A STUDY ON THE FEASIBILITY OF PROVIDING EMERGENCY MEDICAL CARE WITH PARAMEDIC ENGINES IN COLLEGE PARK.

STRATEGIC MANAGEMENT OF CHANGE

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ABSTRACT

The City of College Park, Georgia is a rapidly changing city located within the Metropolitan Atlanta area. Once primarily a residential community, it is now home to 32 hotels, several manufacturing and warehouse facilities, as well as Hartsfield International Airport.

The organizational structure, apparatus assignments, and mission of the department have changed little over the past twenty years. Faced with a change in fire protection requirements of the City, but with a requirement to maintain non-transport paramedic service to a diverse community, this study was initiated to research the feasibility of utilizing paramedic engine companies. The study utilized historical and evaluative research to determine the following:

1. What is the current service demand for fire and emergency medical services?
2. How well is the current service demand being met?
3. Is a change in current service delivery needed?
4. What expenses would be incurred to make this change?
5. What barriers exist to prevent this change?

A review of available literature was conducted. The findings of the research concluded that the vast majority of previous study supported the use of paramedic engine companies.

Analysis of departmental data was performed. The author reviewed departmental response data for the most recent six-month period preceding this document.

Results of the study found that implementation of this concept would enhance the service and performance levels of the department.

Recommendations arising from the research were for this proposal to be presented to the elected officials for approval to proceed. It was further recommended that it be included in the department's master plan. Additionally, it was recommended that definitive performance measures be formulated so as to measure program performance.

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INTRODUCTION

Since the early 1970's, the City of College Park Fire Department has provided an advanced life support level of medical care to its constituents. In providing this, the department has always utilized separate, non-transport medical response vehicles for service delivery. Currently, the department through its Operations Division operates two engine companies, one ladder company, two advanced life support medical units, and one command vehicle.

Located within the Metropolitan Atlanta, Georgia area, the City of College Park has evolved from a primarily bedroom community to that of a very urban city. Comprising a land area of just over ten square miles, the city is home to Hartsfield-Atlanta International Airport, the Georgia International Convention Center, thirty two hotels and motels, the Southeastern Regional Offices of the Federal Aviation Administration, and the nation's largest private school, Woodward Academy. The city includes portions of two interstate highways, several major connector roads, one railway, and a rapid transit railway with both above ground and below ground components.

With an estimated 18,000 residents, the city has an estimated daytime population in excess of 50,000 persons. All public access to the airport is through the City of College Park.

Due to the expansion of the airport, much of the residential area of the city has been lost. In some cases, commercial development has replaced homes in areas that were deemed too noisy for residential occupancies. Commercial development in the form of additional multi-story hotels and large warehousing is slated for much of the vacant land.

While the actual number of structure fires have decreased, the need to address deficiencies in areas such as hazardous materials and technical rescue as well as commercial occupancy fire protection have generated the demand for a third, engine company.

The purpose of this research is to determine the feasibility of providing this engine company by replacing the medical response vehicles with paramedic engine companies. Through the use of historical and evaluative research methodologies, the study sought to determine answers to the following questions:

1. What is the current service demand for fire and emergency medical services?
2. How well is the current service demand being met?
3. Is a change in the current service delivery needed?
4. What expenses would be incurred to make this change?
5. What barriers exist to prevent this change?

BACKGROUND AND SIGNIFICANCE

In recent years, the City of College Park has undergone radical change. Once an affluent suburb of Atlanta, the character of the City has changed from that of a bedroom community to one of an urban environment.

During the 1970's, many multi-family apartment complexes were built. As these complexes have aged, their condition has deteriorated. Consequently, many residents are

in the lower income levels. Due to the rises in health care costs and changes in federally funded programs, many citizens rely upon the emergency medical services system as their primary means of healthcare. As with many urban environments, calls for service run the gamut of every imaginable malady.

