# Comprehensive Review of The Chicago Fire Department

Submitted to:

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#### **EXECUTIVE SUMMARY**

The Chicago Fire Department is delivering a high level of emergency services to the citizens of Chicago despite having many internal problems. These problems must be addressed or the service may begin to degrade.

On the street, the firefighters and paramedics continue a heroic tradition. They exemplify good teamwork and provide first-rate services despite having to deal with a wide array of problems such as broken standpipes in projects, frozen hydrants in winter, old firehouses, leaking water tanks on engines, fires in highly dangerous properties, inadequate information systems, risks of disease from carcinogens to HIV, and high volumes of calls. This aspect of the human spirit of the Department is not always fully recognized.

Off the street, however, some firefighters seem to almost go out of their way to embarrass the Department and themselves. Behaviors and attitudes that have not been tolerated for over two decades in American society are paraded. There is a lack of adequate supervisory authority exercised by far too many supervisors, from Lieutenant to District Chief, often to remain "one of the guys." Far too many disciplinary problems are bucked upward. The level of technical competency is world-class, but the level of human relations and supervisory competence is far too low.

There is a need to change the culture of the Department, which will take several years to achieve. Fortunately, there is a silent majority in the Department who want the work environment to get better. There are many practical ways to improve the work place environment and supervisory competency, starting with better internal communications, more use of labor-management teams in planning, better training on supervision and management of people, training in conflict management, more mentoring and on-the-job training, and increased fairness in making assignments. There are many first-rate people at every level, and there is a huge talent reservoir. Department personnel need the opportunity to compete fairly, be rewarded for good performance, and be penalized for poor performance.

## Key Findings and Recommendations

Below we summarize some of the key strengths and problems found in each area of the Department, and some of the key recommendations.

## **General Management and Organization**

• The Department is about the right size, but the allocation of personnel across Bureaus needs to be adjusted somewhat, with more allocated to prevention, EMS, special operations, and certain support functions (e.g., training, communications).

- The organization chart needs to be simplified and made more logical. Some recommended changes: consolidate prevention under one bureau (including fire investigation, code enforcement, and public education); consolidate R&D, planning, information systems, and records management in one unit; and reassign several functions to Bureaus that now report to the Commissioner or 1<sup>st</sup> Deputy Commissioner (e.g. safety, air rescue, special events, R&D, and financial management).
- Supervision needs to be tightened at all levels in the organization. Supervisors need to be trained and evaluated on their supervisory, conflict resolution and management abilities as well as their technical competence. Line supervisors from lieutenant up should be routinely rotated every three years or so. If the battalion chiefs and company officers fulfill their management duties, there can be further reduction in exempt staff who are handling issues that should be resolved at lower levels. Willingness to be complete managers should be a condition of promotion.
- There are too many levels of senior management. One layer that may be removed entirely are the Assistant Deputy Fire Commissioners, when the supervisory issues are resolved at lower ranks.
- Internal communications need to be improved, with newsletters, closed circuit TV, and more participatory involvement of the workforce.
- Civilianization should be considered for positions where a) trained firefighters are not needed, and civilians can do as good a job at a significantly lower cost (e.g. the messengers and parts deliverers in the shops, air tank deliverers, mail carriers, and Director of Records positions, all now filled by full-time uniformed firefighters) or b) where there are problems in recruiting adequate numbers of firefighters to serve, and civilians can do a good job (e.g. some prevention positions). The skilled firefighters are sorely needed to shore up many functions where their expertise can be used.
- We saw no areas where further privatization was appropriate, except possibly for routine maintenance of light-duty vehicles, but the available data in the maintenance shops was too poor to do a definitive analysis to back up this perception.
- The state of management information systems is below what is needed. More investment should be made in analysts, computer support, computer software, and overall planning for information systems. Some of the Fire Department's MIS problems in financial management, personnel management, and procurement need to be solved at the City level.
- The Department needs to participate more in national fire protection meetings, and in personnel exchange programs with other departments to open it up to new ideas and to share its expertise.
- Older managers need an incentive to retire, freeing scores of promotions and bringing new blood into upper management. Many have not retired while awaiting state legislation to improve their pensions. The vendetta that has blocked this legislation is holding back the careers of many younger members of the department to continue a feud against a few, and should be ended.

## **Emergency Management**

The role of fire departments in mitigating emergencies of all types has only recently been recognized nationally. The Emergency Management Unit is seriously understaffed at three persons; Chicago needs at least 10 to 14 staff to plan for many emergencies and mitigation of potential terrorist acts, help provide staff during emergencies, and back up the hazardous materials management and R&D function as it currently does. It needs emergency Management function might be better analysts, who may or may not be uniformed. The Emergency Management function might be better situated reporting directly to the Mayor's office, as it is in a number of other cities, but should first be given a chance to succeed where it is now, with a properly sized staff. City ordinances currently place the responsibility in the Fire Department, and would have to be changed if the function were moved.

## Prevention

Overall, CFD has excellent prevention programs but they are not adequately supported and do not reach enough citizens. There needs to be a strategy shift to giving far more emphasis to the ounce of prevention instead of the pound of cure. The Department has only 3.6 percent of its employees in prevention jobs (including those in fire investigation and arson control). It should have at least a third more – another 50 to 70 personnel. Redeploying one percent of the suppression forces would meet most of the need; redeploying firefighter positions now used for messenger or delivery roles would meet most of the rest.

The additional prevention personnel should be distributed approximately as follows to meet pressing shortfalls in many aspects of prevention programs: 10 public educators and a clerk, 4 juvenile firesetter counselors, 15 to 35 fire inspectors, 8 fire investigators and 2 associated clerks, 8 inspectors for inspecting the implementation of new plans, overseeing pump tests and other tests, and 2 new plans reviewers. The Prevention Bureau would adjust the deployment of these new resources year by year after analyzing the leading fire and injury problems, as it already does for its existing resources.

• **Codes and Code Enforcement** – Chicago is one of the few cities that does not use or adapt one of the national model codes. This allows tailoring of the code to local desires, but makes it much more difficult to keep the code up to date and to resist lobbying pressures. Consideration should be given to adapting a national code or strengthening the local code. The Fire Department has not taken an adequate leadership role in this area.

Residential codes in Chicago allow affordable, wood-frame residential development in the core of the City. The economic development program is highly successful, but the trade-off is the need for more public fire education, built-in sprinkler systems, maintenance of alarms, and the need to maintain the strength of ladder companies essential for escape from these wood-frame dwellings.

There are scores of commercial and residential high-rise buildings that are unsprinklered, including some hotels. Retroactive sprinkler ordinances as adopted in other cities should be considered.

Plans reviewers need to spend more time reviewing sprinkler system plans; the expected one day turnaround is too tight for complex plans. Several more plans reviewers are needed while the City is in a growth mode, and they need modern software packages to check calculations of builders, especially for sprinkler designs.

There is insufficient resources to meet the required inspection of buildings and tenants. About 46 percent of the structures and tenants that the Prevention Bureau was supposed to inspect in 1998 went uninspected. The Department should require line companies to meet their assigned inspection quota, an ongoing program which makes excellent use of line companies. But the Prevention Bureau still needs to add 15 to 35 more inspectors for the more complex inspections. The exact number to be added depends on a policy decision as to whether to meet the current requirements for annual inspections (35 needed), or to reprioritize and do some inspections less frequently (15 needed).

Certification of fire pump tests and inspections of associated fire safety features should not be further privatized. The Department must oversee the private contractors who do the pump testing, and must be able to cite owners who do not keep pumps in compliance. The unit needs several more staff to reduce backlogs – a source of private industry complaints. A trial might be made to reduce fire department oversight of the tests to alternate years instead of every year and reviewing the written test results in years when the tests are not witnessed live.

Difficulty in recruiting firefighters to be inspectors should be remedied by either providing a better work schedule and/or salary incentives for achieving higher technical competence in inspections; or hiring civilians if firefighters are not willing.

- **Public Fire Education** Another 10 public educators, a clerk, and 4 juvenile firesetter counselors are needed to address fire and injury prevention, with the increases targeted for outreach to the elderly, caretakers of very young, people with disabilities, schools, and people in one to three family frame housing, which all are underserved. They can be civilians if there are insufficient qualified and willing firefighters to serve. This program is needed to help slow growth in demand for EMS as well as reduce fires and injuries. It will reduce the number of ambulances needed and reduce fire losses and fire casualties.
- **Fire and Arson Investigation** This function needs to be organizationally combined with code enforcement and fire safety education for better coordination, information exchange, and mutual support of the various prevention sub-functions. Recommendations made by a previous (1996) evaluation of the fire and arson investigation unit should be more fully implemented. These include:
  - Better coordination of police and fire investigation on the scene to avoid duplication and increase mutual support.

- Increased staffing of fire and arson investigators (about another 8) to keep up with the investigation workload, improve investigations, and try to increase the clearance rate for arson. Add clerical support (2) for the investigators to free more time for investigation work.
- Training and authorization of fire investigators as armed "peace officers," for their safety and to improve apprehension.
- Relocation of the arson unit to a secure facility where they can be allowed to access sensitive databases barred to them at present.
- Continuation of the good start on developing a juvenile firesetter counseling program, in cooperation with the public education unit.

# Fire Operations

Overall, firefighting operations are world-class.

- **Stations** The overall number of fire stations, the number of engine and ladder companies, and their general deployment is about right strategically. Because we were not asked to do a station location analysis, we cannot comment on detailed station locations. Response times for fires is satisfactory and the time between the first- and second-in units is excellent. There may be need for some fine-tuning of station locations if and when stations get rebuilt.
- **Dispatch Complement** The number and types of units being dispatched to different types of calls is appropriate. We suggest considering the addition of a rapid intervention team (RIT), which is an extra engine dispatched to non-minor incidents and intended to standby to rescue firefighters if needed.
- **Staffing** The staffing per ladder company needs to be kept at five for a number of reasons, especially the need for manually positioning ladders in many situations at which the hydraulic ladders cannot be used.

The staffing needed for engine companies is less clear. Most large cities have found that four-person companies suffice. The number of structure fires has been trending downward. The times for getting the second-in engine to the scene is very good in Chicago, and the interval between the first- and second-in companies of any type is even better – less than a minute. However, there are many unique aspects of firefighting in Chicago, including failure to adequately maintain standpipes and elevators in the projects, the weather (especially winters), the large and growing number of developments with difficult access problems, the many high-rises and dense residential development. Extra engine company staffing is highly useful and sometimes critical in these situations.

All in all, there are areas of the City and times of the year with relatively benign conditions where four-person engine companies can suffice. There is no need to maintain all engine companies at a five-person level all of the time; more variances can be tolerated than the current 30, especially in engine companies co-located with ladder

companies, which can respond together as a task force. Also, 4 on an engine suffices for almost all EMS and non-fire calls.

- **Shifts** Despite public perceptions, the current 24-hours-on, 48-hours-off shift for firefighters is far superior in productivity and cost-effectiveness to an 8-hour shift. What is likely to be even better for the firefighters and efficient management is a 24-hours on, 72-hours off shift and no extra "Daley Days" off, like the CFD paramedics have been using with good results. This will cost slightly more but pay off in reduced sick leave and better management. Most people on a shift will work together each shift, and the pool of floaters needed would be much smaller.
- **Safety** Chicago firefighters need to have their protective ensemble updated to modern standards. They are one of the last major departments to use old-style gear that is not as safe as the new bunker gear.
- **Special Operations** The Chicago Fire Department provides an increasingly sophisticated array of emergency services beyond firefighting and EMS. They include mitigation and prevention of hazardous material incidents, a wide variety of technical rescue functions, air rescue, and water rescue. These functions should be grouped together and headed by a new Assistant Chief or District Chief, who would be assisted by two DDCs responsible for hazardous materials and rescue functions, and the special apparatus, equipment and training that goes with them.

*Hazmat* – The CFD is world-class in hazardous materials mitigation know-how, but needs to refurbish its hazmat truck and purchase a second one. The second truck preferably would be fully staffed; second-best would be to co-locate and cross-staff the refurbished truck with one of the team ladder or engine companies.

*Fireboat* – At least one fire rescue boat needs to be retired and a faster boat purchased for water rescues. Both boats can be served by one crew, depending on the type of call.

*Technical Rescue* – Substitutes for rescue squads (and hazmat units) must be drawn from a list of trained personnel. It is dangerous to fill in with non-trained personnel, as is currently done. Training of rescue and hazmat personnel needs to be increased, perhaps by conducting more of it in their stations.

*Air/Sea Rescue* – One of the three helicopters is at the end of its service life and needs to be retired. A second should not be used for air/sea rescue, for which it is unsuitable. The third is satisfactory, but a dual engine helicopter is needed to increase the safety and performance of air/sea operations. Also, the pilots and divers need much more training than they are getting.

# **Emergency Medical Services**

Overall, the level of EMS care in the street is quite good, but a number of improvements are needed to improve response times and to assure maintenance of quality care. The Department is much closer to meeting its response time goals than has been portrayed: it gets to 85 percent of calls in less than 8 minutes, vs. the target of 90 percent.

- **Workload** At least six more ambulances are needed to reduce response times and to reduce the workloads of the busiest units to a more manageable level. The average unit hour utilization of the EMS units is currently quite high at .46 (i.e., they are out on calls 46 percent of the time). Adding six units would bring the average UHU down to .42, a generally acceptable level. Some times of day have much higher shortfalls than the average; redeploying less busy units to the busier areas, adding some units on power shifts, and filling in with paramedic engines in the lower demand neighborhoods would be more cost-effective than wholesale increases scaled to meet peak periods.
- **Paramedic Engines** The move to "paramedic engines" (engines on which at least one position is a paramedic and one an EMT) is excellent. It gets a paramedic to the scene faster and keeps paramedics available in the community even after the ambulance has transported the patient to the hospital. It significantly improves life-saving capability and helps move the department to a modern, dual-role/cross-trained firefighting force. However, additional ambulances are still needed to transport patients and to bring an adequate number of paramedics to the scene in a timely fashion; many Advanced Life Support calls require three paramedics.
- **Medical Direction** Medical oversight of EMS personnel is provided by three doctors who represent three different resource hospitals, each presiding over one-third of the City as required by state statute. A fourth doctor acts as an advisor to the CFD. This organizational structure hampers progress in the EMS system and causes confusion at times. There should be a single overall medical director, with a panel of three advisors in support.
- **Quality Assurance** The present Quality Assurance (QA) program is inadequate. There needs to be more field supervision of EMS to maintain quality. Automated review of patient care reports is also needed. The EMS field supervisors need to have their auxiliary duties handled by others so that they can focus more on medical QA and supervision. There is a need to increase the number of field supervisors (AFOs) by four on each shift.
- **Two Cultures** The paramedics are not integrated with the firefighters in one department. EMS continually plays "second fiddle" to Fire Suppression and Rescue, even though three-quarters of the calls of the Department are EMS related. This leads to unnecessary friction and station house problems. (See the Human Relations section.) There are too few firefighters cross-trained as EMTs; cross-training is the norm in modern U.S. fire departments today.

## Support Services

• **Dispatch and Communications** – Much progress has been made in the past six months in improving the fire operations side of the recently completed, \$200 million police/fire/EMS dispatch center. However, there are still many problems to solve, including better records management and reporting. It is strongly recommended that the CFD appoint a full-time communications liaison, and that it maintain the current ad hoc committee of battalion chiefs to review and resolve problems with the new dispatch center for at least several years.

- **Training** The Department has not paid nearly enough attention to training its first level supervisors and higher ranks in how to supervise people. This is a root cause of many of the problems the Department has had in human relations. In addition:
  - EMS paramedic training needs to be coordinated and conducted by the same organization regardless of whether the paramedics serve on engines or ambulances.
  - A new training facility is needed with capability to keep firefighting and command skills high as the number of fires decline, and to consolidate training in one complex.
  - The collective bargaining agreement makes it difficult to take companies or individuals out of service for training. The reduction in training ultimately endangers the firefighters and reduces productivity. Changes in the rules and perhaps a network of district-level training centers are needed.
  - More full-time or detailed trainers are needed; incentives to leave shift work and become a trainer have not proven adequate.
- **Maintenance and Fleet Management** The fleet of fire vehicles is serviceable but has relatively high average age for a world-class fire department. Many vehicles have multiple maintenance problems, even in the busiest stations, which should have the best equipment. Water tanks leak, some vehicle windows are broken, some seats are torn, etc. A more realistic replacement program is badly needed, with accelerated purchases of engines and ladder companies in the next several years to catch up before a huge bill is presented in one year when simultaneous vehicle failures may occur.

The number of spare engines and ladders needs to be increased as new vehicles are purchased (the best of the retired vehicles can become the spares). Distributing some spare vehicles to each district will reduce out-of-service times when maintenance is needed.

Firehouses generally are old and run down. They are dingy places to spend 24 hours and should be kept in better repair, especially their leaking roofs and problematic heating systems. A comprehensive inventory of problems should be undertaken.

The maintenance shop has over 20 firefighters who act as messengers, parts deliverers, and vehicle deliverers. They get paid as risk-taking firefighters, and have much overtime. They are a waste of firefighters and most should be replaced with lower paid civilians. Another group of 19 firefighters serve in the air mask maintenance unit, and most could be replaced with civilians there, too.

- **Information Systems** There is much useful computerized information available, but many improvements are needed in order for the CFD to have adequate and reliable data for managing and operating the department. These are detailed in Chapter VI.
- **Commissary** This supply service has been privatized, with mixed results. The quality of uniforms and protective equipment needs to be maintained. The commissary contract should be rebid. It is a borderline call as to whether this function should be de-privatized. If quality can be maintained, it should remain private, because it greatly reduces purchasing problems.

## **Supervisory and Human Relations Issues**

Interviews with a broad cross-section of 136 CFD personnel revealed that the Department is currently experiencing a particularly negative and difficult era in its history of human relations. A vast majority of those interviewed described an organization beset by serious challenges anchored in the past, with contemporary consequences. Divisive issues have fractured relationships between racial groups, labor and management, male and female firefighters, paramedics and firefighters, and other work groups. Allegations of favoritism and nepotism; a lack of confidence in the integrity of promotional systems; and poor communication practices add to the internal stresses. The Department does not have a plan to address these issues, and many managers and supervisors do not seem capable of handling these matters in the field. To reduce these problems, a number of recommendations were made:

- **Leadership** Develop the capability of department leaders to address organizational problems by designating a position within the existing management team for organizational development activities; providing a curriculum of training and work plan exercises that will enable the management team to better manage human relations issues; and designing and developing an executive development program as means of improving the overall quality of management leadership.
- **Management Skills** Increase the managerial skill level of all managers and supervisors by establishing core competencies in team building, conflict resolution, communication, leadership, diversity, and supervision; expanding introductory management training for new supervisors; implementing a comprehensive supervisory training program; allowing the daytime release of supervisors to participate in training programs; and leveraging department training resources through the creation of district training plans.
- **Performance Measurement and Personal Growth** Enhance performance measures and professional growth, and gain flexibility in the management of personnel, by establishing an employee evaluation system; installing a career development program; developing a mentoring program; modifying promotional exams and interviews to test for critical supervisory skills, e.g., conflict resolution and team building; and rotating line personnel periodically.
- **Fairer Policies and Procedures** Implement a lottery or random placement method for assignment of post-academy graduates; have the Office of Internal Investigations conduct all EEO investigations; and review disciplinary practices to ensure consistency across work groups.
- **Day-to-Day Operations** Reduce individual and organizational liability by immediately increasing the ability of managers and supervisors to respond to more complex human relations issues through the creation of a peer mediation program; development of district consulting teams; and integrating a human relations component into the inspection protocol of battalion chiefs and EMS field officers.

• **Planning** – Ensure the successful implementation and monitoring of these initiatives through the creation of a five year change plan; conduct an evaluation of the plan at regular intervals; appoint an employee advisory committee to consult with the fire commissioner as one means of promoting employee buy-in; designate a liaison committee comprised of representatives from the law and budget departments, Mayor's office, and the Fire Commissioner to guarantee support and coordination of resources for the plan; and develop a communications plan that will support these initiatives.

\_\_\_**\* \* \*** \_\_\_\_

After the many recommendations in this report are reviewed, and initial decisions are made on which to implement, a more formal implementation plan will be needed. Overall, there should be no reduction in the total number of employees and not much, if any, increases in operating costs; recommended reassignments, and civilianization in some areas, can provide the funding and people for most of the recommended staffing improvements in other areas.

There will be a need for increased capital expenditures for a new training facility and headquarters, an acceleration of fleet purchases, new firefighter protective gear, and a fleet (vehicle) maintenance system.

Implementing the recommendations made in this report will help the City continue reducing losses from fires, improve the quality of worklife and the safety of the firefighters, improve emergency medical services, and improve the array of newer technical services being provided. They will help make the Chicago Fire Department a more efficient and effective world-class organization as it moves into the 21<sup>st</sup> century.

#### **CHAPTER I. INTRODUCTION AND SCOPE**

The Chicago Fire Department (CFD) is one of the premier firefighting organizations in the world. It is one of the three or four largest in the United States, and the largest in the world for cities of comparable population size.

As is the case with most fire departments in the United States, it was originally staffed to fight fires. But over the past few decades, the CFD has taken on many other critical services, including emergency medical services, fire prevention, mitigation of hazardous materials incidents, emergency management, technical rescues, and most recently, mitigating terrorism.

At present the vast majority of responses to emergency incidents are not for fires, but for emergency medical calls. Fire calls in general have been trending downward over the past decade, fires in structures have been dropping even faster. Figure 1 shows the trends in responses.





While the citizens have generally been satisfied with the level of services – which our study team found to be excellent overall – the Chicago Fire Department has been a troubled organization, with many factions. This is not uncommon in large organizations of any kind. But the Chicago Fire Department has had more of these problems than most, and they have lasted longer and at a higher intensity level than is acceptable.

Given the evolving role of the fire department, its large budget, and its internal problems, the City administration and Fire Department management requested an objective, third party comprehensive review of the Fire Department. The review was to determine if the Department should be organized differently, whether its resources were optimally deployed, whether services could be improved, whether any internal changes were needed to improve the ability to supervise, and whether any functions could be provided more efficiently through use of civilians, the private sector, or other means. This report describes the results of the study, and offers over 150 recommendations and suggestions for change.

TriData Corporation of Arlington, Virginia was competitively selected to undertake the study. TriData has conducted studies of fire departments in cities all over North America and overseas. It also undertakes research on the state of the art of fire and emergency operations. TriData used both its in-house staff and affiliated consultants for the study. The firm of HawkinsBay of San Francisco did much of the work on supervisory practices and human relations. TriData's study team also included four local Chicago firms: GMS Consulting, Inc., Unison Consulting Group, Inc., Black Tie Travel, Inc., and Graphic Support Services, Inc.

# A. Scope

More specifically, as delineated in the Request for Proposal, the study was required to address the following issues:

- **Balance Among Bureaus** The existing distribution of duties and responsibilities among the various bureaus for the purpose of determining whether the current system makes optimal use of the Department's resources in light of the demands for services; this includes consideration of whether, in order to address predicted needs for services, the Department should attempt to integrate private sector resources into its protocol for providing emergency medical services;
- **EMS** How best to respond to the need for emergency medical services, including an assessment of levels of training and paramedic certifications which should be required and how fire suppression personnel can be better integrated into the network of emergency medical services;
- **Deployment of Suppression Force** The extent, if any, to which the current distribution and deployment of fire suppression personnel and equipment should be modified to address new circumstances;
- **Supervision/Personnel Policies** Examine the supervisory structure within the Department for the purpose of determining whether any modifications should be made in order to ensure effective supervision of employees, and whether existing personnel policies adversely impact on the ability of the command structure to provide effective supervision; and

• **Use of Civilians** – Whether duties and responsibilities currently performed by uniformed members of the Department should be performed by civilian employees.

In discussions at the outset of the study, the intent was made clear that virtually all functions were to be reviewed. Explicitly left out of the scope of this study were a detailed station location study, promotional examinations and affirmative action programs, and salary administration. Also not explicitly reviewed were airport operations, media affairs, governmental affairs, and internal investigations, though many of the latter issue areas are discussed under Human Relations.

**Collective Bargaining Agreement** – The current four-year collective bargaining agreement will be up for revision in July 1999. Collective bargaining agreements are developed after much debate and discussion, and often arbitration. There are historical factors, precedents, and current interests to be considered. The charge given to the study team was to make recommendations *without regard to the current collective bargaining agreement*. Many changes proposed in this report would have to be negotiated under a new collective bargaining agreement.

# **B. Methodology**

The approach used in this project was generally similar to that used in our studies of many other large fire departments, with the one significant addition of holding many more in-depth interviews of firefighters to get their views on supervisory and personnel policies and human relations issues.

The project started with an intense series of meetings of senior study team members with the heads of all major functional areas of the CFD. This included the Commissioner, all functions reporting directly to the Commissioner; the Deputy Commissioners who head operations, EMS, fire prevention, and support services; and many others. The Communications Center operations were observed and a number of firehouses were visited. A number of District Chiefs and Assistant Deputy Commissioners were interviewed. A meeting was held with the Immediate Past President, the current President, the current Secretary-Treasurer, and members of the Executive Board of the Chicago firefighters union. Meetings were held with the Budget and Finance Office of the Department, the City's Office of Budget and Management, and the City's legal department.

After the initial series of meetings, many follow-up meetings and phone conversations were held with these and other units over the course of the project, with various specialists on our team for each functional area.

A great deal of data and many reports were provided by the CFD for the study, including budgets, apparatus inventory, frequency of runs by unit, fire experience of the city, etc. Some data

was available from the start and some data were produced especially at the request of the study team. The study team also did some special surveys and comparative analyses with other departments.

As mentioned earlier, an unusual aspect of this study was an in-depth series of structured interviews with members of the department at various levels to discuss supervisory and human resources issues. Over 100 members of the Department at all levels in the organization were interviewed in this phase.

Throughout the project study team members went on ride-alongs to view fire and EMS operations. Many discussions were held with companies in their firehouses.

Throughout the study, the City's project manager was kept informed about the status of the project and the issues being identified. Periodic project status meetings were held with representatives of the Mayor's office, Budget Office, and Fire Commissioner.

# C. Organization of this Report

The remainder of this report is organized by major functional areas. This generally conforms to the organizational chart, but some functional areas such as prevention or management information cover activities of units spread out in different parts of the department.

Chapter VII is devoted to Supervisory and Human Relations Issues. That chapter is virtually a separate report by itself, and was placed last, but certainly not to reflect its importance, which is very high. The intent was not to get readers bogged down in controversial human relation and cultural issues before addressing the delivery of services in the field.

Recommendations are given throughout the report for every function discussed.

#### **CHAPTER II. GENERAL MANAGEMENT AND ORGANIZATION**

This chapter discusses the overall structure of the Fire Department and some general management issues. Included are some key units in the Office of the Fire Commissioner and 1st Deputy Commissioner – Financial Management; Research and Planning; and Emergency Preparedness.

