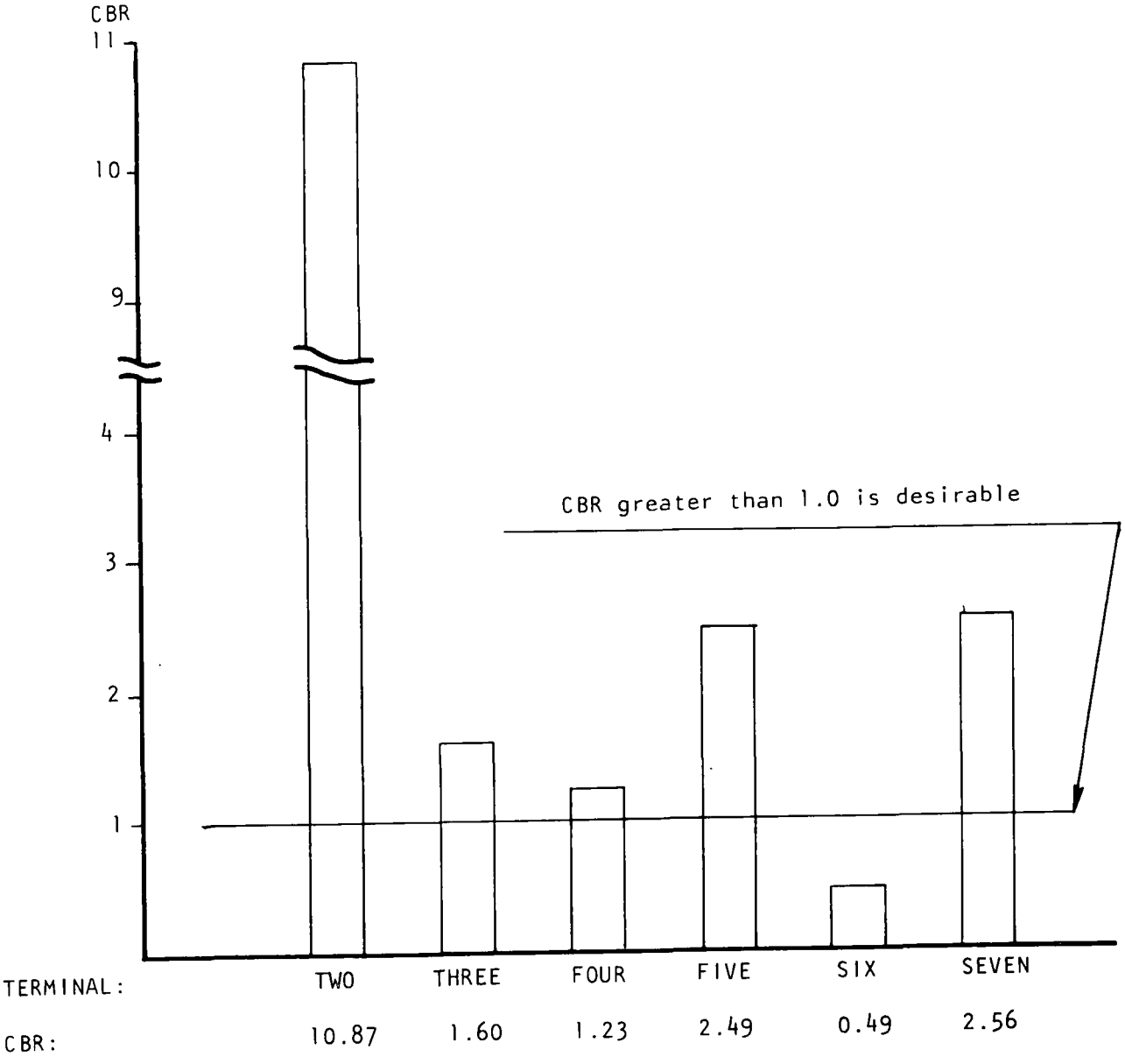


Figure 3.1 CBR Achieved by Test Terminals
January - July 1972

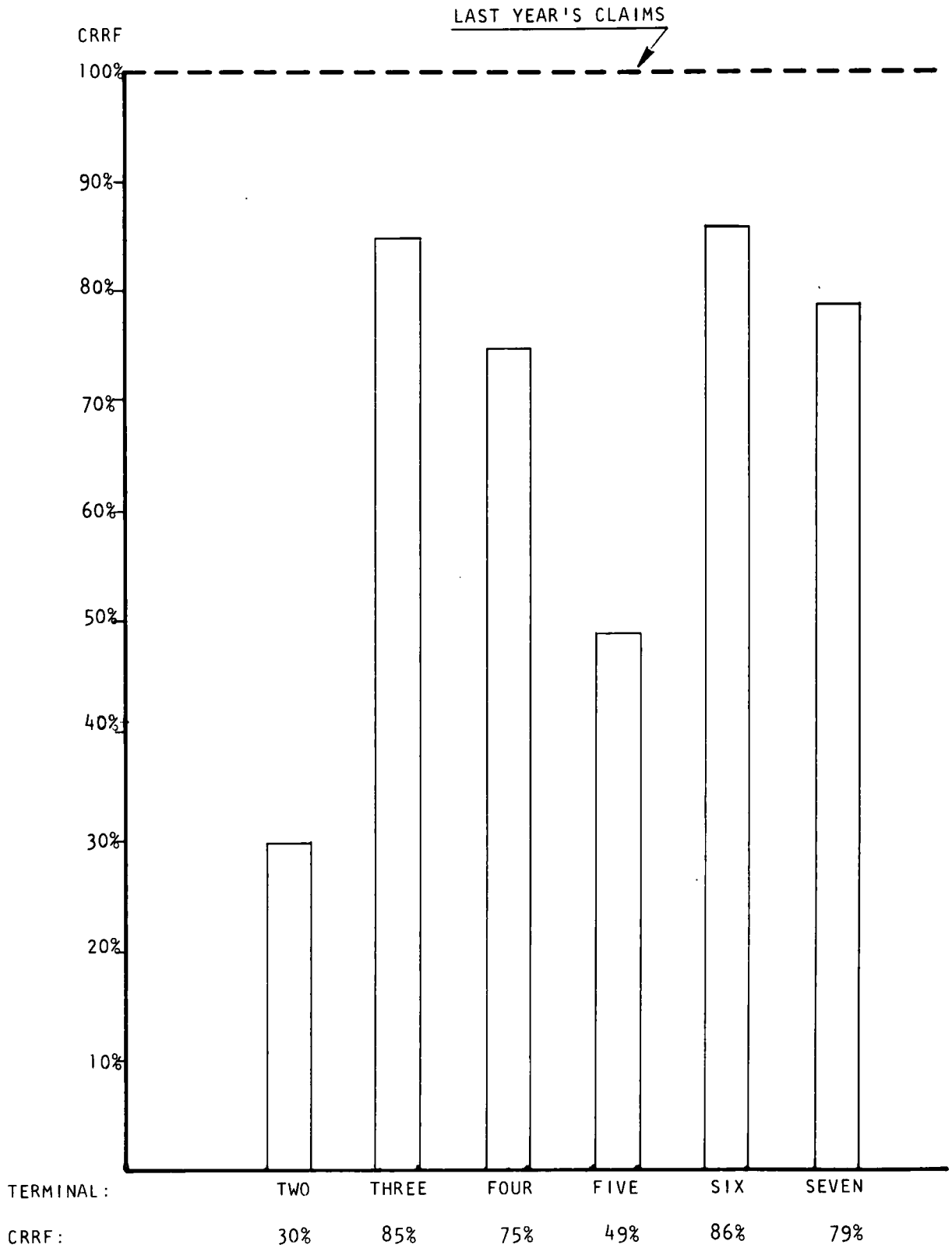


Figure 3.2 CRRF Achieved by Test Terminals
January - July 1972

Table 3.6