The primary responsibility for emergency medical transport in College Park is assigned to both the Fulton County and Clayton County governments. A regional Emergency Medical Services Council coordinates the services in a designated geographical area. This council designates transport providers for defined zones and sets performance criteria for entities to adhere to. Situated in EMS Region III, the City of College Park has no authority to designate the transport provider for its citizens.

The history of emergency medical services within Region III is complicated. Encompassing the Metropolitan Atlanta area, it coordinates the emergency medical services for the most populous area of Georgia

Beginning in the late 1970's and continuing to today, a variety of transport providers have served the College park area. Although now much more reliable, previous providers have logged response times of up to one hour for life threatening emergencies. Within the Fulton County portion of College Park, a private company provides ambulance transport. Within the Clayton County portion of the city, ambulance transport is provided by the county fire department.

Having provided a "rescue" service since the early 1960's, and with the unreliable performance of transport providers, the department in the early 1970's began providing

advanced emergency care to it's constituents. Using their existing "rescue van", the department adopted the common delivery methodology of that time which was the use of a separate non-transport type of vehicle. Since that time, this delivery methodology has remained the same. Various vehicle configurations have been used ranging from two-person mini-pumpers to utility body and sport utility vehicles.

Staffing levels have increased over the years to the current allocation of nineteen personnel per twenty four hour shift. (Appendix A) A minimum staffing policy requires fifteen personnel to be on duty at all times.

All personnel are required to maintain Emergency Medical Technician certification. Personnel achieving Cardiac Technician and Paramedic certification are currently compensated an additional $1,300.00 per year above their normal pay rate for this certification. This incentive is in place up to the rank of Captain. Traditionally, personnel promoted above the rank of Firefighter have not ridden rescue units on a consistent basis.

The city operates it's own dispatch and public safety answering point facility. Dispatchers are not currently trained in emergency medical protocols and do not give pre-arrival care instructions. Each request for medical assistance results in the dispatch of one of two rescue units to the call. Unless specifically requested, or indicated by information received from the complainant, a transport vehicle is not dispatched. In the event both rescue units are unavailable, the closest engine company is dispatched. While these units are staffed by emergency medical technicians and paramedics, they have not previously been configured, equipped (Appendix B), or licensed for such responses.

Despite the presence of fixed and transportation hazards, the department possesses no hazardous materials response capability. Technical rescue capability is somewhat better, although far from adequate.

The types of commercial structures located within the city merit the response of three engine companies and one ladder company on the initial response. The current equipment and staffing configurations do not allow for this.

The National Fire Academy's Strategic Management of Change training course requires the completion of an applied research project. The course introduced participants to a model process for the management of organizational change. Within that model, the first phase identified is the analysis of the existing situation and the assessment of needed changes. This research is directly related to that phase as it follows the concepts contained therein to analyze the provision of emergency medical care by the College Park Fire Department.

LITERATURE REVIEW

The purpose of this literature review is to provide a foundation for this research and to review the findings of others on this particular topic.

Within *America Burning Revisited, (1987)* it is noted that " the demand for emergency medical services has generally been increasing.

Writing in *Managing Fire Services,* Page *(1988)* profiles six different approaches to emergency medical services delivery. Within Profile A, he describes a hypothetical

department where " a number of paramedic firefighters have been promoted to driver or company officer positions". Additionally, he states that "by assigning these individuals to districts with high frequencies of medical emergencies and by equipping their apparatus with paramedic equipment and supplies, the department has been able to ease the burden on its busy paramedic units". He further states that "the use of a non-transporting rescue vehicle allows for a vehicle design that can carry heavy rescue, extrication, salvage and overhaul, and lighting equipment for use on fires". In discussing response vehicles he continues; " The use of fire apparatus (pumpers and trucks) for EMS response has increased greatly in recent years." " In several metropolitan areas of the United States, fire departments have completely replaced their small rescue vehicles with paramedic pumpers, and they report success with the concept.

In *EMS in the 1990's: challenging the fire service;* International Association of Fire Chiefs, *(1991,pp.11),* it is stated that "to meet the ever changing need to provide high quality EMS in a timely fashion, many fire executives have implemented the relatively new concept of paramedic engine and/or truck companies".