Many detailed management and supervisory issues, including personnel, internal affairs, and human relations issues, are discussed later in Chapter VII. The Offices of Affirmative Action, Governmental Affairs, and Media Affairs, which report to the Commissioner, were not formally reviewed, though Chapter VII discusses issues with which they deal. Some functions that currently report directly to the Commissioner or 1st Deputy Commissioner – Safety, Special Events, and Air Rescue – are discussed in Chapter IV, Fire Operations.

## A. Overall Organization

The Chicago Fire Department, one of the largest in the United States, provides fire protection and emergency medical services to a community of 3 million residents and a large number of commuters and visitors 24 hours a day, 7 days a week. It also provides numerous ancillary or support activities including airport crash rescue services, marine fire protection, land and water rescue services, emergency management, and others. The Fire Department provides these services to a modern urban environment consisting of commercial, industrial, educational, medical, and many other varied pursuits within a 283 square mile area.

For organizational purposes this large service area is divided into 6 districts, 24 battalions and 95 local fire company areas. Stationed in those districts and battalions are 98 engine companies, 59 ladder truck companies, 59 ambulances, and a variety of specialized units to deal with heavy rescue, air rescue, marine incidents, and hazardous materials. A seventh fire district services the O'Hare International Airport.

The Department is staffed with close to 4,900 uniformed members and 300 civilians, for a total of about 5,200. They are housed or quartered in 112 buildings including fire stations, training quarters, headquarters, prevention, and automotive repair facilities, and have 520 vehicles of all types.

The CFD fire suppression force works a three-platoon system with 24-hours on duty, 48-hours off and additional adjustment days, which results in a 44.8 hour workweek on the average. The Department's Emergency Medical Service Bureau personnel are on a 24-hours on, 72-hours off duty cycle with no adjustment days. Some fire management and support staff, and all civilian personnel, work the standard Monday through Friday, 40-hour week.

In 1998 the Fire Suppression and Rescue Bureau responded to 177,000 emergency calls, up 8 percent from 164,000 in 1997 and up 12 percent from 158,000 in 1996. The EMS Bureau responded to 246,000 calls in 1998 vs. 233,000 in 1997, and 223,000 in 1996. About 70-80,000 of the fire suppression calls in recent years are ambulance assists to EMS.<sup>1</sup> Clearly the Chicago Fire Department is a very large organization with enormous responsibilities that demand constant close attention. The services provided are increasingly technical, with different parts of the Department having to work synergistically. In order to fulfill those responsibilities, a sizable senior supervisory structure is needed to manage and administer the day-to-day operations.

There is no single organization chart for fire departments that has proven to be superior; many arrangements are acceptable. Further, there is always a question of whether to organize a department to take advantage of individual managers' strengths and preferences, or to have an organization that can be stable as senior managers turn over. While the choices are many, and the current CFD organization has been functional in delivering services to the citizens, where it counts the most, there are a number of changes that need to be considered for improving efficiency and improving management, and for addressing some serious supervisory and human relation issues that have built up over the past two decades.

**Senior Management Structure** – The top management of the CFD currently falls on the shoulders of eight people. The Fire Commissioner has the ultimate responsibility. Reporting to him are the 1st Deputy Fire Commissioner; the five Deputy Fire Commissioners responsible respectively for Fire Suppression, Administrative Services, Support Services, Fire Prevention, and EMS; and the Deputy Commissioner for Internal Investigations (see Figure 2.1).

<sup>&</sup>lt;sup>1</sup> Some EMS calls receive both an ambulance and a fire vehicle assist, others only an ambulance.



There are several apparent problems with the current organization chart:

- The span of control for the Commissioner and First Deputy is too wide, with 15 units reporting directly to them well more than the 5-6 per person that are considered a reasonable maximum in larger organizations of various types;
- Groupings of some functions are illogical (e.g., maintenance combined with fire investigations);
- Some functions are spread across too many units (e.g., management information systems, rescue services);
- Some critical functions (e.g., emergency management, prevention, and EMS) are understaffed; and
- There is a questionable need for all the levels of upper management that exist (especially the relatively new position of Assistant Deputy Fire Commissioner).

*Wide Span of Control* – In addition to the five Deputy Fire Commissioners heading Bureaus, and one Deputy Commissioner heading Internal Affairs; the Commissioner and First Deputy Commissioner currently have reporting directly to them nine specialty functions: Media Affairs, Emergency Preparedness and Disaster Services, Finance Division, Special Events, Air Rescue, Research and Planning, Governmental Affairs, Safety Division, and Affirmative Action. This is an extremely heavy burden and wide span of control. Of course an organization chart does not convey the actual lines of reporting day to day; there is much sharing of responsibilities by the senior management team, and some of these functions are not administered on a daily basis. Still, the number of boxes that have accrued under the Commissioner and First Deputy seems excessive, and there are good alternatives to consider, as will be presented below.

**Logical Groupings of Functions** – At present, the Deputy Commissioner of Support Services is responsible for the Shops (maintenance of vehicles), Air Mask Service (maintenance of equipment), Maintenance of Facilities, and Fire Investigations. While each of these functions is individually well managed, the grouping is illogical and splits a key part of Fire Prevention – the investigation of fires and arson control activities – from the other parts of Prevention. Interviews showed that there is inadequate communication between the various parts of prevention, and a loss of synergism in this crucial fire department function.

Air rescue is an operational function that is separated organizationally from other rescue functions and from EMS transport. It cannot receive much attention to its details when reporting directly to the Commissioner, who has his managerial plate full.

Research and Planning is separated from the Records unit, which is responsible for the collection and quality of data it analyzes. Much real R&D work and grant writing is done by Emergency Preparedness, even though that function is seriously understaffed to do its nominal job. There is no one assigned as the communications person to coordinate closely with the 9-1-1 system, which is in a totally separate City department.

The Safety unit reports to the Commissioner directly, and is not in the same organization with either Training or Operations, with which they must closely coordinate. Again, the Commissioner is too busy to be able to give it much day-to-day supervision.

To address both the problem of the large span of control of top management and to improve the logic of the groupings of functions, we suggest a revised organization as diagrammed on the next several pages. There are many variations possible to fine-tune the proposed organization. As noted earlier, no single organization chart is ideal.

**Recommendation 2.1:** Consider a revised organization chart, as shown in the series of proposed organization charts on the following pages. The proposed organization has the same basic structure as the present organization, but does more grouping of related functions, reduces the span of control problems at the top of the organization, and clarifies the organization, making it more straightforward and easier to see where responsibility for various functions lies.

In the proposed organization, reporting directly to the Commissioner are the five Deputy Fire Commissioners who head major Bureaus, plus the Deputy Commissioner in charge of the Internal Affairs Unit and the Commissioner's Executive Assistant. The functions or activities directed by the five Deputy Commissioners are Operations, Prevention, Emergency Medical Services, Technical Support Services, and Personnel Administration. (The former Administrative Bureau is re-titled Personnel Administration (or Human Resources) to emphasize its important new thrust as will be discussed later.)

There are some significant changes proposed in sub-tasks assigned under these titles. One alternative to the chart shown is to combine all support services under one Deputy Fire Commissioner vs. splitting out the Personnel Administration function, but the latter has so many sensitive, time-consuming issues that it alone can take the majority of a Deputy Fire Commissioner's time, and it will get even more demanding if the recommendations in Chapter VII related to improving human relations and supervisory capability are adopted.

The logic of the other suggested organizational changes is as follows. Fine-tuning can be done by the upper management team to refine the logic of the organization and balance workloads.

• The new (Technical) Support Services Bureau should be responsible for procurement and maintenance of all apparatus, equipment, and facilities, along with Research and

Planning, and Fiscal and Financial Management. This combines all support services but personnel under one command. It would unify management data collection and analysis. Planning and R&D would be more closely connected to the budget and to plans for the deployment of resources.

- The Safety Director is placed under Operations, to closely coordinate with operations. The Commissary operation (which provides personal protective outfits) is placed under the Safety Director; alternatively, it could be viewed as a supply operation and put in Support Services.
- Emergency Preparedness, Special Events, and Air Rescue are placed under a new Special Operations chief in the Fire Suppression and Rescue Bureau, who would also be responsible for hazardous materials and technical rescue services. Air Rescue relates to both Helicopter and Marine activities, and all three functions would fit under the Special Operations umbrella.
- All personnel and Human Relations issues should be under a Deputy Commissioner (it would have most of the current Administration Bureau functions). Training could be moved there, too especially for the period when a major change in focus is adding managerial training. A second reason is to have a "neutral" name for both EMS and fire training. However, there are strong reasons to keep training attached to Operations, too. The management team can decide.
- The Prevention Bureau should be expanded to include Fire Investigations, where it could work with the code compliance and inspection arm of the department as well as with Public Education, where lessons learned from fire experience are taught. Also, the juvenile fire setter program is split between two Bureaus at present, and would be unified. This organization is similar to that found in most major fire departments.
- The Fire Commissioner and 1<sup>st</sup> Deputy Fire Commissioner are viewed as needing to be a closely coordinated box at the top of the organizational chart. Personal management styles will influence how these two positions divide duties: e.g. one focusing on strategic planning, the other day-to-day operations, one running some functions day-to-day, the other another set. Of paramount importance is that the top executive must be able to keep in touch with all the key subordinates, and the work style of the two must mesh well.
- In the longer run, the number of districts might be reduced from six to four, and the number of district chiefs and deputy district chiefs reduced (as discussed in the next section).

More of the suggestions for the organization of Operations and some other functions are discussed further under the various functional chapters.

#### Figure 2.2a Proposed Organizational Chart - CFD Top Level



Alternatives to consider:

- Leaving Community Services in Prevention
- Moving Training under Personnel Administration or Support Services

#### Figure 2.2b Proposed Organizational Chart - Support Services Bureau



#### Figure 2.2c Proposed Organizational Chart - Prevention Bureau



Note: Public education could be headed by a civilian or DC.

#### Figure 2.2d Proposed Organizational Chart - Operations



# B. Hierarchy of Ranks

The nominal hierarchy of ranks is shown in Table 2.1. This hierarchy of positions really is more descriptive of the Fire Suppression and Rescue hierarchy than of any of the other Bureaus, which have many specialty positions filled by uniformed or civilian personnel. Also, the EMS Bureau has its own rank structure (see Chapter V).

 Table 2.1 Current Fire Suppression Rank Structure

There are several problems with the current hierarchical structure and its implementation:

- Not enough accountability, especially for company officers and battalion chiefs, with a corresponding bucking upward of problems;
- More levels and chiefs than needed if managers at each level fulfilled their managerial duties; and
- The potential misleading nomenclature of some rank titles in the proposed new organization.

**Number of Levels** – As with organization charts, there is no national standard for the hierarchy of ranks in a fire department or for their nomenclature. Good management organization theory calls for not having too steep a pyramid, because a steep pyramid leads to bureaucracy and slowness in decision-making, contributes to the practice of avoiding tough decisions by kicking them upstairs, and adds expensive management positions.

Assistant Deputy Fire Commissioners – There are, at present, four Assistant Deputy Fire Commissioner positions that were created to help enforce discipline in the wake of an embarrassing videotape incident. Their role includes patrolling the Department after hours and making
unannounced calls at fire stations. They also play a role in the actual chain of command, albeit administrative. Rather than retain this new rank, which should be eliminated, the other line supervisors should be held more accountable for managing and supervising. Already in place is a company officer in each station that is supervised by a Battalion Chief, who in turn is supervised by a Deputy District Chief on each shift. If each level of command supervises to the extent it is supposed to, the additional Assistant Deputy Commissioner level would be redundant. Each level in the command structure should be expected to enforce the Department's rules or be removed from their position.

**Recommendation 2.2: Eliminate the four Assistant Deputy Commissioner positions.** In addition to eliminating an unnecessary level of bureaucracy, it will save about \$500,000 in salary, benefits, and cars, and it will strengthen the other managers below that level by restoring and raising expectations of them.

*1<sup>st</sup> Deputy Commissioner* – This position should work closely with the Commissioner as a two-person management team, much as a President and Executive Vice President would in a corporation. In some organizations, one of the two top positions focuses on long-range issues; the other runs the day-to-day operations of the department. Some cities have found the organization cleaner by having direct reporting of the Deputy Commissioners to the Commissioner, with no 1<sup>st</sup> Deputy position. Whatever the arrangement, the two must be of similar mind and work closely together. The 1<sup>st</sup> Deputy is an excellent position for training a future Commissioner, and for having a back-up when the Commissioner is absent. All of the Deputy Commissioners and the 1<sup>st</sup> Deputy should serve at the discretion of the Commissioner, so that the management team is cohesive.

*Lieutenants and Captains* – At the other end of the organization chart, some departments have done away with either the Lieutenant or Captain rank. We do not recommend their elimination at this time. There still must be a "station officer" responsible for the station, and there are a number of functions outside firefighting where a captain may head a unit with lieutenants and lower ranks under him or her (e.g., in prevention). One reason some communities abolish one of the two ranks is to reduce personnel administration issues (e.g., an extra exam must be administered). However, eliminating the lieutenant rank – which is usually the one eliminated – can result in increased expense, because the number of officer positions is not diminished. We have not seen persuasive evidence on the benefits of one approach or the other. It should be left to the discretion of the City as to whether the price of having one rank is justifiable from the viewpoint of personnel administration.

*District Chiefs* – A change suggested for consideration in the longer run is reducing the number of districts from six to four. Two of the new, larger districts could report to an "Assistant Chief – North" and two to an "Assistant Chief – South." This would reduce the number of people enforcing policy, would strengthen management, and would save six DDC positions at a savings of about \$700,000. However, until the Battalion Chiefs fulfill their managerial responsibilities more

completely, and personnel issues stop getting bucked upwards, the larger number of exempt positions is necessary. After 4 p.m. (normal office hours), the current six DDCs are the only senior managers (exempt positions) running the department, although the senior leadership is always on call.

**Managerial Accountability** – A disconcerting comment heard from many levels of the CFD was that while a military-style rank structure is used, managerial accountability was often lacking outside the environment of an emergency response. Other than at emergencies, many first-level supervisors, Battalion Chiefs, and others are not as adept or willing to deal with managing people as they are the technical parts of the job. A major theme of our findings and recommendations throughout this report is to provide better training to supervisors and managers at all levels in managing people, and to raise the bar of expectations on performance of officers in managing their human resources.

One place to start is to update the departmental job descriptions to make sure that valid and complete descriptions exist for each position and truly reflect what is expected of individuals holding respective ranks. A number of people interviewed were not even aware that position descriptions existed for exempt positions. Implementing a performance evaluation system as a means of enhancing accountability – which we recommend – could be rendered meaningless without up-to-date job descriptions against which to measure one's productive output.

Once position descriptions have been updated for all positions, all supervisors and managers should be expected to comply with their scope and contents, or, put another way, do all of their job, not just the technical and service provision parts. In order for this to work, each level of supervision and management must insist on that compliance from their subordinates, monitor the activities and efforts of their subordinates, and help get their subordinates the appropriate training. *One should not seek promotion unless one is prepared to be a manager of people, and to be a fair disciplinarian when needed*. Candidates for promotion to Lieutenant and above should be informed of the expectation, and directly asked if they are prepared to meet it. Skill in managing people should be built into promotional requirements more than it is; Chapter VII will describe the overall concept for performance evaluation and management training in much more depth, including an implementation plan for improving supervisory practices and reducing constraints on supervisors – one of the prime tasks the study team was charged to do.

**Recommendation 2.3:** The CFD job descriptions should be updated to reflect what each job entails and what is expected of individuals holding that position. Exempt positions should undergo job analysis to ensure an appropriate match with potential candidates.

**Enhancing Battalion Chiefs as Managers** – A key to improving discipline and accountability is to emphasize and reinforce the role of Battalion Chiefs in being managers as well as mentors and incident commanders. At present, there are many aspects of department culture that do

not encourage Battalion Chiefs to view themselves as managers. There is a pressing need to enhance their authority and accountability. Some are doing a superb job as managers and some are abdicating their managerial responsibility.

Battalion Chiefs, Captains, and Lieutenants currently are part of the same bargaining unit as the firefighters they supervise.<sup>2</sup> This makes it awkward to discipline a fellow member of the unit, on top of the "family" relationship of living together in the firehouse. Although this same situation can be found in many other jurisdictions, it does not make for an ideal disciplinary process. Where charges have been filed against a firefighter or paramedic, testifying against him or her will, in many cases, be fellow union members. The conflict of interest is clear.

**Recommendation 2.4:** Reinforce the role of Battalion Chiefs as managers. Two approaches toward this end would be improved managerial training, and developing performance evaluations in which their managerial competence would be a major factor in eligibility for promotion and even retention of rank. (These will be discussed further in Chapter VII, Human Relations Issues.) Another possibility to explore is removing Battalion Chiefs and above from the bargaining unit.

**Criteria for Senior Positions** – The career service in the CFD ends at the rank of Battalion Chief. All ranks above that are appointed positions, with few requirements. The position immediately above Battalion Chief in line firefighting is the DDC, who manages several battalions in a District. It is difficult to do this well without having had the experience of commanding a battalion. The next level, District Chief, also should have battalion chief experience to serve further up the combat command. It is desirable but much less critical for senior positions in personnel, prevention, and administration to have the rank of Battalion Chief as a prerequisite.

In addition to time as a Battalion Chief for senior line firefighting positions, there should be further requirements for all senior ranks: having the qualifications to meet the job description, good performance ratings, satisfactorily passing an oral exam or interview board, and willingness to take on all of the responsibilities of the next level of management.

**Recommendation 2.5:** Only individuals holding the Career Service rank of Battalion Chief for at least two years should be considered for higher ranks in the line FS&RB positions. The Battalion Chief experience is essential training for all higher fire incident operations command positions. There are some specialty positions (e.g., in personnel administration) where this requirement is not needed.

**Recommendation 2.6:** The ranks above Battalion Chief should have criteria for selection to them. Though filled at the discretion of the Commissioner, there should be criteria to increase the objectivity of the process of filling them.

<sup>&</sup>lt;sup>2</sup> A number of senior managers above the rank of Battalion Chief also voluntarily belong to the Local.

### C. Other Management Issues

In addition to changing the organization chart, and partially restructuring the hierarchy of ranks, a number of other measures would strengthen the organization, improve supervisory capability, or improve harmony. We briefly discuss here some background on the internal management and human relation issues that the Department has been experiencing, and some recommendations for addressing them. Most of these issues are discussed at greater length in Chapter VII. But we would be remiss to go much further without flagging some of them.

*Historical Context* – In addition to its tradition of exemplary service to citizens, personal heroism, and making do with what one has to work with, from old stations to aging apparatus, there has been much turmoil and many unpleasant human relations issues in the CFD over the past two decades. These do not need to be belabored here, having been given much play – perhaps too much, and not all accurate – in the media. However, for those not familiar with them, a few historical notes may be needed.

The roots of much resentment in the department can be traced to the labor strike of 1980 when some members went out in protest and others elected to remain on the job. While this all took place 19 years ago, bitter feelings still exist. Even recent hires have been indoctrinated on the controversy, and forced to pick sides.

Another source of resentment are several incidents in which inappropriate behavior of a few individuals and the follow-up disciplinary actions of the Department received much play in the media. One of these incidents centered on a videotape of a fire station party in 1990 at which some questionable activity took place. The issue did not surface until 1997 when a departmental member found the tape and made it public. The end result was that a number of individuals were dismissed and various changes in departmental procedures and operations were made to address the issue or preclude it from happening again. A recent decision reversed most of the dismissals.

Adding to the above issues peculiar to the CFD's history is the more general "two cultures" issue: the difference in duties, workload, supervision, and other aspects of being a firefighter vs. being an EMS bureau paramedic, with firefighter/paramedics having aspects of both. This problem is found in many departments that provide both types of services when the members are not all cross-trained, and so form two pools of employees and two cultures instead of one. More will be said about this matter in EMS, Chapter V and Supervisory and Human Relations, Chapter VII.

Selective appointments are yet another cause of dissension. As the Department is structured now, promotional exams are given for all ranks up to and including Battalion Chiefs. All individuals serving above the rank of Battalion Chief are appointed. Career Service examinations end with that

rank.<sup>3</sup> In some cases a career service Battalion Chief may work for an appointed Deputy District Chief or District Chief who has not reached the Battalion Chief level by way of competitive examination.

The above issues form some of the undercurrents that affect management and organization. Suggestions or recommendations will be made to address most, if not all, of these issues here and in later chapters. The Fire Department senior management is very much aware of these issues, which stress them almost daily. They have made many efforts to mitigate these seemingly intractable issues (e.g., a two-hour course on diversity and sensitivity was given to all department members this past year), but much more needs to be done.

**Standard Operating Procedures** – Most fire departments have a detailed set of Standard Operating Procedures (SOPs) or Standard Operating Guidelines. In 1998 the Department created an ad hoc committee to update their SOPs.

Standard Operating Procedures are the backbone of acceptable uniform performance not only at emergency scenes but also in the handling of administrative responsibilities. It is vitally important for all members to have a complete understanding of what is expected in certain identified circumstances. Standard Operating Procedures also help share the collected wisdom of the most experienced veterans, but do not have to preclude flexibility.

Numerous interviewees in this study said there is inconsistent application of operating procedures across districts. A certain degree of customization of operations to a district is necessary, as structures and topography vary from district to district. Department managers are aware of the need for SOPs and are interested in developing a revised, comprehensive, practical set of guidelines. There also is awareness of the need for consistency, but it is not yet achieved.

**Recommendation 2.7: The committee to update SOPs should be supported, and the SOPs updated as soon as possible.** There should be a greater effort to being consistent, especially in dealing with people issues, fairly and consistently across the department.

**Standing Committees** – In most fire departments there is a number of standing committees comprised of experienced line and staff personnel knowledgeable about the particular business of that committee. Typically committees address topics such as communications, apparatus and equipment, operations, safety, and training. Two such committees now operating in the CFD are the ad hoc communications committee of Battalion Chiefs, which addresses dispatch center problems, and the newly formed Standard Operating Procedures committee noted above. Involving all levels of

<sup>&</sup>lt;sup>3</sup> A nomenclature note: Positions called "Career Service" in Chicago often are referred to as "Civil Service" positions elsewhere.

the department in the business and operation of the department can enhance the cooperative spirit and further the team building process.

**Recommendation 2.8:** A number of departmental committees should be formed to meet on a regular basis where an exchange of information is encouraged and input from all sources sought. The nature of these committees should be determined jointly by management and labor.

**Intradepartmental Communications** – Intradepartmental communications was frequently mentioned in interviews throughout the Department as an area in need of improvement. The lack of good communications tends to exacerbate existing or developing problems, with resentments stemming from misunderstandings. An example was the many members of the Department who heard that this study was just a "time and motion study" to cut costs. Toward the end of this study, many heard that it was already on the Internet or that it had been dictated by the Mayor's office, both of which were totally false. Having a simple way to dispel such misinformation, explain plans, and discuss the intent and timing of changes can head off unnecessary apprehension and ill will, and reduce the number of internal issues and grievances.

One way to improve internal communications would be for CFD headquarters to issue periodic information releases to department members. Another approach is to start a CFD newsletter. (The Austin, Texas, Fire Department has a particularly good newsletter to use as a model.) A third approach is to use the closed circuit TV and VCR capabilities in each station to broadcast a talk show about the Department on a regular basis, with the Commissioner, senior officers, and other members making presentations. The show could be videotaped and shown to each shift. (The Portland, Oregon Fire Department has had an excellent version of such a program, run entirely by department members.)

The internal communication tools can be used to announce new vehicle purchases; explain changes in procedures; dispel rumors; describe major newsworthy events; announce promotions, transfers, or retirements; provide study aids; and for various other purposes.

**Recommendation 2.9:** A CFD newsletter should be instituted; a videotape news or talk show should also be considered. The newsletter, and possibly a videotaped "CFD news" program would be distributed on a regular basis, at least four times per year to start, and preferably monthly or bimonthly. Each issue of the CFD newsletter could have a training column, copies of thank you letters that had been received, a profile of newsworthy CFD personnel, explanations of orders or memoranda, and an "ask-the-commissioner" column (this is very popular in the Austin newsletter).

Also contributing to communication improvement within the department would be the use of the previously recommended standing committees. When an individual has a part in making or contributing to the development of departmental policy, it is more likely that he or she will support and even promote it once it has become a fact. **Recommendation 2.10:** The opportunity for department members to participate and contribute to policy making within the organization should be increased. The previously recommended participation in committees is just one way to do this.

**Rotations and Transfers** – Related to discipline and to career development of Battalion Chiefs is the assignment or transfer system as it pertains to officers from Lieutenant up to and including District Chiefs. For the most part, the primary if not only basis for transfer decisions under the present system is by seniority. The Fire Commissioner has the discretion to make only four percent of transfers as he sees fit.

Once most individuals with enough seniority get situated where they want to be, they can remain there until they initiate action on their own to move on, get promoted or retire. By remaining in one assignment, their exposure to the varied types of firefighting roles and to the geography and fire potential in different parts of the city is limited. It increases competence to have a broader base of knowledge and experience, and is especially important for developing candidates for promotion to Battalion Chief and above. After spending some time in a ladder company and then moving on to an engine company in another area of the City, there is no question that an officer would be better informed and have a broader perspective than if staying in one place. Said another way, should anyone be promoted to Battalion Chief who has known only one neighborhood and one "firehouse family" as a supervisor? We think not.

Rotations also reduce chances of burnout and increase opportunity to serve in busy stations and keep one's skills up. They also reduce potential for favoritism and for giving good assignments only to pre-selected individuals; more people would get a chance to serve for at least some time in the busier companies.

Having people stay in one place together for a long time does encourage a sense of family, close teamwork, and better knowledge of the details of the first-due area. But a familiarity sets in after a time and with it the possibility of a lessening in discipline or an understandable reluctance to apply it. It may also encourage complacency and lack of objectivity.

**Recommendation 2.11:** A policy should be set up whereby an officer can only spend a specified amount of time in one assignment and then is moved on to a different work site and possibly different assignment. This rotation policy could also include staff assignments. The term of each assignment would be determined by the department, but it is suggested that no more than three years be spent in each work place. Officers should have the opportunity to indicate preferences, and bid for assignments, but not to remain in place indefinitely. The time allowed in one position may need to be longer for a few technical specialties, such as fire investigators, where a great deal of formal specialized training and on-the-job training is needed to gain competence.

**Recommendation 2.12:** Rotating shifts of firefighters and officers should also be considered. Again, to increase sharing of knowledge, to avoid having the same people serve under the best leaders all of the time, and to keep officers objective, the shifts one serves on can also be rotated, with crews rotating forward through shifts (A to C) and officers rotating backwards (C to A), to vary the crew/officer combinations.

**Recommendation 2.13: The Fire Commissioner should have more flexibility in making discretionary transfers of officers.** From a perspective of good management, the transfers of all individuals from Lieutenant and above ideally should be at the discretion of the Fire Commissioner. Individual preferences should be considered and met whenever possible, but the transfers should not be on the basis of seniority alone.