Claim + Security Costs

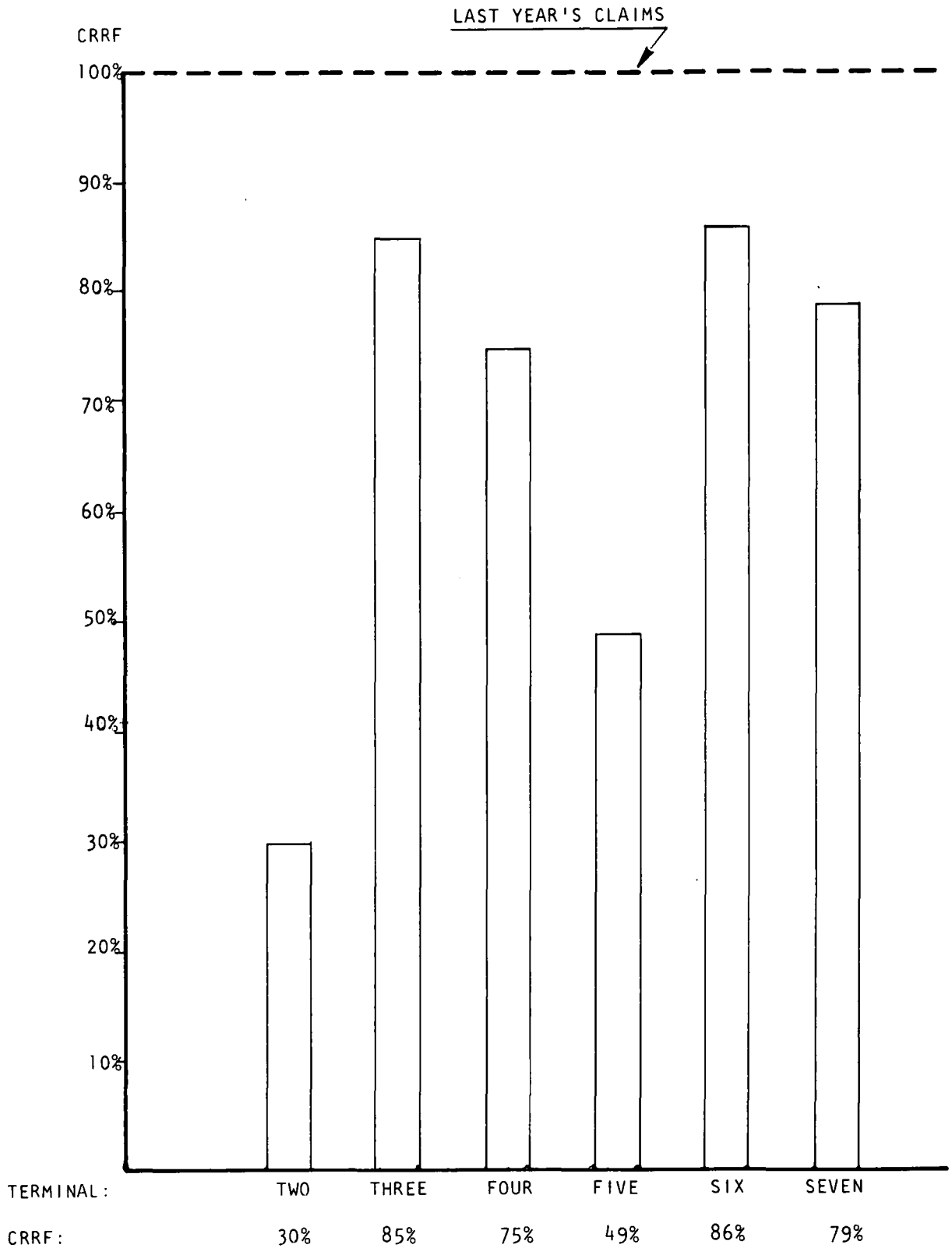
a. 1971

TERMINAL	REVENUE ($1000's) (APPENDIX)	CLAIMS PAID (APPENDIX)	SECURITY COST (TABLE 3.3)	CLAIM + SECURITY COST (CSC)
ONE	$5,500	$184,416	$45,864	$230,280
TWO	3,460	166,815	35,544	202,359
THREE	6,240	117,000	37,488	154,488
FOUR	3,160	42,174	27,420	69,594
FIVE	2,090	52,706	40,692	93,398
SIX	1,820	15,897	13,008	28,905
SEVEN	3,280	162,887	38,892	201,779

b. 1972 (Projected Annual)