Carter *(1987, pp. 85-86)* discusses the conversion of the Largo, Florida Fire Department to exclusive use of paramedic engines. He states that "one of the biggest problems associated with the engine and rescue concept was the fact that the majority of the workload was being carried by the rescue crew since over eighty percent of total calls were EMS related". Among the advantages he cites for paramedic engines are "greater capacity for handling demand fluctuations, and more fairly distributed personnel workloads".

An article by Jack Stout *(1987, pp.84)* lists seven advantages of paramedic engines. Among those, he states "ALS engines are our industry's least expensive means of rapidly delivery paramedic capability to the scene". Additionally, he states that the "use of ALS engines improves the productivity of the entire fire department", and that "crews working ALS engines are not just cross trained, they are also cross utilized every day".

A research paper by Fiero *(1990)* explored the benefits of using paramedic engine companies in the delivery of emergency medical services. Among the advantages he found were; "a more productive and effective use of emergency personnel, reduced operational costs, and improved services to the community at lower costs".

Butler *(1989, pp.45-47)* describes three types of EMS service delivery. He profiles the advantages of paramedic engines as utilized in Anaheim, California.

An article by Gary Morris *(1993, pp. 41-43)* describes the experience of the Phoenix, Arizona Fire Department with paramedic engines over a fifteen year period. He states that "overall, the Phoenix experience with paramedic apparatus has been very positive, and the advantages far outweigh the disadvantages". He goes on to state that "the most significant advantage to implementing paramedic engines is cost". Among the other advantages he cites are "the creation of career ladders for paramedic personnel, increased productivity of personnel, improved supervision, and enhancement of the team concept".

Fred Thorp *(1993, pp. 44-48)* profiles eight jurisdictions where paramedic and advanced life support engines are in use. Each jurisdiction operates differently with varying degrees of success.

O'Brien *(1993, pp.50-52)* chronicles the experience of the Fremont, California Fire Department in providing advanced life support.

Juan Mestas *(1993)* explores the use of ALS engines as an alternative to separate suppression and EMS units. His research found that within the City of Miami "that over two thirds of all ALS dispatches in the city were not transported ". He reasons that "if over two thirds of your dispatches do not require ALS transport, then a fully equipped non-transport unit can handle a great majority of ALS dispatches".

Peterson *(1994)* in evaluating the EMS delivery system of the Bolingbrook, Illinois Fire Department recommends "that the EMS coordinator approach the two stand alone clinics in the Village to determine if either one or both would be interested in a joint venture to privatize the transport portion of the EMS system". He further recommends "that the department staff all engines with paramedics and develop a 100 percent ALS first responder program".

A research project by Edward Stinette *(1994)* found that with respect to ALS engine companies advantages are as follows: "cost effectiveness, a reduction in response times, increased productivity, increased level of staff for fire apparatus, and greater flexibility in providing service". He further noted that "the ALS engine company concept is a viable means of achieving the goal of providing a high level of quality emergency

care and fully utilizing existing resources". His primary recommendation is "that those executive fire officers charged with providing advanced life support care to their citizens, consider the ALS/paramedic engine companies as a possible mechanism for delivering the service".

International Association of Firefighters President Alfred Whitehead *(1996, pp.40-42)* states the "whether for fires or medical emergencies, the only way to assure quick and effective response is to have units close to the scene of the events". "As many communities have discovered, the way to handle these need is to upgrade engine companies to ALS paramedic engines." He goes on to state that "an IAFF study of the different methods of delivering EMS determined that ALS engine companies have a faster response time than ambulance based EMS, while posting no loss in fire response time or fire suppression capabilities".

Rivard *(1996, pp. 52-54)* describes the efforts of the Somerset, Massachusetts Fire Department to upgrade to advanced life support capability. As part of this upgrade, a paramedic engine company was established.