**Management Pensions** – Many senior managers in the CFD, a number in their late 60's, are hanging on in their positions because they would receive unfair pensions if they retire, often pensions that are as low or lower than if they had remained at the battalion chief level. This is an unusual if not unique situation. A pension equity bill in the Illinois State legislature has been actively lobbied against and defeated for years to continue to punish a small number of individuals who went to work during the Chicago Fire Department strike in 1980. The lack of passage of the bill has kept many senior managers from retiring, which in turn blocks scores if not hundreds of promotions and stops fresh blood from flowing upward into management. A district chief who retires frees seven promotions, a Deputy Commissioner eight.

The positions on both sides of the issue are passionately held. It was the opinion of the study team, which included chiefs and firefighters from a number of departments as well as human resource development experts, that the Chicago Fire Department would have a much healthier work environment, would modernize its management faster, would be able to reward the contribution of many younger members, and would be able to take advantage of the pool of talent stuck at lower levels of management if the bill were passed.

Recommendation 2.14: Release many promotions and rejuvenate management by passing pension equity legislation that would encourage retirements.

# **D. Finance and Fiscal Management**

A key function of the Fire Commissioner's office is Finance and Fiscal Management. The Finance and Fiscal Management Division has a staff of 31 civilians including the Director, who reports to the Fire Commissioner. The Director, Assistant Director, and their Administrative Assistant oversee and coordinate budget preparation, and manage the functions of Payroll Administration, Fiscal Administration, and Accounting. These functions include preparing the operating and capital budgets, tracking actual expenditures against budget, purchasing, maintaining cost records, preparing payroll, and maintaining time and attendance records for almost 5,200 (4,886 uniform and 289 civilian) employees of the Fire Department. The Division works with various City

departments that are responsible for these functions, and with the central computer systems that support these functions. Generally the Division operates about as well as can reasonably be expected given their being hamstrung by the limitation of the centralized systems they must deal with.

**Payroll Administration** – This unit has 12 employees of whom 8 are Field Payroll Auditors. These 8 primarily serve as timekeepers for all Fire Department employees, 6 in the field and 2 at headquarters. On a daily basis they report hours worked, sick leave, and vacation leave. Payroll preparation and changes that affect payroll are performed mainly by the Payroll Administrator and Assistant Administrator. Two staff employees maintain the records, perform clerical tasks and assist with time keeping.

Payroll Administration does not enter any data directly into the City's payroll system. Rather they manually complete forms for changes to rates of pay, personal information, hours worked, overtime, uniform allowances, deductions, etc. and send them to the City's central Finance Department for entry there into the automated payroll system. Copies of these forms are maintained by both the Fire Department and the City's Finance Department. The only on-line function available to the Fire Department is inquiry access to employee information, such as position title, rate of pay, and budget number to which the employee is assigned.

The amount of manual effort required by this section is enormous. After ratification of the last collective bargaining agreement, retroactive pay for a period of approximately 1 1/2 years had to be manually calculated and submitted to the City's Finance Department. The complexities involved in manually computing these retroactive changes were tremendous. The difficulties of working through the City's payroll department to properly reflect the retroactive pay were extremely troublesome, often impossible, to manage. The resulting errors in retroactive pay created large numbers of valid complaints. On an ongoing basis, incorrect pay checks, missing checks and late checks create complaints and are a constant source of frustration and dissatisfaction with the staff of Payroll Administration and the employees of the Fire Department.

The above problems and inefficiencies cannot be corrected or even significantly improved by the Fire Department alone. This fact needs to be communicated to the entire CFD staff so that it does not add to internal tensions; the Finance and Fiscal Management Division would like to see the situation improve as much as do the other members of the Department. The Fire Department is dependent upon the City's BIS and Finance Departments centralized systems, and it is they that need to correct this situation. BIS has plans to replace the City's financial systems including the payroll system, and we highly recommend that this be done.

The Department is in the process of implementing the new Chicago Automated Time and Attendance system (CATA). This system was being rolled out to the administrative areas of the

department during this study (end of 1998 – beginning 1999). Implementation of CATA among the uniform fire fighters and paramedics depends upon its successful implementation in the administrative areas and the system's capabilities to support the unusual work schedules of the uniformed force. Because this time and attendance system reports the clocked in and out times, it is expected that the Field Payroll Auditors will be needed to continue to report exceptions such as sick leave, vacation leave, etc. The Division's Principal Operations Research Analyst is dedicated virtually full-time to the implementation of CATA.

**Fiscal Administration** – This function is staffed with 11 positions. They are responsible for originating and managing the purchasing process for all operating and capital purchases for the Fire Department. They work with the City's Purchasing, Law and Budget Departments to make the necessary purchases for the Department.

Many long-standing and widely recognized problems exist with the City's purchasing process. These include constantly changing purchasing procedures that are not uniformly understood or applied, difficulties in maintaining active open purchase orders for standard purchases, difficulties in obtaining necessary warranty work from vendor-authorized service agents, and encountering long delays in obtaining approvals and purchasing fire apparatus. Here too, improvements are largely outside the control of the Fire Department and are dependent upon BIS and the City's Purchasing Department. However, standardization of Fire Department purchasing policies and processes could make a significant improvement to the overall process.

**Accounting** – This section has three people who are responsible for preparing and managing the operating and capital budgets and for insuring that expenditures are properly recorded in the City's accounting system (CAPS). Accounting cannot make entries or corrections directly into the City's accounting system. Inquiry access is available to view account balances. Error corrections for expenses recorded to the wrong budget or account are very difficult and time consuming. Therefore, Accounting must maintain duplicate records in order to reconcile to the City's system and to manually produce the necessary management reports for the Fire Department on a timely basis.

**Core Computer System Support** – The City's computer systems that are used to support accounting, purchasing, payroll, and time keeping are outmoded and require an inordinate amount of manual effort to process work. Out of necessity, the Division maintains a set of departmental records and generates reports necessary for managing the Department. Much of the effort required of Finance and Fiscal Management necessarily duplicates some of the record keeping, data entry and reporting activities performed by the City departments responsible for these functions. The need to replace these automated systems and to streamline procedures has long been recognized by the City. Until these systems are replaced, the Fire Department must operate under the inadequacies and

inefficiencies of these automated systems and must continue to maintain duplicate departmental records to generate the necessary management reports.

However, even though the City may replace the existing core computer systems over the next few years, there are efficiencies to be gained in the short term from improving the methods of using the existing systems.

**Recommendation 2.15:** The Finance and Fiscal Management Division should explore the possibilities for changing how data is prepared, entered and edited for the City's core computer systems. The Director of Finance and Fiscal Management along with the Fire Department's BIS liaison (the Director of Research and Planning) should meet with the City's BIS, Personnel Department, and Comptroller's Office (including the Payroll Division) to determine what changes, if any, can be made to allow the Fire Department input to go directly into the City's automated systems. Direct on-line entry access to the City's Payroll, Human Resources, Purchasing and Accounting systems may not be feasible if security in the City's core system cannot limit Fire Department access to Fire Department data only. Other methods of data entry such as forms that can be optically scanned should then be explored, to eliminate the need for more than one City department to handle, process, file, and report the same data.

The City has been forming a citywide purchasing committee consisting of users from various departments to provide input to and review of purchasing procedures. This type of user committee could have the mutually beneficial effect of improving purchasing processes and developing an improved understanding among the operating departments of the broad issues involved in citywide purchasing.

Recommendation 2.16: The Director of the Finance and Fiscal Management Division along with the Department's BIS liaison (the CFD's Director of Research and Planning) should develop a description of the Division's BIS support needs and should meet with BIS management to present these needs. BIS is not providing adequate support for the administrative needs of the Fire Department. For example, there is inadequate tape storage in BIS and an automated system is needed to maintain equipment cost records.

Additional recommendations for improving BIS support of the Fire Department are discussed in the section in Chapter VI, Support Services, which addresses Information Systems in detail.

### E. Emergency Preparedness and Disaster Services

This function has the enormous responsibility of helping to prepare the City of Chicago for a wide range of manmade and natural disasters, including floods, heavy snow storms, terrorist acts, building collapses, airplane crashes, cold waves, and heating shortages. The Emergency Preparedness function currently is staffed by a very small three-person office that reports directly to the Commissioner.

**Organizational Role and Placement** – By city ordinance, the Chief heading Emergency Services becomes the Deputy Director of Emergency Preparedness for the City during emergencies, and the Fire Commissioner becomes the Director of Emergency Preparedness, reporting directly to the Mayor.

The Emergency Preparedness function must coordinate the activities of 17 city agencies and a number of volunteer groups (e.g. Red Cross), charities (e.g. Salvation Army), and state and federal agencies. It receives about \$169,000 of its budget from the state. It also coordinates with the mutual aid network of virtually all communities in Northern Illinois, from the Wisconsin border to Indiana.

The office must closely coordinate with the Mayor's Office and OBM to get information and justification for declaring state or federal emergencies, and obtaining federal disaster monies from FEMA or elsewhere.

For many types of disasters, the CFD itself has a major role, and that role is increasing. In any disaster it will provide emergency medical services, possibly with a huge surge of calls requiring attention. For disasters involving building collapses or people trapped anywhere, the CFD will have the major heavy rescue role. For chemical-biological- nuclear materials incidents, the Fire Department may have a major containment, removal, and decontamination role.

The growing role of fire departments nationally in disasters has raised questions about their desirability to also be the coordinators of other agencies at the same time, while they are handling their own part in the operation. Further, many disasters are not really in a fire officer's area of expertise (e.g., snow removal). On the other hand, Fire Departments such as Chicago have become highly adept at using an Incident Command System that works extremely well for coordinating disaster management. This has been proven in practice in Chicago. Some large cities such as New York, Los Angeles, Philadelphia, Atlanta, and Denver have their Emergency Preparedness function outside the Fire Department; in others such as Detroit and Dallas, the function reports to the Fire Commissioner, as in Chicago.

A high-level CFD staff person with support (as in the current office) would still need to be assigned the CFD's own emergency preparedness coordination responsibility regardless of where the function is assigned.

**Recommendation 2.17:** Consider transferring the responsibility for citywide emergency preparedness to the Mayor's Office. The Fire Department still would have a major role to play in for major emergencies or disasters, and still needs its disaster preparedness office.

**Staffing** – There is a much larger issue than the organizational placement of Emergency Management: *the Emergency Preparedness function is seriously understaffed*. There is a great deal of

concern nationally about potential threats from terrorist acts to the infrastructure. Chicago has the talent and leadership in the Fire Department to plan for emergencies but not enough people to research and prepare for the threat. A constant level of preparedness activity is needed to more thoroughly consider the threats, city vulnerabilities, planning for what is possible, and coordination with the police and other agencies.

The emergency program coordinator's staff consists of an Administrative Assistant and Secretary, and one was on extended leave at the time of our initial visit. This staff suffices for only the most routine of operations. It does not jibe with the current state of public concern about potential terrorism. There are natural and human threats to the City's infrastructure, places of public assembly, and special events that must be better addressed. The office seems to be seriously behind in updating plans and in preparedness because of their understaffing.

The budget for Emergency Management is buried in the Fire Department's budget, and gets traded off against other Fire Department needs. The Emergency Management budget should be viewed as a separate, citywide function regardless of where it is on the organizational chart. Its budget should not be traded off against the rest of CFD's needs, nor should it necessarily be staffed primarily with firefighters. The Emergency Preparedness function in the CFD is intertwined with Hazardous Materials incident mitigation. While the HazMat function nominally reports to Emergency Preparedness, there is a good deal of sharing of duties and backstopping each other to make the most of the limited personnel resources – an excellent, sensible sharing of duties.

Table 2.2 shows a comparison of the staffing of the Emergency Management/ Preparedness offices in various large cities, and to whom they report. One must be slightly wary of these comparisons because some cities (e.g., Chicago) have some people in the Mayor's Office or elsewhere who play significant roles in emergency preparedness but are not formally in the Emergency Preparedness Unit.

Chicago has many fewer emergency management staff per million population than other large cities. Other cities had from 3.5 to 12 staff per million; Chicago has 1.1. The updating of population figures would not change this picture much, and might make the comparison look worse since Chicago has grown since the last census. A few emergency staff in other cities are designated to help set up and maintain their Emergency Communications Center in an emergency, which presumably is being handled in Chicago by the 9-1-1 Center and does not require additional staff for that function. Even deducting the several staff in other cities designated to set up the ECC, Chicago would still be understaffed.

City	Population (millions)	Emergency Staff per Million Pop.	Emergency Agency	Total Staff	Reports To
New York	7.3	7.5	Office of Emergency Management	55	Mayor
Los Angeles	3.4	4.7	Emergency Preparedness Division	16	City Administration Officer/Mayor
Atlanta/Fulton County	3.7	3.5	Emergency Management Agency	13	Mayor and County Executive
Chicago	2.7	1.1	Emergency Preparedness	3	Fire Commissioner
Philadelphia	1.4	4.2+	Office of Emergency Management	5+	Managing Dir. of Operations/Mayor
Detroit	1.1	4.5	Emergency Coordinator	5	Fire Commissioner
Dallas	1.0	5.0	Emergency Management	6	Fire Chief
Denver	0.5	12.0	Emergency Management	5	Mayor

Table 2.2 Emergency Management/Preparedness Staff Sizes

Table 2.3 shows how the emergency staff in a number of cities (and one county) are used, by position. Some assign people by job classification and others by their emergency role. Below is a brief description of how emergency management works in several large cities.

New York – The Mayor's Office of Emergency Management (OEM) is headed by a Commissioner on the same level at the Police and Fire Commissioners who reports to the Mayor. They have a staff of 55 persons.

The agency is responsible for all planning, preparedness and response issues dealing with emergency management. It supports the public safety agencies and coordinates their efforts as well as the other city agencies. This organization also coordinates the planning and response issues of federal, state, and private sector, emergency management entities as they interface with New York City responders. The OEM is charged with ensuring for the optimum use of NYC resources while at the same time eliminating potential conflict among responding agencies, which may have areas of overlapping expertise and responsibility.

By executive order, OEM is designated the "on-scene interagency coordinator." OEM's role is to coordinate the participation of all city agencies in resolving the event. OEM will assist the incident commander in his or her efforts in the development and implementation of the senior official from the lead agency having responsibility for the event (police, fire, environmental protection, etc.) In those instances where the incident is so multifaceted that no one agency immediately stands out as the incident commander, OEM will assign the role of incident commander to an agency as the situation demands.

Staff Members	Dallas	Denver	Detroit	Philadelphia	New York	Los Angeles	Atlanta/Fulton County
Director Coordinator	1	1	1	1		1	1
Deputy/Asst. Director		1		1		1	1
Sr. Emergency Management Specialist			1				
Emergency Management Specialist			2				
Office Coordinator	1	1			о.		
Computer Technician	1			1	lable	(3 interns)	
Hazardous Material				1	vail		
Planning	1				lot a	3	1
Exercise Training Officer	1	1			were n	2	1
Administrative Assistant/Clerical	1	1	1	1	Details	4	3
Emergency Operations Center						3	
Details from Police and Fire				(1-2)		2	
Mitigation							2
Recovery							2
Response							2
Total Staff	6	5	5	5 (+ 1 to 2)	55	16 (+3)	13
Population Served	1.0 million	.5 million	1.1 million	1.4 million	7.3 million	3.4 million	3.7 million

 Table 2.3 Deployment of Emergency Management Staffing by Function

OEM staffs around the clock response in each of the five boroughs. In addition to appropriate shift response vehicles, OEM operates a command bus for extended operations to support head agencies command, center, and communications.

In addition to incident response support, OEM is responsible for preparation of all emergency plans and coordination and implementation of training programs, drills, and exercises.

*Los Angeles* – The Emergency Preparedness Division is headed by a Division Chief on a par with the Fire Chief, and reports to the City Administrative Officer. It has a staff complement of 16 positions.

The Division is responsible for coordinating the planning, preparedness, response and recovery efforts of the 42 city departments and numerous non-governmental organizations in the city.

The 16 positions are assigned responsibilities for plan development (3), preparation (2) (which includes liaison with other city agencies), training (2), and support and maintenance of the Emergency Operations Center (3). The director, deputy director, and full-time assignments of a fire Battalion chief and police captain are the core responders. Secretarial and administrative support completes the staffing.

The staff is also complemented by the assignments of college interns (three at present) who are assigned such tasks as computer support, Web development, research, and communications support.

*Philadelphia* – The Office of Emergency Management is headed by a Director who reports to the Managing Director of Operations for nine city departments, including police, fire, health, water and sewage. The Managing Director, in turn, reports to the Mayor. They have five full-time personnel.

The OEM is responsible for the planning, preparedness, response and recovery aspects of the City's emergency management program, and for activating and managing the Emergency Operations Center during an emergency incident.

The OEM coordinates the efforts of the emergency operations group, which is comprised of a representative from each of the City's major departments. OEM staffing is supplemented by long-term details, some of which are up to a year in duration, mainly from the police and fire departments. The most recent of these was a fire department Battalion Chief who was temporarily assigned for an eight-month period working on Y2K issues. A Deputy Chief will be assigned to prepare for weapons of mass destruction preparedness.

Atlanta and Fulton County – With a combined population of 3,650,000, Atlanta and Fulton County together have a joint Emergency Management Agency. It is an independent agency headed by a Director who reports to the Mayor of Atlanta and the County Executive Officer. They have a staff complement of 13 positions.

The Agency is structured along the lines of the Federal Emergency Management Agency (FEMA), under of the four phases of emergency management. Two staff members are assigned to mitigation measures. Two are tasked with preparation (plans development and training), and two are assigned the lead on recovery activities. Two others, plus the Director and his Deputy lead response activities. All staff members are expected to respond to emergencies. Administrative, graphic, and secretarial support rounds out the staff.

The Agency coordinates all emergency response efforts. It is the point of contact for the emergency coordinators from all city/county departments. The Agency maintains a Duty Officer for full-time response. The agency's role is that of resource provider and coordinator of multidisciplinary response assistance from federal, state, local, and non-governmental sources. The Agency also activates and operates the Emergency Operations Center for large-scale emergencies.

*Detroit* – The Emergency Coordination function reports to the Fire Commissioner. They have a staff complement of five.

Emergency Management coordinates preparedness, mitigation, response and recovery activities for natural and man-made emergencies and also coordinates evacuations during multiple alarm fires. During a declared emergency, Emergency Management establishes and manages the Emergency Operations Center to coordinate the response and recovery activities.

*Denver* – The Office of Emergency Management (OEM) operates as an agency under the Chief of Staff in the Mayor's Office, and has five staff members.

The OEM is responsible for coordinating preparedness, mitigation, response, and recovery activities for any major emergency or disaster affecting the City and County of Denver. It functions as a liaison between private, state and federal agencies, and coordinates the activities of municipal and private agencies cooperating in the emergency management program. OEM develops Denver's emergency plans and conducts exercises in coordinated response to disasters and other emergencies (including blizzards, floods, and tornadoes, civil disturbances, major power outages, and large-scale hazardous material spills).

*Dallas* – The emergency management function is under the Assistant Fire Chief of Communications, who reports to the City Manager. They have a staff of six. The Office of Emergency Preparedness coordinates preparedness, mitigation, response, and recovery emergency management activities for the City of Dallas. They manage the Emergency Operations Center (EOC) during an incident. EOC coordinates response and recovery activities with three Mobile Communications Units operated by Fire, Police and Street & Water.

**Recommendation 2.18:** Chicago should have at least 4-5 emergency management staff per million protected, or about 11-14 in total, wherever the office is located. Based on the commonly accepted four-phase concept of emergency management (mitigation, preparedness, response, and recovery), a potential staffing by responsibility is shown in Table 2.4; roles change during an actual emergency. The suggested staffing plan is most like that of Atlanta. Certainly other allocations of staff can also be considered. The staff can be augmented to some extent by college intern programs researching such projects as chem-bio terrorism, emergency planning, and community risk management, as is done in Los Angeles.

	# of Positions	Primary Duties
Mitigation	2	All efforts taken to prevent disasters and plan for mitigating the effects of those disasters on people and property.
Preparedness	2	Developing and maintaining the emergency plans, and overseeing the training drills and exercises to support the emergency plans.
Response	2 (Director and Deputy Director of Emergency Management)	Overall office management plus Duty Officer responsibility. (In addition, the Fire Department's Special Operations Chief, the Fire Department's Emergency Management Coordinator, and the 9-1-1 Center's Director would all play key roles, along with counterparts in other agencies.)
Recovery	2	Coordinate planning efforts of business community and non- governmental agencies for returning to normal commerce and daily life after a disaster.
Office/Clerical Sup.	2	Data entry, coordination, clerical support
Computer Tech.	1	Computer support
Total	11	

Table 2.4 Example Allocation of Duties for an Enlarged Emergency Management Office

Law Enforcement Interaction – Many aspects of what is considered "emergency management" fall under the general purview of law enforcement organizations. While the lead agency or authority having jurisdiction in a incident may vary, all complex incidents involving threats to public health and safety will require interdisciplinary response and management. Fire and rescue departments play a major role in the mitigation of harm caused by criminal activities. Injuries, fires, and other emergencies stemming from criminal activity often will be responded to by the fire service. The coordination of activities between police and fire forces, especially in the transition from emergency incident to criminal investigation, is vital to the success of both incident mitigation and criminal prosecution. A smooth working relationship with law enforcement authorities is absolutely essential both for protection of fire/rescue responders, and conservation of evidence and preservation of crime scenes.

While much criminal intelligence and surveillance information is highly sensitive and confidential, a sharing of information for pre-planning purposes is essential. A day to day working relationship with good information flow will help mollify police concerns about confidentially and help safeguard the first responders.

**Recommendation 2.19:** Add a police liaison/special events coordinator position to the Fire **Department for the purpose of regular interaction with city, state, and federal law enforcement authorities.** The primary duties would be to coordinate special events and maintain regular communication with law enforcement authorities. Ancillary duties would include investigation and coordination of alternative funding sources from public and private grant organizations.

**Disaster Control and Communications Center** – The 9-1-1 Communications Center contains a new facility for managing emergency operations. A great deal of care has gone into the design of an adequately sized room with adequate communications, though one can never be sure it will suffice until a real world event occurs. The Communication Center was planned to survive and stay functional in a wide variety of disasters; it has much redundancy built into the hardware at various levels. We recommend a regular schedule of training, drills, and exercise be developed and conducted under the leadership of the Special Operations Chief. The responsibility should be delegated to the Emergency Preparedness officer answering to that chief.

**Data Access** – There is a problem in lack of common access to City databases needed for emergency planning. The emergency preparedness function has the problem of using City databases that are not compatible with their system.

## F. Research and Planning

The Research and Planning Office is somewhat a misnomer, since it has evolved into a data shop and the prime computer support unit in the CFD. They do a wide variety of data analyses, some on a periodic basis and many in response to special requests. (They were extremely helpful throughout this study.) Their changed role needs to be acknowledged. In Chapter VI, Support Services, we discuss the various Management Information System functions in the Department, and recommend that they be coordinated through an enlarged and renamed Office of Research, Planning and Information Systems that includes the Records Division.

# G. Civilianization and Privatization

The degree to which a fire department can use civilians vs. uniformed personnel varies by function. There are several functions that can be staffed by either type of personnel, with varying costs and benefits.

Where there is no cost advantage or where there would be a significant reduction in quality of service, there is little reason to civilianize or privatize. Cost saving is a necessary but not a sufficient rationale for civilianization and privatization. It has to make sense from a quality of service viewpoint, and from various practical considerations (e.g., would civilians stay in a dead-end position long enough to merit their training? Are there not enough qualified firefighters willing to do the job in question?).

**Civilianization** – The Chicago Fire Department already employs about 300 civilians in addition to its 4,900 uniformed staff. Civilians are used as fire protection engineers, data analysts, clerical staff, maintenance workers, budgeteers, personnel workers, financial analysts, and in other

positions. The project team identified several job classifications that seemed to be candidates worth further examination for civilianization:

- Messengers/runners at the shops (over 20 positions)
- Manager of Records Division
- Mail deliverers
- Air tank deliverers and testers (19 positions are uniformed)
- Public fire educators (some or all)
- Fire code compliance inspectors (some)

Unison, a subcontractor whose team for this project was headed by a former Chicago budget director, compared these job classifications with similar classifications in the City's civilian work force, focusing on job duties and rates of pay. Unison also compared CFD positions to those in other large, urban fire departments with similar job classifications to identify who used civilians and who used firefighters for these functions. Several cities with populations greater than one million were selected for this comparison, including New York, Philadelphia, Detroit, Los Angeles and Houston. Additionally, St. Paul, Minnesota was included as a representative mid-western city with significant civilianization in their fire department. The comparison results are summarized in Table 2.5 (except for the air tank positions, which were discovered as candidates for civilianization late in the study, and not included in the survey). Many cities use civilians in these positions. We will discuss the particular pros and cons of civilianization by function in later chapters (e.g., civilianization of maintenance and air tank technicians in the Maintenance Section of Chapter VI, Support Services). The conclusion was that making use of civilians seems cost-effective for all of the above positions in whole or part, without losing quality if they are properly selected.

"De-civilianization" was also considered; that is, whether there were any civilian positions that could conceivably be staffed by uniformed personnel for either a cost or quality benefit. The commissary was the only function that merited review, and the result was to leave it as is. Another consideration was whether firefighters who are injured should be used on light duty to increase their productivity while convalescing, and do some jobs now held by civilians, or not being done at all.

	Chicago	St. Paul	New York	Philadelphia	Detroit	Los Angeles	Houston
Job Title: Public Educator	Public Fire Educator	Public Education Officer - Fire	Public Fire Educator	Public Fire Educator	Fire Department Community Relations	Fire and Safety Educator	Fire Department Community Relations
Civilian or Uniformed Personnel ?	Firefighters	Civilian plus some light-duty Firefighters	Civilian coordinator with light-duty Firefighters	Firefighters	Firefighters	Firefighters	Firefighters
40 Hour or Platoon ?	40 Hour	40 Hour	40 Hour	40 Hour	40 Hour	40 Hour	40 hour
Salary Range	Captain \$61-69K; Firefighters \$36-47K	\$39-49K	Coordinator \$35K	\$29-40K	Deputy Chief \$67K; Captain \$57K; Lieutenant \$51K	Captain I \$73-82K	Inspector \$42-46K; Captain \$42K; Firefighter \$36K
	-						
Job Title: Shops Manager/ Runner	Messenger/ Runner in shops	Parts Runner	Messenger/ Runner	Automotive Technician/Auto. Mechanic	Delivery Driver/Auto. Mechanic	Storekeeper/ Delivery Driver	Storekeeper
Civilian or Uniformed Personnel ?	Firefighters	Civilian	Light-duty Firefighters	Civilian	Civilian	Civilian	Civilian
40 Hour or Platoon ?	Platoon	40 Hour	Platoon	40 Hour	40 Hour	40 Hour	40 Hour
Salary Range	Firefighters \$47K-52K	\$11.69 to \$12.62/hour	Various	Technician \$28-30K; Mechanic \$29-31K	\$10.65 to \$12.04/hour	Storekeeper I and II \$31-39K; Delivery Driver I and II \$28-30K	\$16-26K
Comments	Outsource major maintenance; rest done in-house. FF provide fuel, parts, tires, etc. on a 24-hour basis.	Civilians deliver parts, supplies, oxygen, etc. to the stations and provide 24-hour emergency road service.	Outsource major maintenance; rest done in-house. FF work out of the divisions to provide 24-hr. fuel, parts, tires, tire and tool repair, etc.	All maintenance in-house except major repairs. Emergency repairs/road service available 24 hours.	Engine repairs outsourced, other repairs done in- house. Civilians deliver parts, supplies, oxygen, etc. to stations and 24-hour road service.	Civilians deliver all parts, supplies, oxygen tanks, etc. to the stations and provide 24-hour emergency road service.	Civilians deliver parts, supplies, oxygen, etc. to the stations. Maintenance done by Fleet Management is 24 hours.