	Item a	Item b	Item c	Item d	Item 3	Item f
TERMINAL	PROJECTED ANNUAL REVENUE ($1000's)	CURRENT CR (TABLE 3.3)	PROJECTED ANNUAL CLAIMS (a x b)	PROJECTED ANNUAL SECURITY COST (TABLE 3.3) YTDX (12/7)	CLAIM + SECURITY COST (CSC)	CLAIM + SECURITY COST SAVING (1971-1972)
ONE	$4,515	4.93%	$182,706[1]	$50,314	$233,020	-$2,740
TWO	4,388	1.45	63,626	49,182	112,808	89,551
THREE	6,309	1.59	100,313	48,934	149,247	5,241
FOUR	3,257	1.00	32,570	36,266	68,836	758
FIVE	2,438	1.23	29,987	53,301	83,288	10,110
SIX	1,795	0.75	13,463	17,259	30,722	-1,817
SEVEN	3,024		118,541	51,321	169,862	31,917
					NET SAVINGS	$133,020

1. Jan-Sept. Claims = $152,706; Projected Oct-Nov Claims = $30,000
Total Projected Claims = $182,706 (see Table 3.2a)



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3.6 DISCUSSION OF RESULTS

Terminal ONE is unique because of the severity of its theft problem. As stated in Table 3.2a, however, claims have been sharply reduced in August and September and are expected to continue at this level. Thus, Terminal ONE will end the year with a major theft ring broken, claim ratio sharply reduced and a security program close to paying for itself.

Terminals TWO through SEVEN did not have such a severe problem and their results can be discussed together.

3.6.1 CBR's Achieved by the Terminals

As shown in Figure 3.1 and Table 3.4, Terminals TWO-SEVEN, except SIX, all achieved a CBR greater than 1.0, which means they saved money and increased profits as a result of the security program. Terminal SIX already enjoyed a CR much lower than the national average; their CBR was less than 1.0. They consider their investment in security a long range investment and made it to assure that they continue maintaining a low CR.

3.6.2 CRRF's Achieved by the Terminals

As shown in Figure 3.2 and Table 3.5, Terminals TWO-SEVEN all reduced their CR below that of last year.

3.6.3 CSC Savings Achieved

With the exception of Terminals ONE and SIX all terminals reduced their total cost of claims + security over 1971. (Note that these are projections; complete 1972 data will be reported in a separate report.) As shown in Table 3.6b substantial savings were achieved. Basically the reduction in claim costs more than offset security costs. Thus, when considered with claim costs, the total direct, measurable costs of security pay for themselves.

Terminal ONE spent a net $2,740 to break a major theft ring. If claim and security costs continue at the present level through 1973 (claim ≈ $120,000; security ≈ $50,000) in 1973 their CSC will be about $60,000 less than for 1971.

Terminal SIX already was operating at a very low CR. They knowlingly spent $1,817 to assure that this continues.

3.6.4 Correlation of Results and Security Program Recommendations

As a final summary of quantitative results, the data in Table 3.7 correlate results with survey findings, recommendations and the percent of recommendations implemented.

Terminals TWO-SEVEN are ranked based on last year's CR. Thus, the terminals with the more severe security problems are listed first.

Generally, the following is evident

- Terminals with the more severe problem
  - were found to be inadequate more often
  - received more recommendations for improvement
  - spend more money implementing improvements
  - achieved a greater CBR
  - achieved a greater CSC savings.
- Terminals which implemented more recommendations achieved better results.

With few exceptions, the above statements are true, indicating that results correlate well with security-survey findings and recommendations. Problems were identified correctly and effective countermeasures were proposed. The greater the number of recommendations implemented, the better the results.

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Table 3.7

Summary of Results of Improved Security
January - July 1972

TERMINAL	LAST YEAR'S CR	THIS YEAR'S CR	CBR	CRRF	CLAIMS SAVED	COST OF ADDED SECURITY	CSC SAVINGS	FINDINGS % OF 21 INADEQUATE (Table 2.2)	RECOMMENDATIONS % of 89 POSSIBLE (Table 2.3)	% OF RECOMMENDATIONS IMPLEMENTED (Table 2.4)
SEVEN	4.97	3.92	2.56	79%	$18,585	$7,250	$31,917	67%	48%	51%
TWO	4.83	1.45	10.87	30%	$74,125	$7,849	$89,551	86%	39%	74%
FIVE	2.52	1.23	2.49	49%	$18,346	$7,355	$10,110	57%	33%	61%
THREE	1.88	1.59	1.60	85%	$10,713	$6,677	$5,241	52%	33%	61%
FOUR	1.33	1.0	1.23	75%	$6,345	$5,160	$758	48%	35%	48%
SIX	0.87	0.75	0.49	86%	$1,217	$2,480	-$1,817	48%	28%	52%
Total					$129,331	$36,771	$135,760			
ONE	3.35	4.93	-20.35	147%	-$41,701	$2,050	-$2,740	87%	40%	72%

Note: In August and September Terminal ONE claims have been reduced to 61% of their January-July level. This includes a payment of $5100 for a loss which occurred in October, 1971. If claims continue at the present level they will run at 48% of the January-July level for the rest of the year.