Dennis Rubin *(1997, pp.70-73)* chronicles the shift of the Dothan, Alabama Fire Department to paramedic engines. Prior to this shift, the department had operated basic life support engines and advanced life support rescues. Citing the need to improve response times to medical alarms, the department considered the switch. Benefits of the change included "unity and harmony" of the workforce, an "increase of on-scene personnel", and "a greater level of contact and interaction with customers in need of their help".

A research paper by Janis *(1997)* examines the feasibility of utilizing paramedic engine companies in the City of West Covina, California. His research determined that "the paramedic engine concept is feasible and advantageous for the City of West Covina". He found that if implemented, this concept would "decrease ALS response times by two minutes, provide a better state of readiness for the ever increasing medical alarms, increase engine company efficiency, and reduce out-of–service time for ALS units".

The literature review strongly supported the utilization of paramedic engine companies in a wide variety of jurisdictions. The recurrent theme throughout all of the literature was the overwhelming benefits of this concept.

PROCEDURES

In order to determine the current service demand, a retrospective review of all fire and emergency medical alarm reports for the period of June 1 through November 30, 1998 was performed. This time period was chosen so as to reflect the most recent period of service demands. Additionally, it coincided with changes made in departmental data collection procedures by the author.

Each alarm report was reviewed and the type of call recorded. For alarms designated as medical responses, the calls were designated as either trauma or medical emergencies. For alarms designated as fire responses, the calls were designated as either fire or hazardous condition emergencies.

For each alarm, the time of day and day of week during which the alarm occurred was recorded. Additionally, the primary response station was recorded.

To determine how well the current service demand is being met, again a retrospective review of alarm reports was conducted. For each alarm, the dispatch time and initial unit arrival time were recorded. These recorded times were calculated so as to reveal the average response times and fractile response times for both fire and medical emergencies.

For determination of the need for a change in service delivery methodologies, a comparison in the call volumes of both fire and rescue units was made. Additionally, a vehicle response capability matrix was conducted to compare the functional capabilities of all units staffed on a daily basis. A comparative review of the number of fire apparatus recommended by the Insurance Services Office and those currently in service was also conducted. Finally, daily staffing logs for the time period of the study were reviewed to indicate the total number of personnel available on a daily basis capable of providing advanced life support.

To determine expenses involved in making this change, potential expense areas were identified. Within each of these areas, individual items were identified and a determination made as to whether these items were currently available within the department. If the item was not available, a cost for obtaining the item was obtained. A compilation of the total costs necessary to implement the change was made.

Analytical review of information gathered to answer previous questions was performed. The results obtained from these items were used to identify and clarify barriers to the proposed change.

RESULTS

A review of the alarm records revealed that for the time period of June 1 through November 30, 1998, a total of 2,337 service demands were answered. Of these, a total of 1,889 (80.66%) responses were for medical emergencies. By category, the department responded to 612 (26.13%) incidents of trauma, and 1,277 (54.52%) incidents of medical difficulty.

A total of 448 (19.12%) fire incidents were recorded during the same period. Categorically, a total of 172 (7.34%) of these incidents were actual fires, and a total of 276 (11.78%) alarms were classified as hazardous conditions.

By day of the week, Fridays were the most active in terms of alarm activity with a total of 357 (15.24%) responses. This was followed by Saturdays with 351 (14.98%) alarms, Mondays with 339 (14.47%) alarms, Sundays with 330 (14.09%) total alarms, Thursdays with 323 (13.79%) alarms, Tuesdays with 307 (13.10%) alarms, and Wednesdays with 300 (12.81%) alarms.

The most active eight hour period for alarm response was from the hours of 2:00PM to 10:00PM. This eight hour time period garnered 1,044 (44.57%) alarms (Appendix C and D).

An analysis of these figures reveals that for the time period studied, an average of 10.32 medical responses and 2.44 fire responses were required on a daily basis.

The results of the response time analysis disclose that during the period of this study, a rescue unit arrived on the scene of emergencies in five minutes or less 74.43 % of the time. The average response time for rescue units was 4.27 minutes.

For the same time period, fire units arrived on the scene of fire emergencies in five minutes or less 72.18 % of the time. The average response time for fire units was 4.50 minutes.