Table 2.5 Comparison	of Civilian vs.	. Uniformed F	Positions in	Large Fire	Departments
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	Chicago	St. Paul	New York	Philadelphia	Detroit	Los Angeles	Houston
Job Title: Inspector	Inspector for Code Compliance	Fire Prevention Inspector I and II	Fire Prevention Inspector	Housing and Fire Inspectors I, II, III	Fire Marshall/Fire Prevention Inspector	Fire Inspector I and II	Fire Marshall/Fire Inspector
Civilian or Uniformed Personnel ?	Lieutenant and Firefighters	Civilian	Civilians (under Staff Chief)	Civilian	Uniformed	Uniformed	Uniformed
40 Hour or Platoon ?	40 Hour	40 Hour	40 Hour	40 Hour	40 Hour	40 Hour	40 Hour
Salary Range	Lieutenant \$52-61K; Firefighters \$36-47K	\$34-49K	Staff Chief \$100K; Inspectors \$35K	Inspector I \$28-30K; Inspector III \$30-35K	Fire Marshall \$68-93K; Inspector \$51-67K	\$67-73K	Fire Marshall \$73K; Fire Inspector \$42-46K
Comments		Need Associates Degree in Fire Prevention		Part of Department of Licenses and Inspections			
		1			1	1	1
Job Title: Records Manager	Deputy District Chief – Records	Office Manager of Department	Manager - Fire Records	Fire Marshall (Deputy Fire Chief)	Fire Marshall	Battalion Chief (Fire Incident Records); Chief Clerk (Ambulance Billing Records)	Assistant Chief - Central Command
Civilian or Uniformed Personnel ?	Uniformed	Civilian (reports to Deputy Chief of Admin.)	Civilian	Uniformed	Uniformed	Uniformed and Civilian Personnel	Uniformed
40 Hour or Platoon ?	40 Hour	40 Hour	40 Hour	40 hour	40 hour	40 Hour	40 Hour
Salary Range	\$88K	\$37-47K	\$40K	\$64-67K	\$68-93K	Batt. Chief \$86-103K; Chief Clerk \$44-54K	\$73K
Comments	Chief with civilian support staff.			Maintained by City records dept. by civilians and light-duty FF.	Fire Marshall with civilian support staff.		Assistant Chief with civilian support staff.

Recommendation 2.20: Civilianize almost all of the shop's messenger/delivery personnel, the data records manager, the mail messengers, and most air tank messengers and technicians. Consider civilians for prevention positions that cannot be filled by firefighters qualified for them. At least 40-50 positions are wasting firefighters' skills and should be civilianized in the near future. Another 40-50 positions recommended for public fire education and inspectors could be filled by civilians if firefighters are not willing to take them. They are preferably filled by firefighters, but it is not necessary to do so. The air tank delivery positions need to be available 24 hours a day, seven days a week but do not require uniformed firefighters. Details are discussed in each chapter.

**Privatization** – Some functions of a Fire Department can be privatized or outsourced; that is, given to a private contractor. The Chicago Fire Department already has privatized the Commissary function and some vehicle maintenance. The study team was asked to consider any additional opportunities for savings or better performance through additional privatization, including EMS functions.

The leading candidate for additional privatization was the maintenance of non-specialized vehicles or "light-duty" vehicles, including automobiles, vans, and ambulances. An attempt was made to determine the amount and kinds of repairs performed on these vehicles and the resources devoted to repairing such equipment. This analysis is discussed in Chapter VI under Maintenance and Commissary functions. The lack of adequate maintenance records did not allow a conclusion to be drawn, though it is likely this function could be privatized. The study team did not recommend further privatization of any other functions.

# H. Light-Duty Positions

The CFD does not have light-duty assignments for personnel unable to perform their regularly assigned duties. Many cities have light-duty positions; often they are counted on to help augment prevention functions, and to do messenger work. Examples of cities using light-duty positions for public education and messenger positions were shown in Table 2.5 on the previous page.

We reviewed data that CFD compiles on uniformed personnel who are "laying up" (taking paid time off for illness or injury) in order to determine whether there is an opportunity for them to perform other departmental duties, and thus make them more productive while drawing a salary. Light duty is feasible only if it does not interfere with their recovery, is within their physical capability, and either does not require much training, or the training needed is commensurate with the expected length of disability. There must be enough productive time after training for the effort to be worthwhile.

As shown in Table 2.6, during the first three quarters, January 1 through September 22 of 1998, CFD lost 40,234 days of work as a result of 929 firefighters laying-up. Absences of 429 paramedics added another 12,593 days of lost productivity. Firefighter and paramedic lay-ups in

1995 totaled 72,034 lost days involving 1,972 personnel; in 1996, 81,623 days involving 1,899 personnel; in 1997, 59,180 days involving 1,769 personnel. These are huge losses in productivity.

As shown in Table 2.7, of the lay-ups in 1998, 225 were for at least thirty days, as a result of injuries suffered both on and off duty. These lay-ups totaled 18,815 days of lost productivity; the average lay-up period for this group was 84 days. In other words almost half (47 percent) of the days lost were attributed to about a quarter (24 percent) of the firefighters injured.

*Inter-City Comparison* – Examples of the use of light duty in six metropolitan cities are shown in Table 2.8. Among the cities surveyed, New York, Philadelphia, and Los Angeles have had extensive light-duty programs. Houston has a new program, St. Paul's is not actively promoted, and Detroit's is very small.

In the three cities surveyed that have had extensive light duty programs, management tries to limit light duty assignments to six months or less, though some exceptions are made. Typically the vast majority of firefighters return to full duty and do not require either long-term light duty or disability pension.

Assignments for light duty varied, but common to the six cities surveyed are assignments to fire education and prevention, administrative and clerical support functions.

In all cities surveyed, eligibility for light duty is medically determined by the medical office. Two cities also use the medical office to determine fitness to return to regular active duty or to move to some other status.

A number of factors mitigate against the creation of light-duty assignments in the CFD. They include:

- Lack of many non-fire fighting, non-EMS assignments for which personnel are presently qualified without additional training
- The difficulty in medically classifying injuries
- Past decisions, rulings, and agreements made by and between the City, the bargaining unit and various states and federal agencies regarding lay-ups.

	19	95	19	96	19	97	1998	
Reason For Lay-Up	Days Lost	Count	Days Lost	Count	Days Lost	Count	Days Lost	Count
Firefighters								
24/48 Hour Schedule								
Illness Off-Duty	21,224	523	28,469	535	20,010	501	15,752	374
Illness On-Duty	523	11	78	6	20	3	22	4
Injury Off-Duty	16,254	374	17,659	364	12,338	334	10,707	272
Injury On-Duty	15,617	306	14,837	287	11,853	286	10,112	221
Other							2	1
Subtotal	53,618	1,214	61,043	1,192	44,221	1,124	36,595	872
40 Hour Schedule								
Illness Off-Duty	1,756	62	3,557	70	2,458	64	2,241	33
Illness On-Duty								
Injury Off-Duty	1,012	35	1,057	17	802	27	849	13
Injury On-Duty	1,063	20	1,006	17	488	19	549	11
Subtotal	3,831	117	5,620	104	3,748	110	3,639	57
Total	57,449	1,331	66,663	1,296	47,969	1,234	40,234	929
Paramedics								
24/48 Hour Schedule								
Illness Off-Duty	6,533	370	7,167	352	5,009	289	5,412	216
Illness On-Duty	31	3	48	2	70	1	18	3
Injury Off-Duty	1,930	84	1,841	69	1,739	77	2,143	81
Injury On-Duty	5,929	177	5,716	174	4,181	161	4,894	124
Subtotal	14,423	634	14,772	597	10,999	528	12,467	424
40 Hour Schedule								
Illness Off-Duty	74	5	127	5	76	3	98	4
Illness On-Duty	0	0	0	0	0	0	0	0
Injury Off-Duty	5	1	61	1	93	3	28	1
Injury On-Duty	83	1	0	0	43	1	0	0
Subtotal	162	7	188	6	212	7	126	5
Total	14,585	641	14,960	603	11,211	535	12,593	429
Total Fire and Paramedic	72,034	1,972	81,623	1,899	59,180	1,769	*52,827	*1,358

Table 2.6 Firefighter and Paramedic Days Lost Annually, by Reason

Count = Number of separate illusions or injuries

\* = Total for three quarters of a year only

		24/48 Hour						40 Hour					
	Lay	-Up > 30 E	Days	Lay-Up < 30 Days			Lay	-Up > 30 [	Days	Lay	-Up < 30 E	Days	
Reason For Lay-Up	Days Lost	Count	Avg # Days Lay-up	Days Lost	Count	Avg # Days Lay-up	Days Lost	Count	Avg # Days Lay-up	Days Lost	Count	Avg # Days Lay-up	
Firefighters													
Illness Off-Duty	13,156	136	96.7	2,596	238	10.9	2,014	15	134.3	227	18	12.6	
Illness On-Duty				22	4								
Injury Off-Duty	8,754	112	78.2	1,953	160	12.2	781	8	97.6	68	5	13.6	
Injury On-Duty	8,808	99	89.0	1,304	122	10.7	472	6	78.7	77	5	15.4	
Other				2	1	2.0							
Subtotal	30,718	347	88.5	5,877	525	11.2	3,267	29	112.7	372	28	13.3	
Total	33,985	376	90.4	6,249	553	11.3							
Paramedics													
Illness Off-Duty	3,966	38	104.4	1,446	178	8.1	55	1	55.0	43	3	14.3	
Illness On-Duty					3								
Injury Off-Duty	1 453	24	60.5	18 690	57	12.1				28	1	28.0	
Injury On-Duty	4,025	46	87.5	869	78	11.1							
Other													
Subtotal	9,444	108	87.4	3,023	316	9.6	55	1	55.0	71	4	17.8	
Total	9,499	109	87.1	3,094	320	9.7							
Total Fire and Paramedic	43,484	485	89.7				9,343	873	10.7				

Table 2.7 Firefighter and Paramedic Days Lost In 1998, by Long-Term and Short-Term Lay-Ups

	Chicago	St. Paul	New York	Philadelphia	Detroit	Los Angeles	Houston
Do you have a Light-Duty program?	No	Yes, but not actively promoted.	Yes, extensive program.	Yes.	Yes, but very small.	Yes.	Yes, just starting program.
Ho long can a firefighter be assigned to light-duty?	N/A	Try to limit to 6 months.	Try to limit to 6 months but in some extreme cases it lasts 5-10 years.	Approximately 6 months.	Up to 90 days.	Light-Duty (short- term) = up to 6 months; Restricted Duty (long-term) = permanent change.	Up to 6 months.
What kind of positions are available for light-duty?	None	Fire investigation, clerical, fire inspection, fire education.	Security at training academy and marine division, administrative, chauffeur for maintenance, fire education.	Clerical, fire academy, and prevention museum. No firefighter work in firehouses during light-duty assignment.	Cooking and staying behind during firehouse runs. Community relations, clerical, placing smoke detectors.	Light-duty positions are available in the bureaus, and the division office. Long-term there are 89 positions in administration, operations, emergency services, support, prevention, and personnel.	Currently, just non-emergency calls. Hope to expand to Fire Academy, quartermaster, administrative.
How do you determine who is eligible for light-duty?	N/A	Medical office determines initially and firefighter requests.	Medical office determines initially and firefighter requests.	Doctor determines treatment and abilities.	Medical office determines eligibility and physical limitations.	Medical Liaison Unit determines eligibility and physical limitations.	Medical office determines eligibility and physical limitations.

	Chicago	St. Paul	New York	Philadelphia	Detroit	Los Angeles	Houston
How do you determine when light-duty is completed?	N/A	Medical office determines fitness and returns firefighter to active duty, modified duty, or disability.	Medical office determines fitness and returns firefighter to active duty, different light- duty position, or disability.	Doctor determines; monitored by personnel department.	Case manager working with medical specialists.	Discretion of treating physician and Medical Liaison Unit.	Medical office determines fitness and returns firefighter to active duty, different light- duty position, or disability.
Comments:		Move light-duty firefighter to modified duty if able after initial 6 months of light-duty. Provide some training if necessary to make transition.	There are predetermined time limits for light-duty assignments; even if firefighter remains on light- duty after 6 months he is moved to another assignment.	Try to keep firefighter on light-duty not non-duty. Find that about 95% go back to full- time duty and don't go on long- term light-duty.	Try to have firefighter use 3 medical clinics for most injuries to control costs and streamline administration. No light-duty for firefighter over 25 years of service.	Estimated that about 95% of firefighters return to work from light-duty.	This is a new program so there isn't a lot of history.

The situation does lend itself to a ready conclusion for Chicago, even though light duty is used in many other cities, which leads to the following recommendation:

Recommendation 2.21: Representatives of the CFD, Law Department, the bargaining agent, and an occupational health specialist should meet as a study group to determine the feasibility of establishing a light- or limited-duty classification for personnel who will be unavailable for regular duties for more than thirty days. The study group should perform the following tasks:

- Review successful light-duty programs in other fire departments with an eye to replication in the CFD. The survey above is a starting point.
- Identify tasks that could be performed by light-duty personnel.
- Define what, if any, additional training is required and the content and duration of the training for various candidate light-duty assignments.
- Define, in general, those types of employees who might be candidates for light-duty assignments.
- Report findings and recommendations to OBM and the Mayor's Office.

### **CHAPTER III. PREVENTION**

The prevention program of the CFD has four major components: plans review of new structures and major renovations; building and fire code enforcement for existing structures; public fire and injury education; and fire investigation, which includes arson control and part of the juvenile firesetting program.

### A. Overall Prevention Staffing and Organization

The Bureau of Fire Prevention is headed by a Deputy Commissioner and has two major units: "Operations," which includes all code enforcement and plan reviews; and "Fire Awareness," which includes public fire education and a special "community services" program.<sup>4</sup>

As noted in Chapter II, missing from the Prevention Bureau is the Office of Fire Investigation, which is now in the Bureau of Support Services. Though the Office of Fire Investigation is ably led at both the Coordinator and Deputy Commissioner level, it makes much more organizational sense to combine all of the prevention functions under one Deputy Commissioner. The code enforcement and public education staff should be sharing information with fire inspection on a routine basis, and do not appear to be doing so adequately at any level.

The current Prevention Bureau organization has 161 authorized personnel, with 142 uniformed personnel and 24 civilians.<sup>5</sup> As of May 1999, 20 of the uniformed positions had not been filled, and they are sorely needed. In addition to the Deputy Commissioner and one staff assistant, the Prevention Bureau staffing may be categorized as follows:

<sup>&</sup>lt;sup>4</sup> Both of these names should be reconsidered. "Operations" confuses the activities with firefighting and EMS operations, and might be better called "Code Enforcement." "Fire Awareness" leaves out the growing role of injury prevention, and might be renamed "Public Education."

<sup>&</sup>lt;sup>5</sup> The exact numbers are continually changing; these were a snapshot at one time: May 1999 for the uniformed, the beginning of the year for the civilians. The total includes 5 paramedics whose detailed positions were made permanent in 1999.
Prevention Operations (Code Enforcement) (148)			Fire Education (17)		
Uniformed:	District Chief (Deputy Bureau Commander)	1	Uniformed: (DDC)	Coordinator of Fire	Awareness
	Battalion Chiefs	3		Lieutenants	3
	Captains	10		Firefighters	4
	Lieutenants	43		Paramedics	6
	Firefighters	71			14
		128			
Civilian:	Admin. Asst.	1	Civilian:	Coordinator of	Community
	Fire Prev. Engineers	8		Services	1
	Clerical Staff	9		Asst. Coordinator	1
	Computer Analysts	2		Aide	_1
		20			3

It is questionable whether the six people assigned to Community Services should be counted as being in a prevention role, because the Community Services unit's prime duty is to train and provide EMTs for the housing projects, and to encourage and serve as a bridge for minorities to join the Department. It does little prevention, and could well be assigned to the EMS Bureau, since it is primarily providing an EMS function.

The Office of Fire Investigation (in the Bureau of Support Services) has 25 uniformed personnel, plus part of the Deputy Commissioner for Support Services' time. Its staff is as follows:

Fire Investigations			
Coordinator	1		
Captain	1		
Lieutenant	4		
Firefighter	19		
	25		

A fundamental question asked of this study was to examine the allocation of resources across bureaus of the Department. The grand total assigned to prevention-related services in the Department is about 186 (including the Office of Fire Investigations but excluding the Community Services function), out of a total department staffing of 5,200, or 3.6 percent. This is too small a commitment to prevention. While about average for U.S. fire departments, some leading edge departments and many comparably sized cities in the rest of the world have about 4 to 10 percent devoted to Prevention – something literally closer to the ounce of prevention vs. a pound of cure (1:16, or 6.25 percent). Chicago is a world class city and should be a leader in shifting emphasis more to prevention. More lives and property can be saved by increasing good prevention programs than by dealing with fires after they start, or injuries and illnesses after they occur. Both Prevention and Operations need to be strong, but the allocation of only 3.5 percent of the Department to Prevention is way too low relative to the leverage that Prevention has in obtaining lower life and property losses. Note that a reallocation of only one percent of the suppression force to prevention would just about fill the need.<sup>6</sup>

Most fire fatalities in Chicago occur in people's homes – especially 1 to 3 family homes. Flashover (when the whole room explosively ignites after a fire has built up radiant heat levels) typically occurs only 2 to 4 minutes after open flame ignition, down from 4 to 6 minutes just a few decades ago, according to the NFPA and the National Institute of Standards and Technology. Once flashover occurs, life threatening conditions increase exponentially. Despite their good response times, the fire suppression forces often cannot get to the scene of fatal fires before the fatality occurs (because of delayed reporting of the fire and the rapid fire growth). The leverage in reducing the problem lies in preventing ignition in the first place; getting early warning and rapid escape when fire does occur; and, ideally, having a sprinkler automatically go into operation while the fire is in its earliest stages. Prevention helps all three of these approaches. Of course suppression saves many people, and is vital to keep strong, too. But Prevention is way understaffed, and if necessary, some resources should be shifted to Prevention.

The current Prevention staffing is down 40 personnel from what it was in 1988, down 70 from what it was in 1978, and down over 100 from earlier years. While the City's population declined somewhat during this period, it has since turned around and is growing again. The drop in Prevention was vastly larger than the drop in the population served, and has not been restored. Prevention is not able to keep up with the mandates of their job. As will be seen in the discussion below, there is a pressing need to restore at least some of the past staffing and get the Prevention resources closer to 4.5 to 5 percent of the Department. An increase of 50 to 70 personnel is needed, if not the full 100 once there. Some of the increase needed for Prevention can be met by redeployment of firefighters from Operations and Support Services, including some firefighters who could be freed by civilianizing jobs that do not require firefighters. Use of civilians to meet the prevention shortfall is another approach to consider.

The needs for additional staffing are discussed separately for each part of Prevention in the sections below (the micro, or bottom-up view), but the strategic long-term plan should be to increase prevention as the best way to leverage resources and affect the bottom line of safety (the macro, or strategic view). There is much proof that prevention really does work, and is a "best buy.<sup>7</sup>" The Prevention Bureau, expanded to include Investigations, should be tasked with providing an even more

<sup>&</sup>lt;sup>6</sup> Each suppression position requires 4.5 people to fill it; each prevention position is filled by one person (so 9 fewer on-duty suppression positions would fill the whole prevention need).

<sup>&</sup>lt;sup>7</sup> See for example *Proving Public Fire Education Works*, by Schaenman *et al*, TriData Corporation, 1990.

detailed needs assessment and staffing plan than is presented below. Some variation in recommendations for individual functions should be expected, but overall there is no question of there being a major shortfall in Prevention staff. Also, the Bureau needs flexibility to redeploy from one prevention function to another as various prevention issues emerge and as new construction accelerates or decelerates.

It is important to retain Prevention personnel for at least three years, especially in Code Enforcement and Investigations, where it takes years to build up the technical expertise needed. Incentives should be provided for increasing tenure of experienced employees.

**Recommendation 3.1: Increase the size of the Prevention Bureau by 50 as soon as possible,** and by another 20 in the near-term. The Prevention Bureau estimated its shortfall as being 100. As will be discussed in the sections below, some prioritization of inspection frequency requirements can reduce the total increment needed. The largest shortfall is at the lieutenant level, which also is the level for which there is the most flexibility in assignments (considering that new lieutenants can be assigned anywhere initially). The specific allocation of these increased personnel is discussed in the subsections later in this chapter.

**Civilianization** – One of the problems of staffing the prevention function in the CFD has been the difficulty in getting firefighters who are a) interested in prevention; b) have the necessary skills or aptitude to learn such things as public speaking, education methodology, and technical knowledge of codes; and c) are willing to give up 24-hour shift work to work an 8-hour job for at least several years. The latter appears to be the big barrier. Further exacerbating the prevention staffing problem is that members of the Department can bid for the prevention jobs based on seniority. The Prevention Bureau has no say as to the qualifications of the personnel assigned to it, which makes little more sense than assigning people without qualifications to do EMS. In many departments the prevention bureau is an elite unit. At present there are 20 unfilled slots. We think there should be 50 to 70 personnel added above that level, which means that there is a major personnel recruiting problem facing Prevention.

While capable fire officers and firefighters are highly desirable to have in prevention if they have the requisite talents and motivation, it would be better to get qualified civilians than unqualified and unmotivated firefighters forced into the job. Good public fire education programs have been proven to be deliverable by civilians in many cities. As shown in Chapter II, a civilian public educator costs about \$10,000-\$15,000 less per year than a uniformed public educator. Fire and building code inspections can be conducted by a civilian fire inspector paid \$7,000-\$17,000 less than a uniformed fire inspector.<sup>8,9</sup>

<sup>&</sup>lt;sup>8</sup> Note that civilian (non-firefighters) serve as badge carrying, uniformed inspectors in many places.

<sup>&</sup>lt;sup>9</sup> Using Chicago salary scales of \$41,532 for building inspectors; \$69,982 for supervisors of inspections; and \$52,572 for building inspectors, the total for the 115 positions performing inspections was \$4.9 million vs. \$6 million for the current uniformed salaries. This does count either firefighter benefits, clothing allowances, etc.

Experienced firefighters and paramedics can be well suited to be fire safety educators. Their experience in and around fires and other emergencies qualifies them as experts in fire safety. Civilian fire safety educators probably could not answer as many questions posed by the public at presentations as could firefighters and do not have the same aura. Fire Safety educators who are firefighters or paramedics are able to relate their personal experiences and observations from fires and other emergencies, which can make great and lasting impressions on their audiences, especially those composed of children. The sworn personnel can explain fire code requirements and the rationale behind these requirements.

However, civilians can be selected for speaking ability and knowledge of educational methodology. Ex-school teachers and retired firefighters have proven to be as good or better than uniformed firefighters in public education.

Uniformed fire inspectors, especially lieutenants who are experienced in firefighting, have a unique perspective when conducting fire inspections. They more easily recognize conditions that might cause fires, contribute to fire extension, or jeopardize lives during fires. Members of the Fire Department who go into buildings that are on fire have knowledge of how fire interacts with structural components. Civilian inspectors who never see fires and who are never exposed to the dangers of fires may not assign the same significance to problems that uniform fire inspectors do.

The presence of uniformed fire inspectors in the schools, factories, hospitals, high-rise office buildings, nightclubs, theaters, and mercantile units at various hours and days of the week and weekend reassures citizens that their safety is being monitored. The public has confidence in firefighters conducting fire inspections. Uniformed fire inspectors also often can persuade property owners to comply with fire safety measures.

However, while desirable to have firefighters as inspectors, civilian inspectors may have greater technical knowledge if not first-hand fire experience, and can identify most hazards. They can also be given uniforms and badges as inspectors, and so be visible and carry authority. Colorado Springs, a progressive metro fire department, has civilianized its entire prevention bureau except for fire investigations, and has been doing a fine job of code enforcement.

Overall, there are strategic advantages to having uniformed firefighters serve in Prevention vs. using civilians, especially if selection criteria can be applied, and the firefighters are motivated.

which increases the differential. In two cities surveyed, civilian fire inspector salaries were \$17,000 less than in Chicago. Civilianization of inspections could save \$1-\$1.5 million annually.

Even better would be to require all firefighters – or at least all officers – to get involved in prevention. After firefighters are promoted to lieutenant in Chicago, they can be assigned anywhere in the Department under current practice. At one time Chicago lieutenants were required to spend a year in prevention. It might be good to consider reinstituting this practice. The information and experience gained during a stay in prevention will help officers throughout their careers, and assist them in promotion. It also gives them an opportunity for a less challenging supervisory environment than firefighting in their first assignment as a lieutenant. Some fire departments require new firefighters to spend time in prevention, and some require it for new officers. In several western nations, one must get experience in prevention before qualifying for higher positions. Just this past year the United Kingdom changed policy to strongly encourage every firefighter to get involved in fire safety education. However, if the firefighters will not do the job, civilianizing prevention is a proven and less costly alternative.

These are several ways to attract firefighters to spend some time in prevention:

- Offer incentives in the form of a more desirable shift than 8 hours x 5 days, such as 10 hours x 4 days. An advantage to the City of this 10-hour shift is to make more time available for evening inspections of restaurant and entertainment facilities.
- Offer incentive pay to those serving as a fire protection inspector after training and a certain time on the job.
- Require new lieutenants to serve a tour in prevention.
- Award extra points for promotion, or require experience in prevention for promotion to battalion chief or higher ranks.

There is a long-term, strategic advantage in getting the firefighters to take more of the prevention role. Ultimately, one would like to take the British approach of thinking of prevention as the first duty of a firefighter, as it is for police officers. However, an alternative is to hire qualified civilians to make up the shortfall in firefighters or do the whole job; this is the least costly alternative.

**Recommendation 3.2:** Add incentives to attract more firefighters into prevention and retain them for longer tenures. Consider a more attractive shift such as four 10-hour days, but only if they appear qualified. Consider a pay premium and a special title for fire inspectors who attain a high level of technical knowledge and experience. Consider using newly promoted lieutenants before they receive other assignments. If it appears there is likely not to be an adequate number of firefighters who will make the switch to prevention in the near future, add about 20 civilians to start meeting the shortfall, and add more civilians as necessary.