- Implement sound cargo handling and paper control procedures to fix responsibility for exceptions.
- Provide adequate physical security and facilities to deter entry of thieves and control the flow of all traffic during working hours. Alarm systems enhance security and may be required in severe environments.
- Implement employee screening procedures to prevent hiring undesirables.
- Utilize guards, as needed, based on geographic and operating environment.

These basic tenets of good security can be applied to all segments of the transportation industry. ESI and the seven test terminals implemented these principles in the terminal security programs as described in Chapter 2. Review of recommendations and major events at each terminal shows that many management changes were implemented as the first step at those terminals where management was found to be weak. Most terminals required some improvement in their paper control system and physical security. Many of the special security services provided were related to employee screening and background checks. Guards were provided at all terminals, replacing previous guard services which had been unable to correct theft problems.

These principles and procedures, properly adapted to individual requirements are applicable to all trucking terminals and are also applicable to the operations in other modes of transportation.

Methods which can be applied to implement these principles are discussed in the remainder of this Section. For convenience, the procedures are discussed in the order presented in Tables 2.2, 2.3 and 2.4.

CHAPTER 4

CONCLUSIONS AND RECOMMENDATIONS

4.1 SUMMARY OF RESULTS

ESI and the participating terminals corrected major security problems and significantly reduced cargo claims.

Terminal ONE broke a major theft ring and claims in August and September were reduced to 48% of the previous level and are expected to continue at the lower level.

Terminals TWO-SEVEN saved $129,331 in claims for additional security expenditures of $36,771. Clearly, the security programs at these terminals have been effective and cost-beneficial. At these terminals the combined total cost of claims plus security is projected to be reduced by $135,760 in 1972.

At each terminal these results were obtained because strong management instituted and enforced basic security procedures. By joining a security consortium the terminals obtained services at a cost far below what it would have cost if they had independently hired security personnel. ESI provided frequent on-site management of the security programs. ESI supervisors visited each terminal three times daily and discussed the security conditions and any events daily with each terminal manager. Acting independently each terminal would require at least one additional employee to provide this supervision. For smaller terminals effective professional security services are obtained at lower cost by the consortium approach.

4.2 RECOMMENDATIONS FOR EFFECTIVE CARGO SECURITY

The security procedures instituted at each terminal are basic and follow the philosophy stated in Section 2.6. In ESI's opinion, the best approach to cargo security can be stated as follows, in order of priority.

- Develop a strong security-conscious management team.

- Implement sound cargo handling and paper control procedures to fix responsibility for exceptions.
- Provide adequate physical security and facilities to deter entry of thieves and control the flow of all traffic during working hours. Alarm systems enhance security and may be required in severe environments.
- Implement employee screening procedures to prevent hiring undesirables.
- Utilize guards, as needed, based on geographic and operating environment.

These basic tenets of good security can be applied to all segments of the transportation industry. ESI and the seven test terminals implemented these principles in the terminal security programs as described in Chapter 2. Review of recommendations and major events at each terminal shows that many management changes were implemented as the first step at those terminals where management was found to be weak. Most terminals required some improvement in their paper control system and physical security. Many of the special security services provided were related to employee screening and background checks. Guards were provided at all terminals, replacing previous guard services which had been unable to correct theft problems.

These principles and procedures, properly adapted to individual requirements are applicable to all trucking terminals and are also applicable to the operations in other modes of transportation.

Methods which can be applied to implement these principles are discussed in the remainder of this Section. For convenience, the procedures are discussed in the order presented in Tables 2.2, 2.3 and 2.4.

4.2.1 Personnel Identification and Control

All permanent employees should fill out a detailed application and be interviewed by management. Photographs and fingerprints should be obtained and, if legal, a polygraph examination should be administered. After the interview, the employee's background and credit should be checked, going back 10 years. At least the last two employers should be contacted. If possible legally, a criminal check should be made. Any gaps should be explained. The application form should explain that incorrect statements will be cause for dismissal.