The average response times noted for both types of response appear to be within industry standards. The reliability of the service as indicated by the fractile response figures indicate that there is room for improvement.

TABLE 1

EMS and Fire Unit Response Times

Month	EMS Responses		Fire Responses	
	5min. or less	Avg. Time	5 min. or less	Avg. Time
June:	71.04%	4.25min.	70.56%	4.52 min.
July:	73.02%	4.36 min.	77.72%	4.36 min.
August:	71.73%	4.38 min.	78.26%	4.19 min.
September:	77.92%	4.12 min	70.16%	4.42 min.
October:	75.97%	4.50 min.	70.49%	4.74 min.
November:	76.93%	4.01 min	65.80%	4.83 min.
Average	74.43%	4.27 min.	72.18%	4.50 min.

As previously noted, there exists a wide divergence in the call load distribution between fire and rescue units. Slightly over 80% of the calls dispatched are exclusively for rescue units. The remaining 20% are fire calls. Within that 20% are structural fire alarms. If available, rescue units are dispatched on these alarms as well.

Due to the type of vehicles utilized, rescue units do not have any other capabilities besides the transport of two personnel and medical equipment to the scene.

As portrayed in Table 2, the primary advantage to utilization of fire apparatus for all responses is their versatility. They can be equipped and configured to perform all of the missions performed by rescue units as well as other assignments. The primary disadvantage is the high initial cost.

TABLE 2

Vehicle Capability Matrix

Capability	Rescue Units	Fire Units
Personnel Capability:	2	4
Medical Equipment:	yes	yes
Extrication Equipment:	no	yes
Fire Suppression:	no	yes
Vehicle Life:	5 to 7 years	15 to 20 years
Cost:	$40,000.00	$250,000.00

The most recent report of the Insurance Services Office *(1984)* recommended a total of five apparatus for the City of College Park. Currently, three apparatus are utilized.

Review of the daily staffing logs (Appendix E) revealed that on the average, four personnel trained and certified to perform advanced medical care are on duty daily. Currently, only two per shift are assigned medical responsibilities.

Expense areas identified were apparatus, electronic diagnostic equipment and medical supplies. A review of the current apparatus inventory revealed that the existing apparatus could be configured to provide this service. Two of three pumpers however have significant failure of the body and are in need of replacement. A replacement value of $250,000.00 per vehicle was assigned to this area.

All of the required electronic diagnostic equipment is possessed by the department. It is in good condition and in adequate number. No additional equipment would be required.

All of the required medical supplies were found to be on hand within the inventory of the department. No additional supplies would be required.

The total expenses necessary to implement this change would be in the form of apparatus replacement. The estimated cost to implement this concept is $500,000.00.

Analysis of the data noted that the implementation of this concept would not adversely affect service delivery. Response time performance between engine and rescue units was not significantly different. With the inclusion of a third unit, the call per unit

ratio would decrease. Vehicle versatility and capability would be enhanced by the change, as would the size of responding crews.

The apparatus recommendation noted by the Insurance Services Office would be more closely adhered to. The number of available trained personnel capable of administering advanced life support is adequate. The primary barrier to implementing this concept is in securing need funding for apparatus replacement.

DISCUSSION

The results of this study appear to validate much of the information found in the literature review. For example, Page *(1988)* uses a model wherein over the years, a number of paramedics have been promoted to driver and company officer positions. This very situation has occurred within the College park Fire Department. Only six of the current eighteen advanced medical positions are within the firefighter ranks. As the personnel have progressed in their careers, they have maintained their certifications. Another advantage he cites is the versatility of fire apparatus in being able to carry a variety of equipment. In relatively small departments such as College Park, it is imperative that each response vehicle is able to perform more than one function.

The study disclosed that Rescue units in College Park shoulder over eighty percent of the call volume. Carter *(1987, pp.85-86)* described a similar situation in his profile of the Largo, Florida system. The study further noted that on an average day in College Park, a total of twelve alarms are answered. The distribution of these calls among

three paramedic engines would result in a lower ratio of calls per unit and distribute the workload more equitably.