#### **B.** Code Administration and Enforcement

We discuss here the selection and updating of codes, referred to as code administration, and then discuss the enforcement of the codes.

**Code Administration** – Chicago is one of the few cities that does not base its fire and building codes on one of the four national model codes. Instead, Chicago has its own fire and building codes, which were developed before there were national model codes.

Part of the rationale for having one's own code is the ability to tailor it to local conditions, values, and types of occupancies. Another major reason is the ability to update the code faster than can be done with national codes, which have long formal processes for making changes. However, there is no routine code updating mechanism for the Chicago codes, i.e., no routine cycle of comment and change as for the national codes. This results in a code that often lags the state-of-the-art in the model code.

Of particular concern from a fire safety viewpoint is the increase in permissible wood frame (Class IV) construction, especially the three- and four-story wood frame houses often densely packed in rows or U-shaped patterns on small block-size properties, often without good ladder truck access, and often with only one viable way out of the house other than by fire department ladder. Prior to code changes within the last decade, one could not build more than a three-story frame house without having two exitways. Unlike some communities (e.g. Montgomery County and Prince George's County, Maryland) new townhouses are not required to be sprinklered, regardless of size. The problem is compounded by the frequent use of locked security gates on the roadway into the development, often by a sliding, electronically-operated gate, which can delay fire vehicle access.

In many new developments the driveway into the development is too narrow to allow deployment of hydraulic ladders. (The ladder trucks require lateral space to extend outriggers that stabilize the vehicles when the hydraulic ladder is used; also they need room to maneuver the ladder and place it at a safe operating angle or they are useless.)

Another area of concern in the Chicago code is the allowance of building components that substitute lighter, geometric engineered design for heavier, more massive construction. The new components are structurally sound in ordinary use but can fail early into a fire. Example of such components are the wooden truss floor joists and the wood I beam. The Chicago Fire Department's initial efforts to control fire spread is with an interior attack. Early failure of wood truss floors jeopardizes the safety of firefighters who engage in interior firefighting when the wood trusses are exposed to fire. Many jurisdictions that allow this type of construction for one and two family residential occupancies require approved fire separation to protect floor trusses, and/or require sprinkler systems. New construction in Chicago has not provided additional protection for this type of flooring system. Fire in this type of construction is harder to contain within the structure of origin.

In terms of risk management, the new residential development in Chicago increases the need for fire safety education and code enforcement, and increases the need for a large firefighting force able to quickly set up ladders manually and quickly knock fires down.

Some other hazards noted by the project team during various visits to the City:

- Many old, three-story frame houses with dried-out wooden porches and stairways outside in back.
- Many garages placed under residential townhouses, or placed in rows behind them, sometimes with access blocked by a locked iron fence.
- Light industrial manufacturing buildings converted to condos with exposed timber beams, no sprinklering, and no engine access to their courtyards, let alone ladder truck access. (An ordinance used to require street access to all residences, but was repealed.)
- Many narrow breezeways between buildings, increasing exposure to fires from one structure to the next.
- Townhouses where if the main escape path is blocked, the second means of escape requires going to the roof and climbing over a parapet to the next roof, and then possibly facing a locked entry to get from that neighbor's roof down. In one case observed, a townhouse complex was built with a bridge from one roof to the other as an escape path.
- New complexes with three- and four-story wood frame houses close enough to each other for easy fire spread, with entry to the complex blocked by sliding gates.
- Many hospitals not sprinklered.
- Many older high-rises, including some hotels, not sprinklered.

These are not necessarily immediate dangers, but are all situations that increase risk and require much more intensive public education than exists. It also requires a larger firefighting force than would be needed with more stringent codes.

**Recommendation 3.3:** Reconsider whether Chicago should adopt one of the national codes as its starting point for codes; if not, make changes to the current code for certain high-risk occupancies. A national model code can be tailored to the City's needs; it does not have to be used "as is." Using a model code as a core would greatly facilitate keeping Chicago's codes up to current national standards and make them more objective and less subject to political pressure. There would surely be a major debate over the feasibility of phasing in a new code and the need to grandfather in existing structures, and a need to educate the construction community in the code, but it should be considered for the future. If a new code is not undertaken, then at least the requirements that have reduced standards for three- and four-story wood frame houses should be reconsidered, and/or requiring townhouses to be sprinklered.

The Building Department currently has the authority to inspect certain classes of residences; the authority was shifted away from the Fire Department in the early 80s. However, the Building Department is not cross-trained to check for fire safety when they inspect buildings, they either need to get that training, or allow the Fire Department to inspect the residences.

Another limitation of the Chicago code – and that in most cities – is that it does not require or encourage home sprinklering, even for new homes. The latest plastic pipe technology, allowed by NFPA standards governing residential properties, and used even by some hotels such as the Marriott chain, significantly cuts costs. Sprinklering of new wood-frame houses would go a long way toward improving their fire safety. If sprinklering is not required, there should at least be an intensive education effort to inform new buyers and existing owners of the availability of relatively affordable sprinklers for homes, and to encourage their purchase.

**Recommendation 3.4:** The Chicago Fire Department should help educate the public as to the availability and advantage of new residential sprinkler technology, especially for new residential properties. The CFD should be taking a leadership position in arguing the case for more sprinklering of all properties. It is ultimately a political decision as to whether the risk reduction in lives and products saved is worth the burden of a code requirement on sprinklers, but there cannot be an objection to at least informing citizens of the life-saving and property-saving potential of sprinkler systems they can purchase, along with the critical importance of maintaining smoke detectors in working condition to allow early warning and escape from non-fire resistant structures.

**Recommendation 3.5:** All high-rises should be sprinklered. A fire in an unsprinklered highrise can quickly become unstoppable by fire suppression forces; fires in Philadelphia, Los Angeles, and New York have proven this despite their huge, excellent fire suppression forces. The best solution is a retroactive requirement to install sprinklers in high-rises, allowing a phase-in period of several years (e.g., 5 to 10 years).

**Plans Review** – The code enforcement part of the Fire Prevention Bureau is well organized. One unit, headed by a Chief Fire Prevention Engineer and an Assistant Chief Engineer, reviews plans for new construction and remodeling that falls under the codes, and provides technical advice to fire prevention. There are eight civilian fire prevention engineers who review the plans. Two are stationed at the Building Department to do preliminary review of plans and nip problems in the bud, a good practice.

As buildings are constructed, typically one lieutenant and one firefighter are assigned to check whether the building is being built according to the approved plan. Workload sharing with other code enforcement functions is done as construction levels ebb and fall. The Plans Review section has need for a computerized filing and tracking system for fire protection plans of new construction inspections. There is a need to track plan reviews, resubmission of required revisions, and follow-up inspections that the buildings and fire protection systems are built in accordance with approved plans. A computer system to help track new construction plan reviews and follow-up inspections would help.

In the course of reviewing the Plans Review section, it was found that some builders never pick up their plans after they are reviewed. These builders may not be paying attention to the needed revisions after they submit plans and get the needed permits to proceed.

# *Recommendation 3.6: Establish a computerized tracking system for review of new building plans.* The Bureau already has an excellent system for tracking inspections for existing buildings.

Sprinkler system plans for new buildings are probably not being adequately reviewed. While we did not examine this function in detail, the service goal of same day turn around for these plans does not allow sufficient time for an adequate check of hydraulic calculations for complex structures. The CFD Prevention Bureau should have a computerized program such as "HAFS" to assist in analyzing hydraulic fire protection systems. This program should be used to spot check the calculations of hydraulic systems. The hydraulic calculations need to be compared to the blueprints to ensure the data was entered correctly.

The high-rise plans reviewers currently use a review checklist, which is also available to contractors as a guideline for ensuring plan completeness. A similar form is available for high-rise alarm systems. Inspectors also can use these checklist forms later, when reviewing the built structure for compliance.

# Recommendation 3.7: Plan review check-off forms should be available for all types of buildings, not just high-rises.

The City does not accept Underwriters Laboratory-listed electrical circuit distribution boxes. This requires an investigation and review of electrical equipment that is a wasteful, time consuming process.

#### **Recommendation 3.8: Electrical components meeting standards and tested by national** accepted organizations should be accepted, using the National Electrical Code as a reference.

**Recommendation 3.9:** Add about 10 positions for plans review, field inspections of new construction, overseeing pump tests, and related duties. The Plans Review section has generally kept up with development, but more rigorous field inspections are needed, especially for sprinkler systems and for checking remaining safeguards in wood-frame constructions. The new construction inspectors also oversee pump tests (which will be discussed later in this chapter). Of the 10 new positions, at least two are needed at the engineer level, one for helping to set up and maintain a new tracking system, one for reviewing plans, one for clerical support, and the rest for field inspections of new properties and pump tests.

**Code Enforcement** – Overall, the CFD has responsibility for 93,976 structure and tenant inspections per year. Of these, the Fire Prevention Bureau personnel have been allotted responsibility for inspecting 30,734 structures and 27,932 tenants, for a total of 58,666 inspections; the rest are assigned to line companies. This division of labor is excellent. However, in 1998, the Bureau completed 23,810 structure and 9,352 tenant inspections for a total of 33,163 inspections. While seemingly an impressively large number, this represents accomplishing only 57 percent of the inspections for which the Bureau was responsible; 43 percent of needed inspections – about 28,000 – are not done. Also, the line companies did not complete 21 percent of their quota, and so cannot be expected to be given more inspection responsibility to meet the shortfall of the inspectors.

The highest risk properties, those with the potential for major life loss such as hotels, institutions, and schools, generally receive annual inspections and have a very good safety record. Three units under prevention "operations" specialize in hotel inspections, school inspections, and institutional inspections. In addition, there are four general-purpose inspection teams, one for each geographic area of the City: central, northside, westside, and southside, plus a headquarters group of inspectors. They each have 34 inspection personnel. A Battalion Chief is designated as Code Enforcement Commander for each area, and bench a team. Each geographic area is further subdivided into three sections, each headed by a captain. All of these units (plus the "in-service" inspection unit discussed below) are under a Deputy District Chief. They have a total of 181 personnel (authorized).

Assisting in code enforcement is the Court Compliance section. It is comprised of six inspectors, a captain, and a senior data specialist. They specialize in providing court testimony regarding property owners who fail to rectify code violations. They reinspect properties just before appearing at a hearing, to ensure that the violations still exist. Their record was said to be so good that defendants often choose administrative adjudication by attorneys empowered to levy fines, which reduces court loads and saves time. This is an outstanding concept, one that should be considered by other cities.

*Use of Line Companies for Inspection* – The CFD has long made good use of the line companies to assist the Prevention Bureau in undertaking inspections of at least the simpler properties – an excellent concept that the CFD started doing on a large scale ahead of many other cities. To direct the line company efforts, company inspection forms (called "TOC forms" after their originator, Lt. Tom O'Connell) are distributed to each line company once a month, with the occupancies to be inspected by the company already printed on the form. This is an excellent practice to increase productivity. It also helps the fire companies identify and do something about hazardous properties in which they may have to fight fires. Each company's progress toward meeting its assigned

occupancies is tracked. If a company cannot meet their inspection quota, the inspections roll over to the next year, which is tolerable if the delays do not get to be excessive.

The Fire Prevention Bureau's In-Service Inspection section does a re-check inspection when a line company writes up a non-trivial violation. The write-up might also lead to a Building Department referral. There are 10 uniformed personnel in the In-Service section.

Inspections should be done by the line companies at the times of day when least likely to interfere with fire calls. This should be fine-tuned to each company. The company officers have access to data showing what times of day and days of week they have the least runs and that information should be used for scheduling inspections. Some companies have significantly lighter call volumes than others, and can take on a larger inspection load. This will help balance total workload across companies, though there is a limit of what can be done without leaving the first-due area and still be available for timely response to call. Companies that have lighter loads might take on some occupancies assigned to inspectors at present, and inspectors may have to do more of the inspections in areas with the highest call volumes.

Some inspections by inspectors or line companies should be made after dinner – something not allowed under current work rules. Restaurants, bars, theaters, and other night-life establishments should be checked when at peak usage. Likewise, other occupancies (e.g. churches) should be inspected on the days of the week or times of the day when at peak usage.

The In-Service Program (fire company inspections) is responsible for inspecting 20,764 structures and 14,546 tenants for a total of 35,310. This represents 37.6 percent of all structure and tenant inspections. In 1998, the In-Service Program completed 16,460 structure and 11,377 tenant inspections for a total of 27,837 inspections; this represents accomplishing 79 percent of their assigned inspections; however, over 7,000 scheduled inspections were not done.

**Recommendation 3.10: The line company inspection program should be more rigorously implemented.** There needs to be top level (Deputy Commissioner) monitoring to ensure the program is fully carried out, and that there are not large numbers of inspections carried over from one year to the next, as is now occurring. The line company inspection program can be excellent it if is implemented as designed.

**Recommendation 3.11:** Add inspectors and reprioritize inspection frequencies. Meet part of the major shortfall in inspections by adding 15 to 35 inspectors. Based on the inspection deficiency cited above and based on the fact that an inspector can conduct 5 to 6 inspections of various types per day for a total of 1,112 inspections per year (inspectors work 214 days per year), approximately 25 additional inspectors would be needed just to do the initial inspection of currently uninspected properties. Most original inspections generate additional re-inspections to follow up removal of violations, so the total number of inspectors needed to finish the job would be about double, or 50. Prevention Bureau data for 1998 showed that they were doing 3 or more inspections per structure or tenant; they estimated that 73 inspectors were needed to do the full job.

However, few cities meet their annual inspection goal 100 percent. Also, there is no data to prove what inspection cycle is optimum, even though annual inspections are often required or deemed appropriate. In the face of budget realities, most Fire Prevention Bureaus – including Chicago's – prioritize their inspections, getting to some properties once every two or three years, or less often, instead of once a year. Priorities are set considering life safety exposure and actual fire experience.

We therefore recommend adding an initial 15 to 35 inspectors, rather than 50 to 73, and prioritizing inspections to do some structures or classes of occupancies less often. Also, some cities allow simpler properties to self-inspect, using a form provided by the Fire Department. This approach might be tried for part of the population of buildings.

**Recommendation 3.12: Eliminate the use of firefighter candidates as inspectors.** They do not have the necessary experience or the practical foundation of knowledge necessary to become adequate inspectors. However, young firefighters can be quickly trained to do public fire education, especially for kids.

**Recommendation 3.13:** Consider changing the work schedule of inspectors to four 10-hour days. Independent of its value for recruiting personnel, a longer shift allows flexible use of early and late hours to inspect occupancies where inspection disruption is a problem, or for occupancies such as nightclubs, restaurants, and public assembly occupancies where evenings are more representative times to inspect.

**Recommendation 3.14:** Consider day shift or technical duty pay for positions in prevention (and instructors at the training academy, who have the same issue). This would be extra pay only while in the assignment and not part of the employee's base salary. With this incentive in place, consider filling the positions by resume submission, with an attempt to be selective and develop a career track in prevention.

**Recommendation 3.15:** Consider allowance of service points for technical assignments such as day work positions in prevention and training. Allow these points to be credited to promotional examination scores.

**Recommendation 3.16:** Obtain hand held computers for inspectors to improve their productivity and record keeping of line companies and inspectors. This will allow inspectors to enter data in the field, and automatically generate the appropriate violations letter when the inspector returns to base. Cutting down time spent on paperwork allows more inspections per inspector.

The Fire Inspection section has an excellent computerized mainframe system, called the Strategic Analysis System (SAS), to help track inspections and violations. The computer system provides links to the City Building Department inspections files. This system is backed up by a hard copy filing system. It is a good asset.

**Pump Tests** – Buildings with fire pumps are required to have them tested annually. There is a group of 1 captain, 12 lieutenants, and 5 firefighters who inspect new construction and also

witness pump tests. (About 8 are involved in the pump tests.) The tests are usually performed by private contractors. The reliability of fire pumps affects the safety of firefighters as well as civilians when a fire occurs, and is of great concern to the CFD.

The pump test function has come under some criticism from private industry for causing delays because they have at least three parties who must be scheduled at a mutually convenient time (the building owner or manager, the private test company, and the CFD), but it should not be privatized: a uniformed, badge-carrying authority is essential here. The fire inspectors can issue citations if the pumps fail the test – something a private test contractor can not do. Uniformed personnel are needed to oversee this routine but critical function.<sup>10</sup> To reduce the scheduling problem, the inspection group should be increased in size rather than eliminated.

The private companies doing pump tests in Chicago are licensed by the City's Department of Revenue and approved by the CFD to perform the fire pump inspections. CFD inspectors accompany the inspection companies to each site and issue code and safety violations when defective systems are found. Each private company doing testing must have the equipment and knowledge to perform the inspections. Permit fees are assessed for each annual inspection. The process may be initiated through the inspecting company or previous fire inspections. The CFD unit also checks the sprinkler system.

Table 3.1 shows a comparison of the approaches used to conduct fire pump inspections in New York, Philadelphia, Detroit, Los Angeles, Houston, and St. Paul. Two of these cities (Detroit and St. Paul) have the fire department do the actual testing. Four of these cities use outside contractors to conduct the inspection; the fire department does not oversee the tests in Los Angeles or Philadelphia, oversees the tests every two years in St. Paul and oversees the tests every five years in New York.

St. Paul has a unique title, Fire Sprinkler Inspector, who is a uniformed civilian fire department employee and a member of the sprinkler fitters union. Detroit has annual inspections made by the Fire Marshal's office with monthly pump tests required of a building's management. In Los Angeles and Philadelphia the pump test results done by private contractors are forwarded to the fire department, without fire department oversight of the test, but the fire departments review the test data. In each city where outside contractors are used for testing, they are licensed or licensed and certified.

<sup>&</sup>lt;sup>10</sup> New York only checks the quality of the tests once every five years. There is probably some check and balance provided by the liability of private testing companies if their tests are not adequate.

	Chicago	St. Paul	New York	Philadelphia	Detroit	Los Angeles	Houston
Are sprinkler system pumping systems inspected?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
How often are they inspected by the Fire Department (on-site, witnessing, or hands-on testing)?	Annually	2 years	5 years	No direct fire department inspections.	Annually	No direct fire department inspections.	Every 2 years.
Who inspects (tests) the pumping systems?	Outside contractors accompanied by firefighter.	Fire Sprinkler Inspector	Outside contractors	Outside contractors	Fire Marshal	Outside contractors	Outside contractors
Is there a charge/fee for these inspections?	Permit fee	No	Yes	Yes (\$30)	Yes	Yes, charge per pump.	No, but looking at occupancy based fee.
If inspections are performed by outside contractor, do you require them to be licensed, bonded, etc.?	Licensed and certified	N/A	Licensed	Licensed	N/A	Licensed and certified	Licensed
Do inspectors have fire code enforcement authority?	Yes	Yes, investigates complaints and code violations; can issue code citations.	Outside contractors refer complaints to Fire Department for 4 out of 5 years.	No, they refer complaints to Fire Department.	Yes	No, they refer complaints to Fire Department.	Outside contractors grade the system with red, yellow, or green tags but must refer complaints to Fire Department.

Table 3.1 Pump Inspection Practices in Various Fire Departments

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	Chicago	St. Paul	New York	Philadelphia	Detroit	Los Angeles	Houston
Comments:	Firefighter accompanies outside contractors on inspections. Contractors have no enforcement authority.	Inspectors wear fire department uniforms but are non-sworn members of the Sprinkler Fitters (Sheetmetal Workers) Union.	Outside contractors inspect pumps on a monthly basis and forward inspection logs to Fire Department. Every 5 years, Fire Department personnel witness pump tests.	Pumps are inspected annually and results are forwarded to Fire Department.	Monthly pump tests done by building management according to NFPA manual. Annual inspections done by Fire Marshal.	Pumps are inspected annually and results are forwarded to Fire Department. Inspectors are tested and certified every 3 years.	Pump system is inspected annually by contractor and results are sent to fire department. Every 2 years, sworn inspector walks through building.

#### Chapter III. Prevention

Each of the cities surveyed, except Houston and St. Paul, charge either an inspection or permit fee. Fees could be set such that the fully burdened cost of the inspection is recovered, even when using uniformed firefighters. (A cost study should be conducted to determine the fully burdened cost of the inspections and the permit fee set at a level to fully recover costs, if so desired by Chicago.)

The pump test unit in Chicago also tests pumps and standpipes in the public housing projects. The standpipes are often vandalized and hard to maintain. As a result, the inspection is no guarantee that the pumps or standpipes will be working even the next day following the inspection.

It is interesting to note that in the two cities (Los Angeles and Philadelphia) that do not have fire department direct oversight of pump testing and other features inspected by the same team, there have been two disastrous high-rise fires in partially sprinklered buildings. New York City has recently had a disastrous high-rise fire in which sprinkler inspections were inadequate. We do not have confidence enough in private testimony to suggest that fire department oversight of pump tests be stopped entirely in Chicago, but the Fire Department may be able to reduce the burden on industry somewhat by the following recommended practices:

**Recommendation 3.17:** Maintain the supervision of pump tests as a Fire Department function, for the present, but experiment with the CFD providing oversight every other year; reduce scheduling problems by increasing the inspection staff. The CFD might try to witness tests every two years instead of every year and compare the results of the private-only years with the results when supervised by the CFD. If the rate of problems found was significantly higher when the tests are witnessed, return to full testing. If the rate is the same, extend the practice.

*Fire Alarms* – A group of 11 officers and a firefighter review plans for alarm systems and inspect new fire alarm systems and exits required by code. Their goal is to take no more than three days to turn around plans for all but the largest buildings, an excellent level of service to the construction community. They are short one fire protection engineer position, which is needed for review of the more complex systems.

### **C. Public Fire Education**

The public education unit in the Prevention Bureau is on track both with the targeting of its programs and the content of its programs, but it reaches too small a fraction of its target audiences.

The unit receives statistical analyses of the fire problem in Chicago from the Research and Planning unit, and uses the data to target its programs, which sharpens their focus on the right problems. For example, in 1997, 65 of the 71 fire deaths were found to occur in dwellings that did not have operating smoke detectors. This led the public education unit to focus efforts on increasing the use and maintenance of detectors. In addition, about 1,200 smoke detectors were actually installed in 1997 by the CFD. This is useful but makes only a small dent in the problem. If each fire company were asked to install one detector a day, which could be an after dinner task during the week or a daytime task on the weekends, 57,000 detectors could be installed and/or tested annually.

The public education unit conducts a wide variety of programs aimed at various audiences. Some leading examples:

- **Survive Alive House** About 86,000 Chicago schoolchildren in grades 2 through 5 were reported to be run through the excellent "Survive Alive" facility at Prevention headquarters, which teaches many aspects of fire safety "hands on." There are usually three tours per day during the school year. Participants are taken through a "10 Steps of Safety" program for fire prevention and survival. Movie instructions along with simulated fire situations are used to educate participants. Many schoolchildren from outside of Chicago also go through the program annually a significant contribution of the CFD to area-wide fire safety. The "house" was paid for by the Survive Alive Foundation, with major private sponsors such as Allstate and CNA insurance.
- *Mobile Fire Safety House* This is a mobile facility (a trailer) that can be brought to schools, fairs, or other locations to teach fire safety. It, too, is used outside as will as inside Chicago.
- Change Your Clock, Change Your Battery This national program focuses on testing and maintaining smoke detectors when you change your clock to daylight savings time in the spring. A particular emphasis is given to the program in the battalions with the most fire deaths.

While the 8-member public fire education unit and the newly made permanent six paramedics who focus on injury prevention and use of EMS are highly productive, the unit is severely understaffed for a City of 3 million population. Many target groups – the elderly, new home owners, those living in the higher risk residences, those with disabilities, young mothers and other caretakers of several children, and businesses – all do not receive enough public education time. There is approximately one fire safety educator per 200,000 citizens; one per 100,000 is closer to what is needed at a minimum.

**Recommendation 3.18:** Add 14-15 personnel to Public Education (including 4-5 juvenile fire counselors and a clerk). They would be used to reach more of the high risk groups – schools, elderly, businesses, people with disabilities, pre-school children, and residents in 1 to 3 family housing. There are excellent local or nationally developed programs available for all of the target groups. The national programs (e.g. NFPA's Risk Watch) need slight adaptation to Chicago's

circumstances. For deploying the new staff, the public education unit needs to compute its outreach to various target groups and re-assess the effectiveness of its public education to each group in terms of a hierarchy of measures ranging from outreach to the bottomline of fires, deaths, injuries, and dollar loss.<sup>11</sup>

## D. Fire and Care Team (FACT)

Although primarily a fire or injury prevention program *per se*, FACT has been an innovative program with several purposes. FACT takes in young people living in CHA projects and gives them EMT training.

There are four FACT sites, each in a housing project. When ambulances are dispatched to an EMS call in a FACT first-due area, FACT members also are dispatched, on foot. This service is provided 24 hours a day. The FACT team often can beat the ambulance to the scene.

FACT is federally funded. It improves Fire Department community relations in the projects and helps attract minority youth to a career in the Fire Department or in related fields by helping them onto the first rung of the career ladder.

FACT does conduct some immunization awareness and health awareness activities. However, there seems to be little synergism between the FACT program and the rest of prevention. It is running satisfactorily where it is, but might make more sense being attached to either the EMS Bureau or to training.

### E. Fire and Arson Investigations

The Office of Fire Investigations investigates most significant fires to determine cause, especially whether it is of suspicious or incendiary nature. If arson is suspected, they assist in the investigation. The function currently resides in the Bureau of Support Services. This office received a detailed review in 1996 by a TriData team acting on behalf of the U.S. Fire Administration's technical assistance program for arson unit management. The current TriData study reviewed the progress made since then.

The status of the 16 recommendations made in 1996 is summarized below. Where the issue was not fully resolved, a renewed recommendation is made.

1. Fire scene investigation work in Chicago is often duplicated between the police and fire departments rather than shared. This problem is still unresolved. While there have been efforts

<sup>&</sup>lt;sup>11</sup> See *Proving Public Fire Education Works*, TriData, op. cit.

to improve cooperation at the mid-management levels of the Fire Investigation Office (FIO) and the Police Department Bomb and Arson unit, these units do not routinely work together on investigations, and some duplication still exists.

**Recommendation 3.19: The 1996 recommendation calling for top level involvement to establish** *clear responsibilities for both fire and police units involved in arson investigation should be implemented.* While the police department and fire department roles are stated clearly, overlap still exists in practice. The Bomb and Arson Unit detectives are reluctant to work a fire scene at the preliminary cause and origin stages alongside the fire investigators. FIO and Bomb and Arson Unit personnel should jointly work fire scenes together when arson is suspected. This will mean that in some cases the Bomb and Arson Unit personnel will assist the FIO in the initial fire investigation, and when the case is jointly determined to be criminal, the FIO would support the police department Bomb and Arson Unit.

2. Staffing level reductions in both the FIO and PD Bomb and Arson were noted in the 1996 report, but have not been corrected. The FIO has been reduced by 35 percent.

**Recommendation 3.20:** Increase fire investigation staffing close to the 1984 staffing level (add 9 investigators and one clerk). A request for increased staffing was made in the 1999 budget. This City should look favorably upon this request because the numbers of fire and arson investigations have continued to increase, and the clearance and conviction rate is way too low.