All candidates for management should be similarly checked through their entire adult working life.

Casual employees should be photographed, fingerprints from at least one hand should be obtained and driver's license and social security number should be obtained. Two or three previous employers should be telephoned and his home telephone should be checked to be sure he is known at that number.

To control flow of personnel traffic, all employees should be provided ID cards. (In some smaller terminals a system of personal recognition may be sufficient.)

The facility should be designed so that all personnel can be checked by a guard or some other company employee at least on exit.

All visitors including foreign drivers should be required to identify themselves, be issued a gate pass and refused exit unless the pass is signed by the person visited. The pass can also be used to clear packages the visitor might be taking out. All visitors should be logged in and logged out.

4.2.2 Controlled Areas

Employee parking inside the terminal fence should be restricted. Often only office personnel are allowed to park inside. Cars permitted inside should be issued an identifying decal to facilitate entry and help identify unauthorized vehicles.

At exit, all vehicles, including those of top management and corporate management, should be inspected, including opening the trunk.

Fences are essential to good security. The entire yard should be fenced with 8-foot high, 2-inch mesh, 9 gauge steel chain link fence with a double 3-strand barbed wire overhang. Electric gates, controlled by a guard or other terminal employee, should be provided to positively control traffic.

All fence lines should be clear of weeds, debris and equipment to deny concealment and prevent easy entry.

Bumpers are essential to prevent damage to the fence.

Adequate lighting is extremely important. The standards published in DOT P 5200.2 are adequate. Illumination should be measured with a light meter and inadequacies corrected.

4.2.3 Alarms and Communications

Fence and internal alarm systems, TV cameras and other security devices enhance the senses of guards or in areas where the theft threat is not severe, may replace guards or reduce guard requirements.

If electronics are used, it is important to select an appropriate response to alarms. Direct police wires, direct wires to supervisory personnel homes, annunciators at a central guard station and many other responses are possible. Each situation is unique and careful design, by experts, is required.

4.2.4 Guards

Use of guards depends on the location of the facility. In a high crime area, guards are essential. In larger facilities with heavy traffic flow, guards are usually required and are an economical solution to traffic control.

In areas of relatively low crime incidence, guards are often not required. In such situations, some form of electronic alarms should usually be installed.

A good guard service will require a high school education for guards, rigid physical fitness qualifications, qualification for firearms and will have a continuing training program. A good fringe benefit program should be provided to assure top quality guard personnel.

When evaluating competing guard services, transportation company management should ask to see the application and interview notes for the specific guards to be assigned to their facility. This will help evaluate the relative merits of the guards and will also assure that they will not be provided inadequately trained guards very recently hired.

Guards should be closely supervised. The guard supervisor should inspect each site and the guards there daily. A daily conference between the transportation company management and the guard supervisor should also be held so that each is aware of problems and special activities of the other.

4.2.5 Cargo Handling and Paper Control

Cargo handling and paper control are second in importance only to strong management for providing a secure cargo terminal. Review of the Security Survey Reports will show that many corrections were made to terminal paper flow systems. Terminal ONE had a poor procedure which had to be greatly modified. Terminal FIVE had a good system which will be summarized here to illustrate the features of a good system.

Basically, at least for trucking companies, the operation can be divided into inbound and outbound procedures. Inbound freight arrives on a line haul unit, is stripped, loaded onto a delivery vehicle and delivered to a local consignee. The control system must provide a check point each time freight is handled. The office must retain a control document to check dockmen and drivers.

Outbound freight is picked up locally. On return, the pick-up vehicle must be stripped, the freight loaded on the proper line haul unit and the line haul unit dispatched. Again, the system must provide a check point each time the freight is handled and the office must retain some form of control document.

In either operation, each dockman or driver who handled the freight must sign or initial a document, indicate the piece count and date the document. Whenever an exception is noted, it should be reported on an Exception Report Form which is used by the OS&D Department to work the problem.

Figures 4.1 and 4.2 illustrate good Inbound and Outbound procedures.

Proper protection of high value cargo is also an important part of cargo handling. A crib for temporary storage of high value cargo is essential. Trailers with high value loads should not be stored in a yard if at all possible. When they must be stored, pin locks should be employed and secure trailer locks are also required.