Another advantage noted within the literature and borne out by the study is in the area of supervision. As shown in the College Park organizational chart, there is no direct supervision of rescue units. If adopted, this concept would provide a direct supervisor for each unit. Morris *(1993, pp. 41-43)* noted just such an advantage in his profile of the Phoenix, Arizona system.

Perhaps the most advantageous aspect of this concept is that it maximizes utilization of existing resources. Rubin (*1997, pp. 70-73)* noted this in his profile of the Dothan, Alabama conversion.

There is no question as to the viability of this concept. The referenced sources prove that the concept works in a variety of locales and conditions. The implications to the College Park Fire Department are quite clear. This concept offers a multitude of advantages as compared to the current system. Chief among these advantages and benefits are versatility, cost effectiveness, efficiency, and the enhancement of service levels. On a daily basis, fire executives are tasked with finding opportunities that meet these criteria. It should be noted that this concept improves not only EMS capability but fire response capability as well. Despite the falling numbers of actual structure fires, a significant hazard still exists in the commercial and multi-family residential occupancies of the city.

The primary drawback was found to be the cost of replacement apparatus. As noted in the study however, this concept could actually be implemented with existing

apparatus. The preferred alternative however would be to replace two of the existing apparatus.

It is the author's opinion that both the literature cited and the results of the study overwhelmingly support the implementation of this concept in the College Park Fire Department.

RECOMMENDATIONS

With this concept, the City of College Park Fire Department has an unprecedented opportunity to not only enhance the services provide to it's constituents, but to do so in a cost effective manner.

The purpose of this study was to determine the feasibility of providing emergency medical care with paramedic engines as a means of increasing the available engine companies in the city.

Based on the research completed, it is recommended that this concept be presented to the elected officials with a request for implementation of the concept.

It is further recommended that as part of the planning for implementation, that definitive, performance standards be adopted so as to measure program performance.

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APPENDIX A

Organizational Chart

College Park Fire Department

Fire Chief

Secretary

Deputy Chief

Captain	Captain	Captain	Fire Marshal	Training Officer
Lieutenant (2)	Lieutenant (2)	Lieutenant (2)		
FAO (6)	FAO (6)	FAO (6)		
FF/EMT-P (2)	FF/EMT-P (2)	FF/EMT-P (2)		
FF/EMT (8)	FF/EMT (8)	FF/EMT (8)		

APPENDIX B

List of Required Equipment

Medical First Responder Vehicles

Respiratory:

1Portable Suction Aspirator

4 Sterile Suction Catheters

2 Irrigation Liquids, 1000ml

1 Bag Valve Resuscitator Unit

1 Pediatric Bag Valve Resuscitator Unit

2 Adult Non-Rebreathing Mask

2 Adult Rebreathing Mask

2 Nasal Cannula

1 Set – Oropharyngeal Airways

1 Set - Nasopharyngeal Airways

1 Oxygen Unit D-Size Cylinder

1 Spare Oxygen Cylinder

Immobilization Devices:

4 Extremity Immobilization Devices

1 Short Spinal Extrication Device (KED)

1 Pediatric Immobilization Device

2 Long Spine Boards

2 Lateral Cervical Immobilization Devices

Bandages/Dressings:

2 Triangular Bandages

2 Universal Dressings

12 Sterile Gauze 4x4

6 Bandages (2x4 Kling)

2 Bandages (6x5 Kling)

3 Elastic Bandages

3 Vaseline Gauze (4x3)

4 Rolls of Adhesive Tape

Diagnostic Equipment:

1 Anteroid Sphygmomanometer

1 Stethoscope

Immobilization Devices:

6 Cervical Immobilization Collars

1 Traction Splint

APPENDIX B CONTINUED

Miscellaneous:

2 Blankets

2 Waterproof Patient Covers

1 Flashlight

1 Fire Extinguisher (10 lb. ABC)

1 Shears

2 Clean Wrapped Sheets

1 Non-Porous Infant Insulating Device

1 Obstetrical Kit

Rescue Equipment:

1 Spring Loaded Center Punch

1 Rescue Axe or Halligan

1 6” Screwdriver

1 3lb. Hammer

1 Hacksaw with 2 Extra Blades

1 Roll Duct Tape

1 One Ton Come-A-Long with 2 Straps

1 Pair Safety Goggles

1 DOT Emergency Response Guidebook

I.V. Equipment:

1 Sharps Container

I.V. Solutions as per Director

Cardiac and Drug Supplies

APPENDIX C

EMS Responses

June 1 through November 30, 1998

	June	July	Aug.	Sept.	Oct.	Nov.	Total
Sta. # 1	186	184	179	187	159	186	1081
Sta. # 2	123	165	143	127	123	127	808
Total	309	349	322	314	282	313	1889
Medical	210	234	213	209	173	238	1277
Trauma	99	115	109	105	109	75	612
Monday	59	31	56	41	33	45	265
Tuesday	60	54	42	56	28	36	276
Wednesday	42	69	33	34	32	37	247
Thursday	36	58	37	44	44	47	266
Friday	34	50	45	48	56	55	288
Saturday	39	46	60	49	36	53	283
Sunday	39	41	49	42	53	40	264
Most Active 8 Hr. Period	1600 2400	1400 2200	1600 2400	1500 2300	1300 2100	1200 2000	

APPENDIX D

Fire Responses

June 1 through November 30, 1998

	June	July	Aug.	Sept.	Oct.	Nov.	Total
Sta. # 1	28	30	44	25	45	33	205
Sta. # 2	50	42	48	32	42	29	243
Total	78	72	92	57	87	62	448
Fires	37	22	22	25	32	34	172
Hazardous Cond.	41	50	70	32	55	28	276
Monday	21	10	20	03	09	11	74
Tuesday	15	08	11	06	08	12	60
Wednesday	10	12	14	08	06	03	53
Thursday	05	08	10	13	10	11	57
Friday	11	10	13	09	15	11	69
Saturday	09	12	11	07	21	08	68
Sunday	07	12	13	11	18	05	66
Most Active 8 Hr. Period	1400 2200	0800 1600	0800 1600	1400 2200	1400 2200	1200 2000	

APPENDIX E

Daily Staffing Levels

Advanced Medical Care Personnel

Date	June	July	Aug.	Sept.	Oct.	Nov.	
1	4	4	4	6	6	4.5	
2	4.5	4	5	4	2.5	3.5	
3	4.5	5	4	4	3	7	
4	4.5	4.5	4	6	6.5	4	
5	4.5	5	3.5	5	3.5	3	
6	7	6	4.5	5	3	3	
7	4	5	4	6	7	3	
8	4.5	5	4	5.5	4	4	
9	5	4.5	4	3	3.5	3.5	
10	3	4	4	7	6	3.5	
11	4	4.5	6	4.5	3	4	
12	3.5	5	4	3.5	3.5	4	
13	3.5	4	2.5	5.5	5.5	4.5	
14	4	4.5	7	3	3	3.5	
15	5	4.5	4	4	3.5	5	
16	2	4.5	5	6	5	3.5	
17	4	2	6	3	4	3.5	
18	5.5	4	3	5	4.5	5	
19	3	4	4	5.5	7	5	
20	3	4	5	2.5	4	3	
21	7	4	2	2	2.5	3.5	
22	5	5	4	4	4	4	
23	4	3.5	6	4	4	4	
24	6	4	4	2.5	2.5	5.5	
25	4	3.5	4	6	4.5	4	
26	5	3	6	3	4.5	3	
27	6	4	4	5	3	4	
28	4	3	4.5	5	6.5	4	
29	4	3.5	6	3.5	3	3.5	
30	3	4	5	2.5	3	7	
31		3	4.5	5	4		
			Average Daily Staffing				
Monthly	4.36	4.11	4.17	4.40	4.31	4.08	4.23