- 3. The creation of a formal Fire Investigation Task Force for arson fraud and other major cases was recommended in 1996. This concept is being implemented in a program called the Major Incident Response Coordinate (MIRC). The Bureau of ATF has taken a role in coordinating the efforts among fire and law enforcement agencies. This concept is becoming more important as cities such as Chicago prepare defenses for the threat of terrorist attacks as well as arson.
- 4. Fire Investigators are not authorized "Peace Officers" and, as such are not armed while conducting investigations in dangerous areas. Efforts have been made to provide adequate justification and documentation to the City Council, which must approve this action, but the change has not occurred.

**Recommendation 3.21: Fire investigators should be authorized Peace Officers.** This is for their own safety and to reduce dependence on the Police Department, which does not focus on arson and does not provide officers for all fire investigations.

5. The City does not have its own K-9 accelerant detection team. Presently FIO is using the State Fire Marshal's canines. No progress has been made toward establishing a Fire Department canine unit because of an issue concerning overtime compensation and the union's stance on paying off-duty care and maintenance of the dog by the fire department dog handler.

**Recommendation 3.22: The Chicago Fire Department should develop a K-9 accelerant detection team.** The dogs have been proven to work well and their "testimony" has been upheld in the courts. The barriers need to be negotiated away, perhaps in an arrangement similar to that used with handlers of police canines. If this is not possible, the accelerant canine should be assigned to the Police Department, giving them more of a role in arson investigation.

6. There is inadequate clerical support for Office of Fire Investigation. There is no clerical position available at Station 44, where the unit is located, to finalize the reports of the fire investigators and to perform clerical tasks. A request for the position was made in the 1999 budget.

**Recommendation 3.23:** The Fire Investigation Office needs a full-time clerical position to free up investigation time and make the office more efficient. This position was included in the count in Recommendation 3.21 above.

- 7. The organization of the standard investigative report needed to be improved. This recommendation was implemented and the report is now a model format for fire investigation reporting.
- 8. Direct communications from the field between the Fire Investigators and the Bomb and Arson Section detectives was not possible in 1996. The 1996 recommendation called for a telephonic or radio hook up, and the link was implemented using the city telephone system.
- 9. The FIO office at Station 44 lacks computer access to records in the Department of Motor Vehicles and other pertinent data sources. The 1996 recommendation was to provide the computer hardware and software to establish access, but was not implemented because there is not sufficient security at the fire station to protect the computer from misuse.

**Recommendation 3.24:** Relocate the Fire Investigation Office to a secure facility or secure an office for them in Station 44. It is unacceptable that the FIO unit not have access to needed records because of the lack of security.

- 10. First level supervision of fire investigators needed to be strengthened. The recommendation was that the lieutenants should not be primary investigators on a case but rather supervise the platoon and assist the field investigator when required. This has been implemented and a written procedure has been issued which details this policy (FIO Manual of Operations and Procedures, section 1-7) but it increases the shortfall of investigation hours; the recommended increase in investigation staffing would remedy the problem.
- 11. The Commanding Fire Marshal had been handling too many day-to-day tasks that could be delegated to others. The recommendation was made that the Fire Marshal place more emphasis on coordinating with other city and county agencies to enhance the investigation of fire cause, the prosecution of fire offenders and prevention of fires. This has been implemented by establishing

an assistant fire marshal and fire investigation training coordinator positions. The delegating of the above duties to them allows the Commanding Fire Marshal more time to plan, manage and coordinate the unit.

- 12. There was only one computer workstation available for entry and final edits of investigation reports. This caused delays of reports and was inefficient. This problem was addressed by the addition of three additional computers.
- 13. The D-Base file lacked witness and victim information. It was recommended that this information be added to the file. Efforts are underway to improve the data file including rewriting the d-base file program and adding the Paradox program. Owners and occupants' information have been incorporated; however victims and witnesses have not been included as yet. This effort is still on going, and should be pursued to completion.
- 14. It was recommended that investigators be required to be certified to the NFPA 1033 standard Professional Qualifications for Fire Investigators. Efforts are underway to develop this certification process and the curriculum has been formalized. This program is being coordinated through the University of Illinois, Fire Service Institution.
- 15. A personnel evaluation system based on specified performance criteria should be utilized to conduct annual reviews of all investigators. This recommendation is under development. Progress is being made, but because this is a labor agreement issue, the practice is conditional upon union review and agreement. A similar evaluation system has been adopted for investigators in training to evaluate their progress. (We recommend in Chapter VII that a performance evaluation system be implemented for the entire department.)
- 16. The juvenile firesetter program needs to be enhanced. It was recommended that the FIO juvenile firesetter investigator and the public fire education section should have a coordinated program. (This is another example of why the two units should be in the same Bureau.) The coordination is being implemented; the new commander of FIO is working with the fire prevention public education section for education and fire safety issues. They could work yet more closely and share personnel if Investigation is moved to the Prevention Bureau. Lake Shore Hospital is the contact facility for initial visits of families needing professional counseling. This service is provided free when referred through the juvenile firesetters program.

**Recommendation 3.25:** Add 4- 5 personnel to the juvenile firesetter counseling program. They were included in Recommendation 3.19. Juvenile firesetting has been found to be part of the background of many people who become felons. It is also a common background factor in mass murderers. Investment in this function not only offsets fires by juveniles but may also impact future crime rates.

#### **CHAPTER IV. FIRE OPERATIONS**

This chapter addresses fire suppression and technical rescue activities – the prime responsibility of the Fire Suppression and Rescue Bureau (FS&RB). The next chapter will address EMS operations.

#### A. Overall Deployment

For organizing fire operations, the City is divided into six fire districts that together have 24 battalions. There is an average of four battalions per district, 24 in total. A seventh district encompasses the airports. Within the battalions are 98 engine companies<sup>12</sup> and 59 ladder companies. Specialty units include a fireboat, air crash rescue units at the airport, 4 heavy rescue companies, and a variety of other supporting units and equipment.

Of the approximately 5,200 employees in the Department, FS&RB has about 3,900. This does not count the paramedics on the ambulances that are housed in fire stations with the fire companies.

**Response Complement** – An emergency call from the public is first received by the joint police/fire/EMS 9-1-1 communications center, where a determination is made as to what, how much, and who will be dispatched. The "what" is the type of equipment. The "how much" is the number of those companies thought to be needed. The "who" is the particular fire suppression units. There are pre-determined criteria that apply, including the nature of the call, what is known about it, the type of occupancy, and whether more than one call comes in regarding that particular incident. The Computer Assisted Dispatch (CAD) system in the Communications Center makes "suggested" assignments to the CFD but can be overridden by the human judgment of the dispatchers or field officers.

Response levels start with the "still" alarm, then proceed through a "still and box," a 2-11 (second alarm), 3-11 (third alarm), 4-11 (fourth alarm), and so on. Each level sends more personnel and equipment to the scene.<sup>13</sup> Stepping up from a "still" alarm to a higher level alarm usually is done by fire personnel on the scene who have sized up the existing conditions. Table 4.1 shows the nominal response dispatched automatically to each additional alarm level for structure fires. Additional specialized units (e.g. hazmat, lighting, fuel supply, etc.) may also be sent as needed,

 <sup>&</sup>lt;sup>12</sup> The Fire Boat is designated as Engine Company 37, and thus sometimes reference is made to 99 engine companies. Also, two engine companies, 9 and 10, are stationed at the O'Hare airport.
 <sup>13</sup> The "still and box" alarm complement in Chicago is large enough to be considered a second alarm in many

<sup>&</sup>lt;sup>13</sup> The "still and box" alarm complement in Chicago is large enough to be considered a second alarm in many communities.

along with ambulances. The dispatch also varies if the call is from a high-rise, especially a high-rise residential project, or for certain high-risk occupancies.

Type of Alarm	# Engines	# Ladders	# Chiefs	# Other
Still alarm	2	2	1 BC	
Still and box	2	1 TL	2 BC, 1 DDC	Squad and Van
2-11	4	2 & 1 TL	2 BC	
3-11	4			-
4-11	4		As needed	
5-11	4			

 Table 4.1 Nominal Complement of Fire Apparatus

 Dispatched to a Structure Fire, by Alarm Level

BC = Battalion Chief, TL = Tower Ladder, DDC = Deputy District Chief, and Van = Command Van NOTE: This table is additive; each type of alarm receives everything from the alarm levels lower than itself, too. A still and box gets 4 engines, a second alarm, 8 engines, etc.

This level of dispatching seems appropriate overall. Consideration should be given to adding a Rapid Intervention Team (RIT) to a "still and box" or greater alarm. The "RIT" is simply an additional fire company dispatched to the scene with no initial firefighting duty but to stand by in case quick action is needed to rescue firefighters themselves. This safety practice is rapidly spreading in the fire service. With the RIT on the scene, resources would not have to be drawn away from other duties to intervene – the unit is ready for rescue at all times. This helps prevent a delay in starting rescue operations. The RIT coordinates with the safety officer at the scene.

**Recommendation 4.1:** Consider sending a Rapid Intervention Team to all "Still Alarm and Box" or greater level structure fires. A Standard Operating Procedure should be drawn up outlining what is expected of the Rapid Intervention Team, and how they link to the Incident Command system and the safety officer on the scene.

**Overall Adequacy** – The present 24 battalions are sufficient to meet current and at least near future anticipated demands for fire and rescue calls. The high workload in the Department today is EMS calls; the number of actual fires, especially significant fires is dropping and the population increasing only slowly, after a significant decline. The existing units have enough capability to handle any foreseeable growth (if any) in fire calls and non-fire calls for the FS&R units (excluding ambulances) for at least the next five years.

**Response Times and Fire Station Locations** – The major consideration in the location of fire stations is the time it takes the closest fire company or ambulance to get to the scene of any emergency situation in their local district. Almost as important is the time it takes the second-in company, especially engine companies, to get to the scene and the time to assemble the full complement of units necessary to handle different types and sizes of incidents.

The first-in response times in Chicago are in the acceptable range though not excellent compared to targets used in many departments nationally (there are no true national standards of coverage). The average city-wide response time measured from dispatch to arrival on the scene is 5 to 6 minutes in Chicago. To this must be added about a minute for call processing to get the total response time (6 to 7 minute average), which runs from when a call is picked up at the 9-1-1 center to when a fire unit arrives at the location.<sup>14</sup>

There has been a discontinuity in how response time data is recorded in Chicago with the advent of the new 9-1-1 Communications Center. The result was a significant change in the average response time reported (by a full minute), even though there was no change in operations or station locations. We will address this issue in detail later in the Information Systems Section of Chapter VI. Suffice it to say here that first-in engine response times are acceptable, but have some uncertainty as to their accuracy. Ambulance response times are at the high end of the acceptable range and will be discussed in the next chapter.

A major strength of the Chicago Fire Department deployment is the robustness of the system. There are sufficient units able to handle multiple calls in virtually any area of the city. There is also an excellent ability to get a fully staffed, large enough complement of engines, ladders, and chiefs to the scene of a working fire in good time.

The average time between the first- and second-arriving units (regardless of whether engines or ladders) was 48 seconds in 1997-1998. It ranged from a low of 40 seconds in District 3 to a high of 53 seconds in District 6. (District 6 is in the southeasterly portion of the City, where many stations only have one unit.) These are extraordinarily good second-in unit response times, and stem from having many stations with a ladder truck and engine that respond together.

The average time for the second-in engine company following the first engine company on the scene to arrive is 2.52 minutes, with a range of 1.34 to 4.16 minutes. Again, District 6 was at the high end of the range. In other words, the first engine on the scene is backed-up by a second engine in less than three minutes on the average. This is an extremely important feature of the overall response system in light of Chicago's many high hazards, and is important to consider when evaluating the staffing needed per unit later in this chapter.

<sup>&</sup>lt;sup>14</sup> Ideally, the response time clock should keep running until the unit arrived at the actual incident location, which may be up 15 stories in a high-rise, or well inside a gated compound, but few if any fire departments are recording time that way at present. It should be considered for addition to the time data collected, going into the future.

It is the opinion of the TriData team that Chicago's fire stations generally are appropriately located as a whole to meet current demands. Growth and development in areas of the city such as the southeast, northwest and west central should be closely monitored in order to assess the future need for additional fire protection. It was beyond the scope of this study to consider fine-tuning of individual station locations; a response time analysis is needed at the local level (in each first-due area) to make sure there are no problem response areas with a significant number of calls; overall averages can mask individual local areas that have a problem.

**Number of Ladder Companies** – In almost all fire departments the engine companies outnumber the ladder companies. Typically, one ladder company will support more than one engine company. The ratio can run from one ladder company for every 1.5 engine companies (New York) to one ladder for every 3-4 engine companies (San Jose, Phoenix), as shown in Table 4.2. In Chicago, the ratio is 59 ladder companies to 98 engine companies, or one ladder for every 1.7 engine companies – a very high ratio. The ratio depends on the fundamental fire fighting philosophy, the mix of occupancies, the nature of a city's buildings, and its fire department history. Cities with many high-rises and cities with many multifamily dwellings, like Chicago, need more ladders than the flatter, less dense, lower-structured cities of the same population. One does not choose a ratio and then determine the number of ladder companies needed. Rather, the ratio is the outgrowth of planning for adequate ladder response times and the amount of situations for which ladder companies are truly needed, in actual experience.

City	Engines	Trucks	Ratio
New York, NY	209	142	1.5 to 1
Chicago, IL	98	58	1.7 to 1
Detroit, MI	41	24	1.7 to 1
Baltimore, MD	40	22	1.8 to 1
Los Angeles, CA	98	48	2.0 to 1
Philadelphia, PA	59	30	2.0 to 1
Houston, TX	81	34	2.4 to 1
Dallas, TX	54	21	2.6 to 1
San Antonio, TX	44	16	2.8 to 1
San Francisco, CA	41	18	2.8 to 1
San Jose, CA	30	8	3.8 to 1
Phoenix, AZ	50	12	4.2 to 1

 Table 4.2 Engine to Truck Company Ratios; Cities of 750,000 or More Population

Note: The average of the ratios is 2.44 to 1. The overall ratio (sum of engines/sum of trucks) is 1.95 to 1.

Based on the density and nature of the structures in Chicago – many high-rises, many multistory residential frame houses, much industry – the high number of ladder companies is reasonable. Here again, a detailed localized analysis of ladder company response times by each area of the city would need to be performed to see if any units could be reduced or if there are any gaps. In the large, there were no obvious problems, and no problems raised in any interviews about any problems in ladder coverage.

**Number of District Chiefs** – As noted earlier, there are 6 Districts, each with an average of 4 battalions. Each District is headed by a Deputy District Chief (DDC) on shift duty, so there are 18 DDCs. Each group of 3 DDCs reports to a District Chief who is on a 40-hour workweek. For the near future, these exempt positions are needed because of the lack of adequate managerial responsibility taken by the company officers and battalion chiefs, and the many issues bucked up to exempt positions. After normal business hours, the only exempt-level employees on duty in the whole Fire Department may be the six DDCs. Of course, more senior officers can be called back in if needed, but that takes some time. The DDCs each check at least one station in their district each night to make sure things are going well.

Looking to the longer term, there is an opportunity to enhance the efficiency of the organization by reducing the total number of Districts from six to four. Management communications and control can be tightened. Each of the four District Chiefs would be housed in a station centrally located in their district, allowing more or less equal response times to any location in their assigned areas. This could be done, however, only if and when Battalion Chiefs are trained to be better people managers and to handle many of the disciplinary problems and other personnel issues that are now bucked upward. (Chapter VII discusses the training needed in detail.)

Figures 4.1 and 4.2 show the present and long-term proposed District alignments, respectively. Each of the four "District Chiefs" (a title we recommend to replace the current "Deputy District Chief" title) would report to one of two "Assistant Chiefs" (a term we would recommend to replace District Chief). Each Assistant Chief would be responsible for two districts covering half of the City – one Assistant Chief for the North and one for the South. (Because they would be responsible for two Districts, the term "District Chief" would be inappropriate.) The Assistant Chiefs would report directly to the Deputy Commissioner – FS&RB. The relatively new Assistant Deputy Fire Commissioner position above the Districts would be eliminated, as was suggested in Chapter II. Table 4.3 shows what the proposed CFD Operations chain of command would be if all the rank recommendations were accepted.

Figure 4.1 Chicago Fire House Locations by Battalion and District



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#### Figure 4.2

## Chicago Fire House Locations by Battalion and District



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Fire Commissioner
Deputy Commissioner
Assistant Chief
District Chief
Battalion Chief
Captain
Lieutenant
Engineer or Driver
Firefighter

Table 4.3 Pro	posed New CF	D Operations	Chain of	Command
		B operatione		oomana

The Assistant Chiefs would work normal business hours, as District Chiefs do at present. Their role would be to coordinate the activities of the three platoon District Chiefs under them, thereby assuring operational continuity and a unified policy. For firefighting purposes they would respond to major incidents meriting an Incident Commander above District Chief. The Assistant Chiefs would be placed on an on-call status and rotate that stand-by duty between themselves.

The Assistant Chiefs each should be supported by a uniformed assistant and a civilian secretary, to help handle their administrative duties. As for the daily working headcount of suppression personnel and the daily adjustment of staffing, the four District Chiefs will gather the necessary information from their respective groups of battalions, and adjust and reassign to the extent they can at their level. Their numbers would then go to the Assistant Chief level where the final reconciliation will take place.

From a fire fighting activity and response standpoint, the elimination of two districts should have little or no impact. In 1997 the six Deputy District Chiefs made a total of 1,347 responses including fire and non-fire emergencies (see Table 4.4). This is an average of 225 calls per district; divided by the three platoons, each Deputy District Chief averaged only 75 responses in 1997 out of a total of 122 annual working days – just over one response every two days.

	1337 Deputy	(coponded	
District	Fire	Non-Fire	Total
1	131	135	266
2	96	68	164
3	105	99	204
4	96	78	174
5	178	114	292
6	94	153	247
Totals	700	647	1,347

 Table 4.4
 1997 Deputy District Chief Responses

A great deal of the DDCs time is spent on other matters such as administration, training oversight, and discipline, but the merits of a more streamlined chain of command seem to be worth the slight increase in responses, which would not be overly burdensome at about one response per day. Administratively, under the proposed system, paperwork originating in a fire company would now pass through fewer levels, thereby reducing the number of reviews and/or endorsements required.

**Number of Battalion Chiefs** – The present 24 battalions average 6.5 companies each. The number of stations they command is fewer than that because many stations have two companies. This is a reasonable span of control for each battalion chief to manage if all of the managerial job of a battalion chief is done. The span could be stretched somewhat further, to between 7 and 8 companies (4 to 6 stations) if the battalion chiefs do not do the entire human resource management aspects of their job, in addition to their technical management. Disciplinary issues, vehicle accident investigations, and other issues that could be handled by battalion chiefs often are bucked up to higher levels, which requires more higher level exempt positions than would otherwise be needed, as discussed earlier. About 20 to 22 battalion chiefs would be needed to oversee the line companies if their span of control was increased slightly.

However, it would be preferable to retain the current number of battalions and battalion chiefs and have them acquire better management skills so they could take a larger management role. Reducing the number of battalion chiefs would slightly increase the time for those most qualified to be incident commanders – the battalion chiefs – to get to the scene, which is not desirable.

**Recommendation 4.2: Retain the current number of districts and battalions for the near term, but consider reducing the number of districts in the future.** Reducing the number of districts from six to four would save 2 District Chief positions and 9 Deputy District Chief positions, a savings of \$1.4 million, and streamline management. This should be considered only after the management training plan described in Chapter VII is fully implemented.

# **B. Unit Staffing**

One of the most controversial subjects in the American fire service over the last twenty years has been fire apparatus staffing – the number of firefighters needed on each engine and ladder company when it is dispatched to an assignment, as opposed to the nominal assigned staffing of the unit, which may or may not be there on a given day. For Chicago, the debate centers around the question of whether a supervisor plus three firefighters (totaling 4) or a supervisor plus four firefighters (totaling 5) is the appropriate complement needed to handle the initial fireground tasks before additional units arrive with more help. The number of personnel per unit also affects how quickly an adequate complement of personnel can be built up to deal with a significant fire. Engine

and ladder company staffing is critical because these units comprise the vast majority of uniformed department personnel, and hence the most impact on the cost of fire protection.

At the present time, the CFD staffs all engine and ladder units with five firefighters: a Captain or Lieutenant and four firefighters in the case of ladder companies. a Captain or Lieutenant, an Engineer, and three firefighters on the engine companies. There is little variation in this pattern because the present collective bargaining agreement allows only 30 "variances" at any one time. A "variance" can be one person missing from a unit or one person working out of rank, i.e. filling in for others above their rank. Thus, at most, 30 of the 156 engine and ladder companies can have a crew of four on a given day. Usually it is fewer than 30 because of people working out of rank. If staffing drops below four, the unit would be taken out of service, but this is rarely done.

*Inter-City Comparisons* – As is the case in many controversies, there are strong differences of opinion on each side of the staffing issue in Chicago (and elsewhere) and a paucity of reliable data to make the case definitively one way or the other. Most large cities now operate with four firefighters per engine, some with three (e.g. Seattle), and a few small career departments even have as few as two on some companies, which is unacceptably low. Most of the older large cities have five on the ladder units. At the top of the spectrum, New York City has five on each engine and six on each ladder. Table 4.5 provides a comparison between Chicago and other large cities. The list includes the largest cities and older cities with high density.

<u> </u>		
City	Engine	Ladder
New York, NY	5	6
Chicago, IL	5	5
Boston, MA	4	5
Los Angeles, CA	4	5
Philadelphia, PA	4	5
San Francisco, CA	4	5
Milwaukee, WI	4-5	4-5
Baltimore, MD	4	4
Dallas, TX	4	4
Denver, CO	4	4
Detroit, MI	4	4
Phoenix, AZ	4	4

 Table 4.5 Firefighters per Unit for Selected Large Cities

Note: The numbers here include the company officer.

Unfortunately, no one has yet been able to show the impact of five- vs. four-person staffing on fire losses, civilian casualties, or firefighter casualties with a statistically significant study of real-

world results (vs. simulations). It is highly complex to factor out the effect of staffing from the many other variables that affect the bottom line. Obviously, if money were no object, five would be better than four assigned to each unit because more work can be done more quickly by more hands, and in a fire and other emergencies, time counts. However, the critical question is *how much more* can be accomplished by five-person staffing, and how does it affect citizen safety, firefighter safety, and losses, vs. the large added cost of the fifth position.

There are many instances on the fire ground where the level of staffing per unit makes little difference. A fire from an unattended pot on the stove or a minor trash-can fire, if contained to the object of origin on arrival, can be put out by one or two persons, let alone four or five. In fact, the occupants extinguish many such fires themselves or they self-extinguish before the fire department arrives. Sometimes the ladder company extinguishes the fire with a "can" (five-gallon extinguisher) before the engine company arrives. The end result in those situations usually will not depend on the number of firefighters used in the effort. However, sometimes the numbers do matter even for a small fire, which may take considerable effort to get to before it spreads; e.g., one or more doors may need to be forcibly opened, and equipment may have to be hand-carried up several flights of stairs.

Once flashover occurs and the fire gets out of the room of origin, the potential for spread escalates sharply. It is in the race to contain a fire to the "room of origin" that the main effect of staffing per unit comes in. An additional firefighter, especially on the first units in, could make a difference in stopping spread when the additional personnel speed up operations and allow more tasks to be done simultaneously.

Chicago arrived at its current level of staffing mainly by erosion from previous levels, not by analysis. A long time ago, major urban fire departments dispatched their engine companies with a complement of 12. This included a foreman, a driver, an engineer, a stoker, and eight hosemen. Ladder companies ran even heavier, with a foreman, a driver, a tillerman, and 10 laddermen. This was at a time when horses were used to pull fire apparatus, water supply came through wooden mains and was not very reliable, housing was closely built, cedar shingles were prevalent, candles were used for illumination, and wood for heat.

As built-in fire protection and firefighting technology changed, less staffing was needed. Apparatus are now motorized, more stringent fire and housing codes are in place restricting construction materials, open flames and wood burning appliances are used less, and water supplies are much more dependable. The majority of private homes and apartments, where most fire deaths occur in Chicago and nationally, are now equipped with smoke detectors that give critical early warning. Many high-rises are sprinklered. Fire department apparatus has greater pump capacity and larger water supplies. Ladder companies have ladders that reach higher and are mechanized. Tools are lighter, more efficient, and, in many cases, electronically or motor driven. With the improved investment in technology, the declining population in many older cities, eroding tax bases, and a variety of other socioeconomic problems, city management started taking a closer look at all the services they were providing, including their fire departments. They argued that if the number of fires was going down, why were the same number of units and firefighters needed as in earlier years? In spite of varying degrees of protest by fire administrators that fire losses would rise, most cities reduced the staffing on their fire suppression units. Despite the cutbacks, there has continued to be a decline nationally in fire deaths and a decline in fire losses in real dollars. The drops are even greater if measured on a per capita basis. The reason for the decline in losses nationally is that many factors affect the bottom line in addition to suppression staffing. However, adequate suppression forces still are needed to a have rapid, adequate response for the fires that continue to occur in large numbers. The number of fires is *not* the main determinant of the size of the suppression forces still need to be well deployed to obtain desired response times to the fires that occur.

The total dollar and total human losses from fires are a function of the number of fires times the loss per fire. The loss per fire is affected by the size of the fire suppression force, but also by other factors (e.g., built-in compartmentation). Both elements in this formula are affected by prevention, which, pound for pound, has more leverage on losses than does the number of firefighters. Although it is all but impossible to quantify the expected loss with the current state-of-the-art models and data available, most informed individuals would agree that somewhat more damage and injuries are likely to be incurred in some fires if staffing decreases, and that losses per fire may raise slightly on the average, all other factors being held the same. Regardless of the number of fires experienced, when a fire occurs, the same tasks must be accomplished rapidly by firefighters to control the blaze or other emergency incident.

**Standards of Coverage** – One of several factors in determining crew size is the expectations placed on fire suppression forces. The higher the expected performance in terms of rapid response times and containment of the fire, the more resources needed. What percent of fires are expected to be confined to the room of origin? How much toleration is there for an extension of some fires to other parts of the same building or even to other buildings? Of course extension of fires will happen sometimes even with large suppression forces available, but the odds change. The answer to these types of questions is generally referred to as the "Acceptable Risk." It is a value judgment.
There is no true standard of coverage for response times or staffing standards in the United States (unlike the United Kingdom, which does have national standards of coverage)<sup>15</sup>. The NFPA Fire Protection Handbook has a table entitled "Typical Initial Attack Response Capability Assuming Interior Attack and Operations Response Capability" that lists three general categories of hazards (High-, Medium-, and Low-Hazard Occupancies) and the minimum response that should be sent to each. Table 4.6 provides a comparison between the NFPA recommendations and the present CFD practice.