4.2.6 General Terminal Management

Good housekeeping aids good security. It indicates that management will not tolerate slovenly performance. This mental attitude has a positive effect on security.

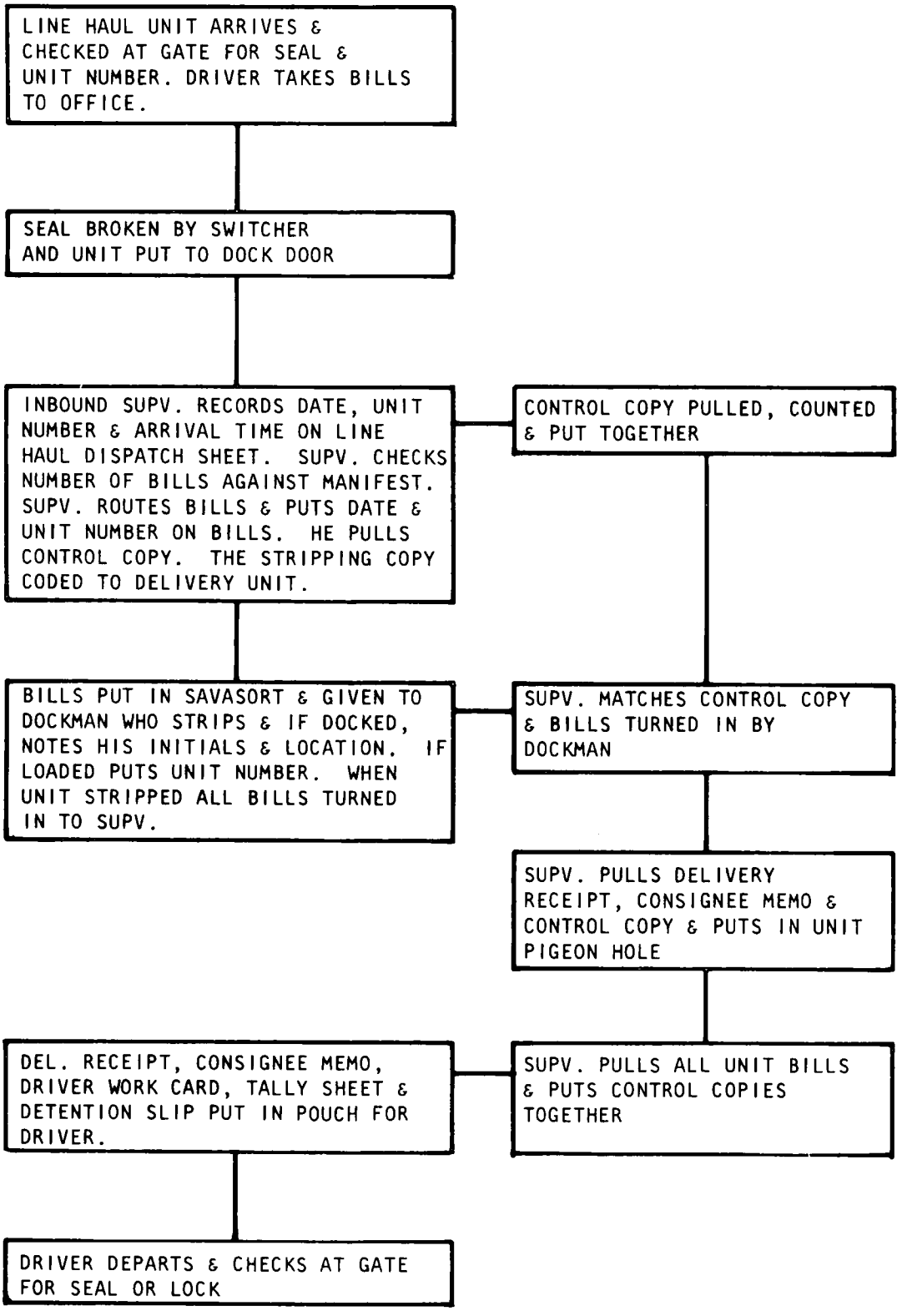

Figure 4.1 Inbound Procedure Paperflow

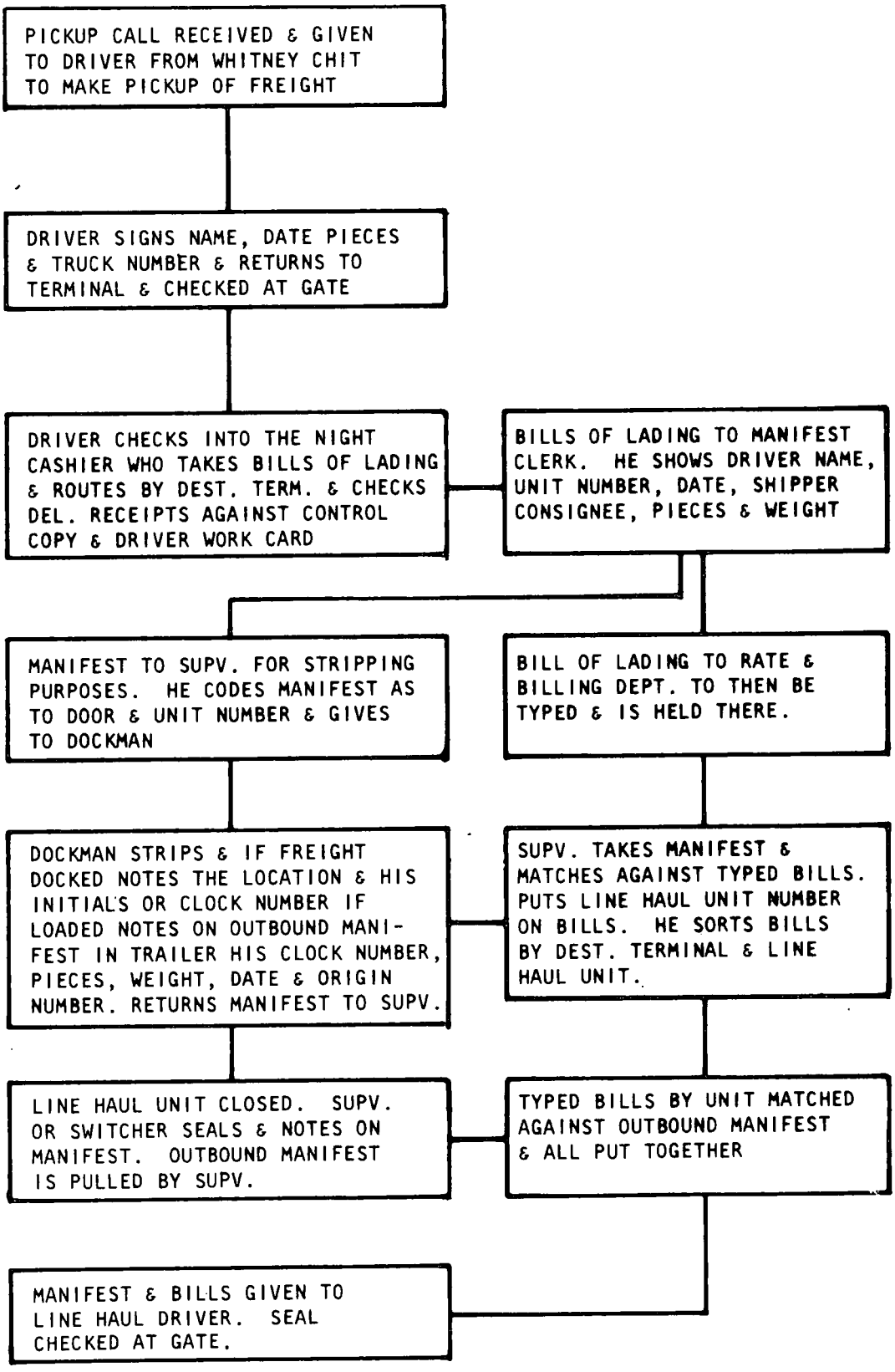

Figure 4.2 Outbound Procedure Paperflow

4.3 CONCLUSIONS

ESI believes that this program has proven that good cargo security is possible without expenditure of large sums of money. The security techniques and procedures required to attain good security were summarized in the preceding section. Further details are available in the Security Survey Reports delivered to DOT.

Good security requires strong cooperation and participation by terminal and corporate management. Constant on-site management is required. Where this is economically not feasible through full time company personnel, the collective approach is an effective and cost-beneficial solution.