Type of	Entities	C	Total # Firefighters		
Hazard	Compared	# Engines	# Ladders	# Chiefs	(excluding Chiefs)
High	NFPA Rec.	4	2	2	24
	CFD	4	3	3	35
Medium	NFPA Rec.	3	1	1	16
	CFD	4	3	3	35
Low	NFPA Rec.	2	1	1	12
	CFD	2	2	1	20

Table 4.6 CFD Typical Response vs. NFPA Recommended Guidelines for Minimum Response – First Alarm

Note: CFD uses five firefighters per engine and ladder. NFPA does not specify unit size, only the number of firefighters.

The NFPA Handbook does not specify the number of firefighters per unit, but rather the total number to be sent to a call. By inference, the Handbook requires an average of four firefighters per unit. The CFD exceeds the minimum goals stated in the Handbook for both the number of apparatus and the total personnel for a working structure fire. The NFPA recommendations are for hazards of particular types, not for the size of a city. A high hazard might be an unsprinklered hospital or a high-rise. However, the NFPA was not thinking specifically of Chicago when constructing these standards. Chicago high-rises are higher, and the density of hazards greater than most cities for which norms are applicable. Also, the NFPA has just appointed a new standards committee to reconsider staffing standards for career fire departments.

NFPA Standard 1500, dealing with Fire Department Occupational Safety and Health Program, does not specify unit staffing, but does specify operational requirements that could be interpreted as implying a need for five-person engine company crews. The standard advocates the "two in/two out" concept: suppression forces should operate in teams of a minimum of two individuals, and two firefighters should be available outside to rescue a team of two inside. Thus,

<sup>&</sup>lt;sup>15</sup> Standards of coverage refer to the number of units and the total complement of firefighters that are expected to arrive at the scene of a fire within a given amount of time. For example, it may be expressed as a requirement that the first unit should arrive in 6 minutes, and 16 to 20 firefighters with 10 minutes (this is not a standard, just an example). Sometimes the standard of coverage is given in terms of fractiles, e.g. the first ALS unit should arrive within 8 minutes in 90 percent of the calls.

where firefighters are working in the hazardous area at a structural fire, at least four individuals are required from the outset. But that implies a minimum staffing of five when the operator of the pump on the engine is added, because the operator is required to stay with the piece when it is in service and does not count as part of the "two out," since he or she is preoccupied and not available to participate in a rescue. Some jurisdictions are augmenting their initial dispatch to bring more firefighters to the scene more quickly, and are using the first two engine companies to meet the requirement by pooling resources together. Technically, they should not send in two firefighters until the second unit arrives, except in dire life safety situations.

In considering the need to implement the two-in, two-out rule, an extremely important factor is the time it takes the second unit to arrive. Having to wait for a second unit to arrive instead of having an adequate number to proceed immediately with just the first unit eats up precious time. However, as noted earlier, in Chicago the second-in unit arrives an average of only 50 seconds after the first unit, so there will usually be enough personnel for "two-out" by the time the first arriving unit would be ready to go into the building. But the second-in unit, if a truck company, which is most often the case , also has its own duties to perform. Therefore the time of the second-in engine is also critical to consider. In Chicago, the second-in engine arrives in less than 3 minutes on the average, though it increases to 4 to 5 minutes in some parts of the City or when things get busy. The first-in unit can use its on-board water supply for about 3 minutes before running dry. It often would be a close call as to whether the second engine arrives in time not to delay firefighting (either ladder company or engine operational), unless the first unit has a crew of five and has been able to hook up its own water supply from a hydrant.

Each individual jurisdiction must decide on how to go about achieving the desired fireground safety and, at the same time, keeping risk reasonable, while economizing to the extent possible. It is a difficult choice. From a practical standpoint there are several options for Chicago: (a) continue to staff engines and ladders at their present level of five; (b) reduce both of these units to four; (c) continue to staff engines with four and ladders with five; (d) use a nominal staffing of five, but accept four on days when someone is on leave, for at least some units, or (e) use five-person staffing in higher-risk areas of the City and 4 in others. Increasing the present staffing of units above current levels does not seem needed, and was not suggested by anyone that the TriData team interviewed, nor by our own team.

On the cost side, any career fire department's greatest annual expenditure goes towards personnel, their salaries and fringe benefits. Reducing the number of fire personnel per unit from 5 to 4 would reduce the overall outlay for fire suppression by almost 20 percent. (It is not exactly a 20 percent reduction because some suppression costs are not directly proportional to staffing; e.g., the number of chiefs needed and the amortized cost of the apparatus.) But a reduction in unit staffing is not something to be entered into lightly. Before deciding one way or another, the pros and cons must

be weighed. Under the influence of budget pressures, most other major cities are staffing their fire suppression units at four, especially their engine companies, but there are some compelling reasons why Chicago might be ill advised to do likewise across the board. The next two sections address the issue for ladder companies and engine companies respectively.

Ladder Company Staffing – It is important to understand what activities are engaged in by the first-arriving ladder company at a structure fire in analyzing the numbers of companies needed. Table 4.7 lists ladder company actions for two typical scenarios that were based on interviews conducted by the TriData team with CFD members on what their ladder companies typically do. Much flexibility is needed in ladder company operations. There are many variations from call to call. What is done and when it is done is dictated by the conditions found. In general, the ladder company duties are to make forcible entry if necessary; conduct a primary search for occupants or victims; ventilate the building if needed; raise ladders for firefighter access and for helping victims escape; and then overhaul the premises when the fire has been controlled. Ladder companies also assist in salvage operations during and after the fire (e.g. protecting equipment or furniture from water with tarpaulins). Not all fires require all of these activities, but many do. In Case #1 below, three firefighters, including the officer, conducted a search for victims while two others ventilated the roof. In the second example, two firefighters raised a ladder while two others ventilated the roof, and the officer supervised the operation for appropriateness and safety.

Table in Example of Ballee of File Annung Ladder Company					
	Case #1	Case #2			
Officer	Primary search	In front			
Driver	Primary search	Raise ladder			
Firefighter #1	Primary search	Raise ladder			
Firefighter #2	Ventilate roof	Ventilate roof			
Firefighter #3	Ventilate roof	Ventilate roof			

 Table 4.7 Example of Duties of First Arriving Ladder Company

Ladder companies carry, as a part of their tool inventory, numerous portable ground ladders. These are generally made of aluminum and range from 16 to 50 feet in length. The larger ones can be extremely heavy, so one not only faces the awkwardness of maneuvering their length but also their sheer weight. In fire situations, ladders frequently have to be set up in almost inaccessible places and can only be placed there after strenuous laboring. The actual raising of a ground ladder can require from one to six firefighters, depending on its size. For instance, a 50-foot ground ladder with "tormentors" (long arms that aid in positioning the ladder) requires a crew of four to six to raise it safely. The question might then be asked, "Just how often do firefighters raise this particular ladder?" The answer in Chicago is more frequently than ever, and more often than in many cities. In addition the frequency of having to manually raise ladders is likely to increase further due to the increased construction of three- and four-story frame townhouses and other frame construction. We saw many

developments with geometries where the ladder truck with its built-in, 100-foot hydraulic ladder cannot get into the site, or can get in but does not have room to either deploy the outriggers (hydraulic jacks) needed to stabilize the ladder, or the ladder cannot deploy because of the lack of space to get the needed angle of placement of the ladder, thereby necessitating the use of a 50-foot ground ladder.

There are so many situations that require brute force to raise ladders to rescue citizens, and/or give the firefighter access, and so much ladder company work at even small fires that a decrease in ladder company staffing would almost certainly have a negative impact on fire ground operations and the ability to rescue people from fires in Chicago.<sup>16</sup> Our team consensus was strong, and led to the following recommendation.

# Recommendation 4.3: CFD ladder companies should continue to be staffed by an officer and four firefighters.

**Engine Company Staffing** – Turning now to engine company staffing, we reiterate that there is not enough hard or decisive data to be conclusive about the needed staffing of engine companies. At present all engine companies in Chicago nominally run with an officer, an engineer, and three firefighters by contractual agreement, but sometimes they run with four. Table 4.8 displays activities typically undertaken by the first arriving CFD engine company on structure fires. The main degree of flexibility allowed an engine company on the fire ground is the method of stretching a hose line and the size of hose needed to combat a particular fire. Naturally, a two-story row house usually will not require the same size hose line as a large commercial or industrial building.

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	Case #1	Case #2	Case #3
Officer	Advance hose line	Supervise in front	Supervise in front
Engineer	Drive/operate pump	Drive/operate pump	Drive/operate pump
Firefighter #1	Advance hose line	Advance hose line	Standpipe
Firefighter #2	Advance hose line	Advance hose line	Back up
Firefighter #3	Connect to hydrant	Connect to hydrant	Connect to hydrant

Table 4.8 Typical First Arriving CFD Engine Company Activities

All of the actions above must be done simultaneously in most cases. That is, as the hydrant person is doing his or her work, hose line is being stretched by two firefighters and the Engineer is preparing to provide water and pressure to the hose line. All this should be under the supervision of the officer who, in most cases, also assists where needed after he or she has assessed the situation and

<sup>&</sup>lt;sup>16</sup> Data does not exist to be more quantitative and report the numbers of fires where rescues were made by ladder, let alone the frequency of use of various ladders. And it would be difficult to avoid gaming the data if it were recorded. A notoriously unused and unreliable data element on fire incident reports for years was the feet of ladders raised.

radioed in a report of conditions found. When the hydrant person completes his or her assignment, he or she also can assist where needed.

Time is a critical factor when firefighters first arrive at the scene of a fire. Whether or not the size of engine crews is five to four, the same tasks must be accomplished and accomplished rapidly. The fifth person may speed up the tasks. The more hands applied to the set of tasks, the quicker they will be accomplished (to a point). Time is critical because fires grow exponentially as the minutes pass until the fire runs out of fuel or oxygen, is stopped by fire-resistant materials or sprinklers, or is manually extinguished. The sooner firefighters can intervene, the quicker the fire will be contained and the smaller the fire damage and threat to life safety. Time and motion studies, and simulated trials, have shown that a five-person crew can accomplish the engine company tasks faster than a four-person crew, and a four-person crew is much faster than a three-person crew.<sup>17</sup> However, four-person crews are usually adequate for many situations, such as fires in bungalows. Remember that it is not just one engine that arrives, but at least two and up to four when it is known that there is a working fire.

We next summarize advantages of the five-person staffing, followed by a discussion of the approach and advantages of using four-person staffing. First, five-person staffing:

- With five-person crews, supervisors can devote more time to supervising the crew as opposed to doing the manual labor of the crew. The cities with four-person crews count on the officer's manual labor. This loss of supervisory perspective can at times have serious fire ground safety ramifications. Individual injuries tend to decrease when supervision is heightened.
- Chicago has one of the largest concentrations of high-rise buildings in North America. Firefighting operations in these structures are facilitated by crews of five as opposed to four and by rapidly concentrating enough firefighters to handle all tasks. Mounting a fire attack on the upper floors of a high-rise building requires increased resources. Hose sections and other weighty equipment (e.g. brass nozzles, standpipe wrenches) often have to be carried up several stories to fight the fire.
- Problems are often encountered in high-rise housing project fires in Chicago that go beyond office building high-rise problems. Frequently the standpipes in the projects are inoperative, necessitating the development of an alternative water supply, such as by dropping enough connected hose from an upper story window to reach the engine a labor intensive operation. Also, the elevators in the projects are often not operating, meaning firefighters must access the fire floor by foot, carrying all the necessary fire suppression gear, again an exhausting task in which a fifth crew member speeds the operation and reduces the strain.
- The weather extremes in Chicago, particularly the cold, ice, and snow, have a deleterious effect on fireground operations. These conditions make it more difficult to

<sup>&</sup>lt;sup>17</sup> A famous study by the Dallas Fire Department in the 1970s is still the main source for this argument.

do what must be done. It is not uncommon to find hydrant caps frozen in place. This necessitates locating an operating hydrant and stretching new hose line, or relocating the original line. Dealing with winter conditions are facilitated by a crew of five.

- A crew of five aids in complying with the two in/two out safety recommendations of the NFPA. For the short time they are on their own or just accompanied by one ladder company, two can go in with a line, leaving two out and the engineer working the pumps, which accelerates the time to start firefighting and rescues in many situations.
- There is more likelihood that a fire will be contained to the room or area of origin simply because the tasks required to contain it can be accomplished faster with a crew of five on responding units. A particular concern is that much new wood-frame construction is taking place within Chicago. Frame construction, absent built-in fire protection, poses the potential for rapid fire spread. In general, five-person suppression crews are better positioned to address this problem. Five-person crews also may cut down the number of multiple-alarm fires (though no data existed to show this).

Thus there appear to be some strong arguments for use of five-person engine crews in many circumstances. But the cities that have reduced engine crew size to four do not seem to have had noticeable adverse effects. Career firefighter casualties on the fireground continue to decrease. Fire losses continue to decrease overall, though losses per fire have increased slightly nationally (at least in part because of increased affluence, and also because of changes in homes and furnishings that allow flashover to occur more rapidly). Unfortunately, much data is needed to be able to sort out the effects of various factors on the bottom line. Surely the decrease in structure fires, which has nothing to do with the size of crews, contributes significantly to the downward trend in losses and reduced firefighter casualties. Ideally the loss per fire and profile of the spread would be examined before and after changes in crew size, but we were not able to find the "before" data in the cities surveyed that had transitioned from crews of five to four.<sup>18</sup>

The alternative to staffing engine companies with five is to use four: an officer, an engineer, and two firefighters. If the question is "Can Chicago run with four individuals on engine companies," the answer is yes, and it is done to some extent almost daily. The collective bargaining agreement allows 30 variances a day, and this frequently results in the reduction of some engine companies from five- to four-person staffing. Usually the reduction is taken from engine companies because of the consensus that the ladder trucks require the full five-person complement.

TriData surveyed big-city fire departments using four-person engine crews fire departments to determine how they assign tasks upon arrival (see Table 4.9).

<sup>&</sup>lt;sup>18</sup> This is important enough to merit further study. Some large cities like New York and Philadelphia did not used to report dollar losses, and some still don't. There may be data on whether the percent of fires confined to room of origin increased, but we have not found that either for the "before" periods.

	Philadelphia	Washington DC	Phoenix	Kansas City MO	San Francisco
Officer	Command activity Stretch line	Command activity Advance line	Command activity Advance line	Command activity	Command activity
Driver	Operate pump Water supply	Operate pump Water supply Assist with hand line	Operate pump Water supply Assist with hand line	Operate pump (Note: Attack is off the tank.)	Operate pump Water is supplied by 2nd- in engine
Firefighter #1	Assist driver Stretch line	Water supply	Water supply	Stretch line	Stretch Line
Firefighter #2	Stretch line	Stretch line	Stretch line	Stretch line	Stretch line

 Table 4.9 Typical First-In Engine Company Activities in Departments

 with Four-person Engine Companies

In most cases with four-person staffing, the driver/pump operator is on his or her own to assure a water supply. (The crew can start applying water to fire by drawing from the on-board water tank before the engine is hooked up to a hydrant.) In the event he or she gets no help, they either haul the hose line back to the hydrant themselves and hook it up, or wrap it around the selected hydrant and radio in for another responding unit to pressurize it. In San Francisco they leave water supply entirely up to the second-in engine company. Another alternative is for the ladder company, if they arrive second, to assume the water supply function as a first task. The supervisor of the engine company meanwhile is assessing the situation, making his or her report and giving instructions to the rest of the crew. The two firefighters are stretching the appropriate hose line. These tasks take somewhat longer to do than with five-person companies. However, considerations favoring the use of four-person crews include the following:

- Four-person crews are significantly less expensive than five-person crews. Reducing one position per engine company in the CFD would reduce costs by about \$33 million (98 companies x 4.5 staffing factor x \$75K average loaded salary).
- Other major cities, some with similar construction and geographical considerations, have been operating with four-person crews for quite some time without reporting major problems or significant increases in losses. However, there has been no systematic study of the losses when a four-person company is first to arrive vs. a five-person company because of poor data. Most 9-1-1 systems do not track the staffing of companies, only the number of units at an incident.

- The collective bargaining agreement allows the CFD to operate from time to time at present with four-person crews, so most engine crews are familiar with the adjustments that must be made when staffed with four as opposed to five. (Also, fire losses have continued downward even though some four-person staffing is being used.)
- The response times in Chicago for the second arriving unit are good. This means that additional help is readily available in most cases.
- Response alternatives such as sending additional units to the initial response help in accomplishing the NFPA "two in/two out" recommendation. Chicago already has increased the size of its initial dispatch.
- A slight redeployment of resources from suppression to prevention, ambulances, and other aspects of the department probably would yield higher overall effectiveness in terms of reduced casualties and losses than maintaing five-person engine staffing.
- For the non-fire calls, which are the majority of engine company calls, four-person crews are entirely adequate.

All things considered, the decision on four vs. five per engine company is a close call.

**Recommendation 4.4:** Consider using four-person engine companies in areas of the city with bungalows (detached style family houses) and low structural fire incidence, and five-person companies elsewhere. Five-person engine companies are desirable in freezing winter weather or heat of summer, especially in areas likely to have heavy work, such as high-rise housing projects. The savings from slightly backing off on engine company staffing could be used elsewhere to meet shortages in critical functions that may have a bigger impact on overall effectiveness.

**Recommendation 4.5:** More flexibility can be introduced in the use of variances, especially in spring and fall seasons, in low-moderate risk areas of the city, and for engines housed with ladder companies. There is no compelling reason to limit the number of variances to 30. There could easily be twice as many variances without significantly affecting losses, though one must be prepared to accept an occasional fire where it might make a difference. Overall, engine companies that have to operate on their own for longer periods of time should be favored in assigning fiveperson crews. The current practice of taking variances from engine companies rather than ladder companies makes sense. But there is not a critical need to bring back firefighters on overtime to fill the fifth position in many situations, such as in stations where an engine is co-located with a ladder and they respond together. In very hot or cold weather, the larger five-person crews are highly desirable, and it would be better to schedule leave so that fewer firefighters are absent during these periods. It should be left more to the judgment of senior management as to when fill-in people are needed.

## C. Shift Schedules

This section discusses the appropriateness and efficiency of the firefighters' shift schedule, and some possible alternatives. At present the Fire Suppression and Rescue firefighters are on a 24hour shift, with one day on followed by two days off and an extra day off after every fifth working shift. Paramedics who staff the CFD ambulance work 24 hours on, 72 hours off, with no Daley Days. Their shift is discussed further in Chapter V, Emergency Medical Services.

Readiness to respond to emergencies is required 24 hours a day. Fire departments across the nation use a variety of shift schedules to provide that 24-hour response. The type of shift schedule affects the number of firefighters needed and their efficiency, and hence the cost and effectiveness of the fire department. No single shift schedule has proven to be *the* optimum – several work well – but some have been proven clearly less than optimal.

### Current 3-Platoon, 24-Hour Shift

Firefighters assigned to fire suppression (and some other activities) currently work a 3-shift (or 3-platoon) system, in which they work a 24-hour shift, followed by 48 hours off. This shift schedule unadjusted would result in a 56-hour average workweek. As in many other jurisdictions with similar schedules, the firefighters are provided an additional day off every fifth on-duty shift. This is known as a "Daley Day" in Chicago, and would bring the workweek down to a 48-hour average (not counting leave). The actual average hours worked per week are 43.7, with certain other time off averaged in (but not vacations or sick leave).

A typical three-week shift schedule for a Chicago firefighter will look something like the following; the shaded days are the days worked:

Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.	Hours Worked
24			24			24	72
		24			Daley Day off		24
	24			24			48

24-on, 48-off Shift with Daley Days

48 avg.

Most large city fire departments in the United States use a 24-hour shift, with various on-duty and off-duty cycles. (A 1997 survey by Chicago's Budget Office found that 19 of the 25 largest U.S. cities use a 24-hour shift for firefighter staffing, with either a 3-platoon or a 4-platoon system.) They include Los Angeles, Houston, San Francisco, Washington, D.C., St. Louis, Indianapolis, Phoenix, and Seattle. New York, Philadelphia, and Boston – some of the cities with types of structures and structural density most comparable to Chicago – are among the exceptions.

Fire department work is unlike that of any other municipal department, including police. During a single shift, firefighters perform a wider array of activities than probably any other service: heavy physical labor such as raising ladders, hauling hose in the cold of winter or in the heat of summer under high stress; practicing firefighting skills; making life and death decisions in emergency medicine; or inspecting properties. A typical 24-hour shift in a firehouse in almost any large city in America, would (or at least should) include most of the following activities for the entire company. These routine activities could be interrupted at any time by emergency calls. Times are approximate.

- *Morning Line-Up (15 to 30 minutes)* Held at the beginning of the shift each morning, similar to a police roll call. During this period station officers assign tasks for the day, review daily assignments, process timecards including overtime forms, and communicate any orders or procedural changes from the Chief's office. In the CFD, Battalion Chiefs are required to do roll call checks in two of their battalion's stations each evening; Deputy District Chiefs must do two in their District each evening.
- Apparatus and Equipment Checks (1 hour) The first activity of the day consists of checking the engines or trucks and their associated equipment. Firefighters check their vehicle's motors, oil, tire pressure, and inventory of emergency medical equipment. They check their self-contained breathing apparatus, radios, and other emergency equipment. Ladder companies check the operation of their hydraulic aerial ladders. Minor repairs may be made at this time, such as changing broken light bulbs or adding oil to a motor. Needs for more major repairs are documented and set aside for the appropriate vendor or technician to fix. The vehicle may be taken at this time to the shops for maintenance and a back-up vehicle retrieved.
- *Small Tool Maintenance (1 hour)* After the vehicle and equipment checks, maintenance may be performed on small tools, such as replacing chain saw blades that might have been used during the prior shift, and overhauling small motors on gasoline-powered fans or equipment such as the "jaws of life."
- Station Cleaning and Maintenance (1 to 1 ½ hours) Unlike most other government employees, firefighters are responsible for the daily maintenance and janitorial upkeep of their job site. Firefighters may clean toilets and showers, dump garbage, wax floors, change air filters, and conduct a myriad of other tasks for upkeep of the fire station. They often make minor repairs to stations (e.g., covering a broken window) while awaiting "official" maintenance.
- *Firefighting Tactics and Drills (1 to 2 hours)* Usually on a daily basis, firefighters have some type of training or drill. It may be on basic skills to maintain operational readiness, such as advancing and handling hose lines, deploying ground ladders, or practicing how to conduct searches for victims in buildings on fire. Firefighters may also practice pumping fire engines, using aerial ladders, or advanced rescue techniques, such as automobile extrication or confined space rescue. Crews on one vehicle (e.g., the engine) may be cross-trained on the other (e.g., the ladder truck). They may practice salvage techniques such as the use of tarpaulins. Firefighters also review their area of response, help to teach new firefighters the response routes, and review hazards in the area, such as temporary construction sites where blasting materials might be stored, where excavations might be taking place, or where roads may be blocked.

- Building Inspections and Pre-Fire Surveys (Some days 1 hour) During the down time between emergencies, firefighters may inspect buildings in their area for fire code violations. Each CFD company has a monthly assigned quota. They may also informally conduct pre-fire surveys in which they walk through buildings to identify various hazards that might be present or that might complicate rescue efforts during an emergency.
- *Physical Training (<sup>1</sup>/<sub>2</sub> to 1 hour)* Most firefighters exercise for brief periods during the day. A firefighter's physical training may consist of lifting weights, running on a treadmill in a fire station, or running a few miles at a local high school track as a company.
- *Fire Prevention Education (Some days 1 hour)* On some days, a fire company may conduct public safety education, such as leading tours of the station or giving fire safety presentations in local schools.
- *Emergency Response (Time varies)* The entire firefighter's day is built around and subject to being ready for an emergency response. The time taken by an emergency response includes the time for turnout from the station and travel to the scene, the performance of the service, the time it takes to return, and the time to get the company ready to respond to another call. The time spent on each emergency response varies, but could be 20 minutes to investigate and clear a false automatic fire alarm, 45 minutes for assisting an EMS crew with a heart attack victim, or several hours for a working building fire. Many calls are dealt with in only a few minutes, and in some cases fire units are turned back before they ever arrive on the scene, when the first unit signals that there is no need for them. However, even a short run causes a discontinuity in doing the routine tasks, which must be picked up again when they return.
- *Routine Recertification (Time varies)* On a regular basis, firefighters must be recertified in various occupational certifications. Typically, these training sessions take place on a monthly basis, or at certain times during the year. This type of training includes CPR recertification, Emergency Medical Technician recertification, OSHA hazardous materials awareness training, OSHA hazardous materials operations training, OSHA bloodborne/airborne pathogens training, NFPA 1500 mandated 24 hours annual live-fire training, and others.
- *New Training (time varies)* Throughout the year, firefighters of different experience levels take courses in advanced practices, such as automobile extrication, advanced hazardous materials mitigation, confined space rescue, rope rescue, water rescue, building collapse rescue, trench rescue, and incident command and management. Officers and officer candidates may also take course in personnel management, leadership, tactics, and administration. Training may be at the station, at the Fire Training Academy, or at another location outdoors or indoors.
- *Paperwork* After each run and for many other activities, the company officers have to complete incident reports, logs, and various other paperwork.
- *Meals* Firefighters prepare and eat two to three meals each day in the station, plus some snack times.

• *Recreation and Relaxing* –Firefighters often watch TV or otherwise relax between other duties. After 6 p.m. firefighters theoretically are permitted to sleep until the end of the shift. Chicago is a busy fire department and it is usual for companies to have to respond to multiple calls at night. It is rare that one gets a "civilian" night's sleep. There are usually one or more calls between 11 p.m. and 7 a.m. The EMS units typically receive many more calls than the fire units at night (as well as during the day).<sup>19</sup>

The *advantages* of a 24-hour shift include the following:

- Allows companies to perform more tasks with more continuity in a single work period.
- Reduces likelihood of firefighters being out on a call at the time of a shift change, which requires overtime to keep them at the scene. (With an 8-hour shift, there are three times a day when this can occur.)
- Simplifies personnel management because staffing adjustments are only needed for one shift change per day (vs. three per day with an 8-hour shift).
- Permits firefighters considerable rest time between shifts to recover from physical labor, especially if involved in a working fire or significant rescue incident the previous shift.
- Allows 48 hours or more for detoxification after exposure to toxic chemicals, which range from carbon monoxide to such things as hydrogen sulfide and hydrogen cyanide. Despite improvements in breathing apparatus and protective gear, some of these chemicals are still inhaled or absorbed through the skin.<sup>20</sup>
- Most firefighters prefer a 24-hour shift, leading to improved morale and productivity. It allows for supplemental jobs and a better lifestyle.
- More hours are accepted in the average workweek than under an 8-hour shift, essentially in exchange for being allowed to sleep between calls at night. This reduces costs.

*Disadvantages* of the 24-hour shift:

- Somewhat more fatigue toward the end of the shift, especially for units with high EMS call loads.
- Perception of citizens that firefighters "hardly work," with much time spent sleeping, watching TV, or otherwise not overtly productive.
- Slightly slower turnout time (on the order of 15-30 seconds) during sleep periods.

<sup>&</sup>lt;sup>19</sup> Of 176,949 incidents requiring an engine or ladder company response in 1998, 18.1 percent or 31,971 were between the hours of 11 p.m. and 7 a.m. Divided by 365 days, this averaged almost one during sleeping hours every night in every fire station, not counting calls to the EMS units. For EMS units, the average is closer to 3 per night. Some stations are busier than others, and have a much higher rate of calls at night than the average. <sup>20</sup> To make the point clearer: police in Chicago are allowed three days off if they enter a building with a fire, to

<sup>&</sup>lt;sup>20</sup> To make the point clearer: police in Chicago are allowed three days off if they enter a building with a fire, to ensure they detoxify.

- When ill or injured for one day, a firefighter misses 24 hours of work (but conversely, a firefighter with an illness or injury that requires several calendar days to recuperate following his shift may recover on routine scheduled days off, without using sick leave).
- Continuous training is difficult for multi-day training modules, as no two consecutive days are worked.
- Less continuity for tasks that require multiple consecutive days to complete.

## 8-Hour Fire Department Shift

Many people wonder whether firefighters would be more productive if they had an 8-hour shift, like police and other workers. An 8-hour shift schedule would put firefighters on a more traditional 40-hour workweek, with three shifts needed in every day. In 24 hours, a station would be covered from, say, 7 a.m. to 3 p.m. by one platoon, from 3 p.m. to 11 p.m. by a second platoon, and from 11 p.m. to 7 a.m. by a third platoon. A fourth, or floating platoon may be used to fill in during days when the company was scheduled off, or days off could be covered by individuals or whole relief crews assigned to the same shift.

The scheduling of the regular shifts is straightforward, but the assignment of the floating or relief crews in an 8-hour shift schedule is complex. The problem is that weekends need to be covered just like weekdays, 24 hours a day. You cannot have three groups working neat 40-hour, Monday through Friday shifts, and then an assortment of people covering the 48 hours on Saturday and Sunday.

The common perception that an 8-hour shift will provide more productivity turns out not to be correct, because of some fundamental problems with the complexity of staff scheduling it requires and the lack of any real advantage – one cannot use the night hours productively. Actual experience with 8-hour shifts revealed many problems. The 8-hour schedule increases costs and has a negative impact on productivity.

Below is a summary of the pros and cons of the 8-hour shift:

- <u>Length of Workweek</u> The 8-hour shift provides a 40-hour workweek; the 24-hour shift provides a longer average workweek, 44-48 hours, depending on the Daley days added. The extra time to be covered requires more firefighters in the department, or more overtime.
- <u>Use of Night Hours</u> What many people think of as the prime benefit of an 8-hour shift is more effective use of staff during night hours, from 11 p.m. to 7 a.m., when firefighters would work instead of sleep. However, the nature of the job limits the type of work that can be conducted during this time period. At night, firefighters can't conduct building inspections or pre-fire surveys because the businesses are closed. Likewise, there is no

public fire education activity to conduct. There is no analogy of fire patrols to police patrols: patrolling with fire engines generally would just add wear and tear and increase noise.

There are limits on the type of training that can be conducted at night. Much fire department training is noisy and can't be done near areas where citizens are sleeping. Likewise, while an 8-hour shift may allow for constant use of the training academy for a limited number of companies, this pulls companies away from their response districts during the night periods when quick response will have the most impact in saving lives. Therefore firefighters still must spend most of the downtime at night between calls waiting for emergencies.

- <u>Use of Evening Hours</u> An advantage of 8-hour shifts is that more prevention work can be done in the 3 p.m. to 11 p.m. shift than is done now. There are many businesses such as theaters, bars, nightclubs, restaurants, sports arenas, and even nursing homes where evening inspections are potentially of more value than day inspections. However, these inspections should be done under a 24-hour shift, too.
- <u>Use of Officer Time</u> An 8-hour shift will reduce productivity for staff officers. Almost triple the time would be spent on staffing adjustments, because there are three shift changes in a given 24-hour period instead of one.
- <u>Awkward Fill-Ins</u> Problems will be created for the swing or floating platoon that must fill in when companies are off duty, such as weekends, because the 8-hour shift does not lend itself to uniform staffing over a 7-day period. The fire department floating personnel would have to move from company to company on various days of the week more than they do at present, which reduces productivity and accountability, and the efficiency and safety of operations at emergencies. It is not possible for relief crews to be as familiar with the response areas or local hazards as are the local crews. Companies will not be able to operate as cohesively as a unit if they are working with different people every day. Relief personnel are less accountable to any single officer or battalion chief because of the frequency with which they move from company to company to company.
- <u>Maintenance Redundancy</u> Federal law mandates that drivers of class B trucks (engines and rear mount aerials) and class A trucks (tiller ladder trucks) conduct thorough inspections before driving. Maintenance checks would be performed three times a day instead of once.
- <u>Administrative Burden</u> More personnel will need to be managed, adding to the administrative costs of the fire department and other City agencies, such as Personnel. More time every day will be devoted to staffing issues, such as overtime, filling in for sick personnel, and coordinating training and other functions. Management of the floating shift and development of floating personnel is difficult. There are few management advantages to an 8-hour shift, and significant disadvantages
- <u>Recovery Time</u> Firefighters working an 8-hour shift lose the benefit of recovery time between shifts from minor injuries such as strains and sprains. This could result in further, more serious injuries and more use of sick leave.

- <u>Detoxification</u> Firefighters will not have the benefit of significant detoxification time between occupational exposures to hazardous chemicals.
- <u>Sick Leave</u> In Kansas City use of sick leave increased 60 percent among firefighters and 130 percent among officers when they implemented the 8-hour shift referenced below. Sick leave abuse and general leave use may increase from employee dissatisfaction, as well as from other factors.
- <u>Costs</u> Required staffing increases for an 8-hour shift would add \$27 million to the annual operating budget (see Appendix A: Cost Comparison of Alternative Shifts). Overtime costs are likely to increase with an 8-hour schedule, both from firefighters held on the scene at emergency incidents across a shift change, and covering for absentees, such as last minute sick-leave and AWOL personnel. Significant one-time costs may be incurred for employees who retire rather than switch to an 8-hour system, resulting in unplanned financial pay-outs for unused leave. (This does have a positive side of opening new positions at lower cost.) The costs of hiring and training 360 to 550 new hires to fill 8-hour staffing also needs to be considered.

*Experience with 8-Hour Fire Department Shifts* – A few cities tried using 8-hour fire department shifts in the 1970s. They included Seattle (WA), Toledo (OH), Placentia (Orange County, CA), and Kansas City (MO). All of these departments abandoned the 8-hour shifts within a few years because of rising fire department costs, lower productivity, and poor morale. A brief summary of their experience follows:

- <u>Placentia</u> The city went to an 8-hour shift system in 1974. They had a 100 percent increase in the number of personnel, a high turnover rate of employees (at one point all of the original city firefighters had left, leaving only three Captains remaining). Morale dropped, personnel costs increased, and the city and firefighters became involved in several lawsuits. Citizens complained because of the noise from night training.
- <u>Toledo</u> Firefighters tried an 8-hour shift in 1975. They experienced staffing problems, labor-management disputes and increased overtime costs. Injuries went up 400 percent from prior levels.
- <u>Kansas City</u> For four years, between 1977 and 1980, Kansas City was the last major metropolitan fire service to try an 8-hour shift schedule. They had a day shift (7 a.m. to 3 p.m.), an afternoon shift (3 p.m. to 11 p.m.), and a night shift (11 p.m. to 7 a.m.). Each shift worked all seven days, but no firefighter worked more than five days straight. Days-off were assigned by whole company, based upon the seniority of their station officer. Companies that were off duty were covered by floaters that consisted of personnel and officers with the least seniority. Rotation between day, afternoon, and night shifts occurred every three months.

Upon the switch to the 8-hour shift, many firefighters retired, resulting in an unexpected surge of payouts for unused leave. Over 400 firefighters had to be hired to fill spots vacated by retirees as well as the additional positions required to staff the new schedule. Overtime costs increased due to both the constant changing of shifts throughout the day, increases in sick leave use, and sick leave abuse. Injuries to firefighters increased, due to

lack of recovery time between shifts, especially shifts with a fire or other significant incident. Scheduling was described as "chaotic," especially efforts to schedule floating or relief companies that would fill in during the two days when the regular crews were off-duty.

Though the beds were removed from the fire stations, night activity remained limited for reasons previously cited. Firefighter morale plummeted. Overtime costs were 227 percent greater than budgeted. The fire department budget expanded 59 percent (from \$17 million in 1976 to \$27 million by 1978). Firefighter injuries increased by 60 percent. Continued training virtually stopped because the training academy was overwhelmed with trying to keep up with training new hires.

In 1980, Kansas City abandoned the 8-hour shift, first in favor of a seven-platoon 10/14 system, then a traditional four platoon 10/14, and eventually back to a 24-hour shift.

#### 24/72-Hour Shift and Other Alternatives

There are several shifts other than an 8-hour shift that deserve consideration. Alternatives that have been successful are the 24/72 shift, the 10/14 shift, and the 9/15 shift.

*The 24/72 Shift* – A 24-hours on, 72-hours off schedule is shown below. It averages 42 hours per week. This is the schedule currently used by the CFD paramedics.

Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.	Hours Worked
24				24			48
	24				24		48
		24				24	48
			24				24

24/72 With Elimination of the Daley Day

42 avg.

The 24/72 schedule is generally similar to the 24/48 off in its advantages and disadvantages. We think it is attractive to consider, especially to have paramedic and firefighter schedules coincide. Pros and cons of the 24/72 shift are as follows:

*Advantages* of the 24/72 schedule compared to a 24/48 schedule:

- Greatly simplifies personnel scheduling vs. 24/48 shift, because of not having to deal with Daley days.
- Improves ability to supervise: the same people appear each shift without substitutes for Daley days an important consideration for improving human resource management.
- Improves coordination with EMS; both will work the same shift.

- Increases time off for rest and recovery from minor injuries between shifts.
- Increases time off between potential toxic exposures with the potential to reduce current sick leave and lay-up usage (as was the case for the paramedics).
- Improves employee morale.
- Likely to reduce lay-ups; EMS has had good experience with this shift.

Disadvantages of the 24/72 schedule:

- Increases firefighter salary costs by 2 percent or \$5 million (See Table 4.11) due to decreased average workweek (which may be offset in part by fewer lay-ups and less use of sick leave).
- Slightly delays training that takes over several days to accomplish because firefighters work every fourth day instead of every third; this is offset by increasing the likelihood that all personnel will be present for the training.
- Makes it more difficult to convince personnel to take daywork (M-F) staff assignments.

The 10/14 Shift – A few large municipal departments (Philadelphia, Pittsburgh, Baltimore, and Boston) use a four-platoon system with a split 10/14 shift. Under these schedules firefighters work a series of day and night shifts, e.g., two 10-hour day shifts followed by two 14-hour night shifts, followed by 96 hours off. New York City works a 9/15 split. A 12/12 shift would have much of the same character and costs. Firefighters spend most of the night shift sleeping. The schedule 10/14 nominally averages 48 hours a week, but the actual average hours worked is usually reduced further by the equivalent of Daley days. The shift is diagrammed below:

Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.	Hours Worked
10	10	14	14				48
	10	10	14	14			48
		10	10	14	14		48
			10	10	14	14	48

10/14 Shift Schedule

48 avg.

*Advantages* of the 10/14 schedule compared to a 24-hour schedule:

- More continuity of training, because the shift comes to work four days in a row.
- Less fatigue than toward the end of a 24-hour shift.
- Firefighters can be home part of every day to attend to family matters.

*Disadvantages* of the 10/14 schedule:

- Fatigue and burnout builds over several consecutive workdays. Many firefighters feel better by working for 24-hours and then having at least two days off to recover, versus having to work several days or nights in a row and then have to adjust to changing from a day shift to a night shift.
- Twice the time spent on start-up/phase-down time at the start and end of the two shift changes per day.
- Slightly increased overtime costs due to increased number of shift changes.
- Less time to heal wounds, strains, sprains, and to detoxify between consecutive shifts.
- Being away from home consecutive nights can cause home distress. (This is a different problem from the 24-hour shift; each has its advantage and disadvantage.)
- Training the entire department takes longer. Instead of providing uniform training to the entire department in three days, as with a 24-hour shift, training has to be spread over a longer period, because the shifts don't work consecutive days. A new policy can be implemented faster with the 24-hour shift.
- More Battalion Chief and Aide time is spent on staffing issues and adjustments, because two shifts are working each day.

The 9/15 shift is used by New York City (and by British fire brigades). It is close enough to the 10/14 shift not to warrant separate analysis.

**Summary: Shift Comparisons** – While there has been no definitive research to prove that one type of shift clearly produces the highest level of productivity, the 8-hour shift clearly is the less desirable from both management and labor standpoints, and there are good reasons to consider a 24-on, 72-off shift. What seems more important than the type of shift is how productively the time is used. There are many ways to increase productivity of the line companies, as are suggested throughout this study.

The numbers of personnel and costs associated with three different shift schedules are summarized in Table 4.11. Details are given in Appendix A.

	Current 3 Platoon 24/48 shift with Daley Day	3 Platoon 8-Hour Shift	4 Platoon 24/72 shift without Daley Day
Staffing per company	5	5	5
Number of companies	158	158	158
Staffing factor*	4.5002	4.95	4.5842
Firefighters required	3,555	3,911	3,622
	_	(+356)	(+77)
Costs	\$ 269.1 M	\$ 296.3 M	\$ 274.4 M
Change from current	_	+ \$27.1 M	+ \$ 5.3 M
personnel costs	_	(+ 10.0 %)	(+ 2.0 %)

 Table 4.11 Cost Comparisons for Various Shifts

\* Number of firefighters needed to fill each on-duty position 24-hours a day, year round.

**Recommendation 4.6:** The Chicago Fire Department should consider switching firefighters to a 24-hours-on, 72-hours-off schedule as has been adopted for paramedics. The additional cost of the 24/72 shift probably would be at least partially offset by reduced sick leave and lay-ups. Leaving schedules as they are is the second best approach. The Department should not consider an 8-hour shift, for the reasons outlined above.

# D. Safety

There are some occupations more dangerous than firefighting, but not many. Risk is the everyday companion to all who pursue the fire service as a career. Firefighters go into some of the most hostile environments while others are exiting. Safety on the fireground, safety in training, and safety in the fire station should be a high-priority in any fire department.

There are several NFPA standards dealing with safety, most notably NFPA 1500, which deals with protective equipment and safe practices, and NFPA 1521, Fire Department Safety Officer. This publication has become the bible for those who fill that position, partly because it is a sound document, and partly because, if not followed, the specter of liability looms large. What he or she was wearing or doing at the time, or what training had or had not been provided will be of concern.

The activities needed for a credible fire department safety office are clear and straightforward, and are succinctly spelled out in NFPA 1521. By meeting the recommendations in that standard, a fire department will have gone a long way toward ensuring a safe work environment and, at the same time, the construction of a litigation defense. The possibility of lawsuits entered against a department should not be the primary motivating factor in instituting a safety program – rather, the protection of human lives – but it is something to at least keep in mind and prepare for as best one can.

**Organization** – The Chicago Fire Department has a Safety Division headed by a District Chief with the title of Director of Safety, who reports directly to the Fire Commissioner. The staffing of this unit consists of a Deputy Chief, a Battalion Chief, and two civilian assistants.

The high level on the organization chart indicates the importance of the safety function. Having it outside of the FS&R Bureau also gives it autonomy and some independence of a viewpoint – a check and balance. It could remain there, but we think it may get less adequate attention in the Commissioner's office than if placed elsewhere because of the large span of control of that office. We therefore recommended in Chapter II that the safety function be moved to Operations. It can be closely coordinated with operations there and hopefully not lose either its objectiveness or its visibility. Fire Departments assign their safety office to either place. We are less concerned where it is assigned than how the safety program operates.

**Safety Officer** – This position and office requires aggressiveness and persistence in accomplishing the safety mission, because safety may be neglected in the heat of other issues. Safety demands a proactive attitude. The departmental Safety Officer's voice must be heard.

The Safety Officer in a department as large as Chicago is a key player and should be recognized as such. Some of his or her recommendations might be costly, but that is the cost of doing business, and complying might be more cost effective in the long run than lost time from work and the cost and settlements from litigation.

The CFD Safety Officer is guided by General Order 89-005 entitled, Department Safety Officer (dated August 1, 1989 and amended in April of 1990). The duties of the departmental Safety Officer are closely related to those in the NFPA 1521 standard. As the basic CFD Safety Officer document was issued in 1989 and the most recent edition of NFPA 1521 is dated August 15, 1997, a comparison for updating purposes should be made. An annual review and revision, where appropriate, of all other safety related General Orders should be done as well. In the area of firefighter safety it doesn't take long to become outdated.

#### Recommendation 4.7: The CFD General Order regarding the Safety Officer should be reviewed against the latest edition of NFPA 1521, Fire Department Safety Officer and updated where appropriate on a yearly basis.

**Safety Office Staffing** – A review of the CFD Department Safety Officer General Order prompts the question as to whether adequate staffing is in place to accomplish the intent of the order and to address this vital function properly. There are 15 individual items or categories listed under "Duties and Responsibilities." At present, the two uniformed firefighters assigned to this office are occupied primarily with coordinating activities of the office and overseeing the Commissary. There are other important safety related functions that are just touched on or passed on to other units in the

department for action. For instance, an in-depth review and analysis of the 549 duty injuries and 532 vehicle accidents sustained by members of the CFD in 1998 requires a large block of time. At present no real analysis is being done in the Safety Office of either accidents or on-duty injuries. The reports on both come into this office and some information is captured, but the bulk goes elsewhere, where little or no analysis is done either. The professional analysis of the safety data by a trained safety-conscious individual who can identify trends and/or recurring categories of problems is vitally important in the development of corrective or preventive programs, and for evaluating current programs. Not enough analysis is being done.

An augmented staff is needed in order to make the Safety Officer a viable unit. The office might be structured as outlined in Table 4.12.

Rank	Responsibility
District Chief	Overall direction
Battalion Chief	Safety program coordinator and developer of specifications
Captain	Protective clothing and oversight of commissary
Lieutenant	Safety data analysis and investigation

 Table 4.12 Proposed Safety Office Staffing

In addition to these uniformed ranks, appropriate clerical support would also be needed. There seemed to be adequate clerical staff to support this function if the current staff did not have to take on extra non-safety duties.

This office should maintain a close liaison with Local 2's Safety and Health Committee. Safety improvements can be implemented faster when there is consensus.

**Recommendation 4.8:** The Safety Office should be increased by two officers. A periodic review of personnel needs should be conducted in order to ensure adequate staffing levels to meet current needs. The proposed increment would cost about \$150,000. Preventing 2-3 lay-ups or one lawsuit would more than pay for the increment, and there is every prospect to do so.

**Protective Clothing** – Change should never be made just for change sake, but when you are not in step with all those around you it is worth a look at why they are doing what they are doing. The CFD is one of very few fire departments that still uses long canvas type protective coats and high rubber boots.<sup>21</sup> NFPA Standard 1971, Protective Ensemble for Structural Fire Fighting, states that "the elements of the protective ensemble are coats, trousers, coveralls, helmets, gloves, footwear and interface components." Another reference, the *Essentials of Fire Fighting, 4<sup>th</sup> Edition*, published by the International Fire Service Instructors Association, says that "All firefighters operating at an emergency scene must wear full protective equipment suitable to that incident....Full protective

equipment for structural fire fighting consists of the following: ...Protective coat and trousers...." The CFD does not use protective trousers nor the shorter coats that go with them (called bunker gear).

The CFD has, to its credit, evaluated and tested this type of protective gear in the past, but its members concluded that they did not like it. However, the evidence is clear and compelling – bunker gear saves lives and prevents injuries. The fact that some firefighters "didn't like" the gear shouldn't stand in the way of adopting it.

One reason cited for keeping the current protective gear was the desire to keep boots for wading in deep water that is a frequent result of fighting basement fires. If the water is deep enough, nothing will adequately protect the individual from getting wet. And the frequency of these types of incidents is low enough that they do not outweigh the protection that "bunker" trousers provide. Another reason cited for the status quo is that the proposed new gear would hamper work on steep roofs. However, the challenges faced by Chicago's firefighters are not that different from those faced by others in the American fire service. Others have basement fires and steep roofs and have accepted the new generation of protective gear. Tradition has its place, but not in the selection of protective wear for firefighters.

Many fire departments across the nation have done exhaustive tests and evaluations regarding the new class of protective clothing. The end result was that the change was made from the old style, like Chicago's, to the new ensemble. Even the New York City Fire Department, a long time holdout, has gone to this type gear in the past few years. There is simply no valid reason why the CFD does not adopt this equipment.

The current protective gear worn by departmental members, specifically the coat and boots, *does* comply with Illinois Department of Labor standards. No attempt was made to compare standards, but if the greater number of fire departments have elected to comply with NFPA, Chicago would be well served to do so as well.

**Recommendation 4.9: The CFD should adopt structural fire fighting protective gear as outlined in NFPA 1971, Protective Ensemble for Structural Fire Fighting, and do it as soon as possible.** The legalities of phasing in this equipment as opposed to a one-time issue to all personnel should be explored, as individual jurisdictions have different ideas on this aspect of the issue. Some do it as a one-time capital cost; others phase in the gear over several years. A new concept to reduce the capital budget impact and possibly reduce life cycle costs is to lease rather than purchase protective equipment. Some large cities have done this recently. It would change or do away with the current nature of the commissary. Several major fire department protective gear suppliers have started implementing this concept.

<sup>&</sup>lt;sup>21</sup> San Francisco is the only other metro-sized department we know of.

**Professional Membership** – During the course of on-site interviews it was learned that the CFD is not represented in the Fire Department Safety Officers Association. This is a national organization whose purpose "…is to provide a forum for the exchange of ideas, concerns and information for safety officers and others involved in promoting safety standards and practice." Further, it fosters networking among individuals who share common safety interests. The advantages stemming from membership in this group should be readily apparent. For a fire department as large as Chicago's not to belong denies access to a wealth of knowledge and practical experience gained from years of first-hand exposure to all aspects of fire department safety. The CFD should be a leader in this field.

# Recommendation 4.10: The CFD Safety Officer should be enrolled as a member of the Fire Department Safety Officers Association, and encouraged to participate.

**Accident Investigation** – When a CFD vehicle is involved in a motor vehicle accident, three separate departmental entities are sent to the scene to investigate: the local Battalion Chief, the Deputy District Chief and the on-duty Field Safety Officer. The Chicago Police Department also prepares a report. All the CFD individuals involved prepare reports, and the Deputy District Chief recommends disciplinary actions if the case warrants it. In all but the most serious cases, this seems like overkill.

Battalion Chiefs have the knowledge and practical experience to investigate accidents involving fire department vehicles on their own. They are also fully capable of making recommendations as to whether or not discipline is indicated. However, senior chiefs say that the Battalion Chiefs often will not file reports finding fault with firefighters under them. If Battalion Chiefs are not willing to fulfill their responsibilities, they should not be allowed to continue as Battalion Chiefs, rather than ask higher level officers to fulfill the Battalion Chief's responsibilities.

The Deputy District Chiefs have enough on their plates so that the time used in routine investigations could be better used in other activities. Also, the individuals making up the Field Safety Officer roster for the most part have little special expertise for these investigations. We are not challenging their knowledge or professionalism but rather the need for their services in the more routine accident investigations. The more serious accidents such as those involving non-trivial injuries or multiple vehicle accidents should be responded to by the department Safety Officer or his representative, and do merit a team investigation. All accident reports should be reviewed by the Safety Officer.

**Recommendation 4.11:** The investigation of fire department vehicular accidents not involving serious injury should be handled by the Battalion Chief. The reports generated should be reviewed by the Safety Officer or his representative. If it is found that a Battalion Chief does not turn in an accurate assessment, he or she should be considered for demotion or remedial training. **Field Safety Officers** – All the individuals on the Field Safety Officer's roster have other full-time assignments, but only a few are related to safety. The role they play in accident investigation, fire response or hazardous material incident mitigation can be handled within the framework of the CFD Incident Command System (the latter is the method used to organize command at an incident of any kind). This could be as simple as adding a Battalion Chief to the assignment and designating him or her as the Incident Safety Officer. Battalion Chiefs might all benefit from taking safety officer training, either the two-day Health and Safety Officer (HSO) or two-day Incident Safety Officer (ISO) courses offered by the National Fire Academy.

If the Field Safety Officers are eliminated, as recommended above, it would be beneficial for the department to expand the present representation on the CFD Safety Committee to include all ranks from both the suppression and EMS side of the house. It would truly be a "users" group and their input would be both invaluable.

Recommendation 4.12: The position or designation "Field Safety Officer" and the function itself could be eliminated; the "safety officer" role can be filled by a Battalion Chief and incorporated into other procedures.

Recommendation 4.13: Review the make up of the present CFD Safety Committee and augment it with representation from various ranks.

## E. Special Operations (Hazmat, Rescue, Air Rescue, Boats)

As in most modern fire departments, the Chicago Fire Department provides an increasingly sophisticated array of emergency services beyond the traditional fire protection and Emergency Medical Services. These advanced services include:

- Mitigation and prevention of hazardous materials incidents
- Air/sea rescue (via helicopter with divers)
- Fire-rescue boats
- Technical rescue services (high-angle rescue, collapse, confined space, water rescue, etc.)
- Counter terrorism (shared with Emergency Management)

These functions are often referred to collectively as Special Operations.<sup>22</sup> Chicagoans can be proud of all of these services, but each needs some additional support. All of these functions are highly technical and require a great deal of training, special equipment, and logistical support to be

<sup>&</sup>lt;sup>22</sup> The term "Special Operations" is not currently used in Chicago but is used in many departments nationally; it would help to use this terminology for outside interchanges.

performed effectively and safely – well beyond the already demanding requirements of firefighting. The leaders of these specialized units need even higher levels of training, and must coordinate with regional, state, and federal agencies to share in networks of expertise and support. These units also require close coordination and support from the line fire companies; some line companies or selected personnel receive special training in these specialties.

At present, these functions report to diverse places in the organization. Air/Sea Rescue and Hazmat report to the Office of the Commissioner; Technical Rescue and Fireboats are under FS&RB.

These functions do not have very high numbers of calls, but when they are called, they are often critical for life safety or averting potentially huge losses. They need the attention of high level chief officers, which led to the earlier recommendation to group them under an Assistant Chief of Special Operations (a new rank) or a District Chief reporting to the Deputy Commissioner for Fire Suppression and Rescue. This will assure their having adequate attention.

**Recommendation 4.14:** Create a Special Operations organization within the Fire Suppression and Rescue Bureau, headed by an Assistant Chief (or District Chief) and supported by two DDCs (or BCs). This Assistant Chief should also be given responsibility for coordinating special apparatus and equipment, such as high expansion foam units and smoke ejectors. The Emergency Management unit might be placed here, too, or left under the Commissioner. One DDC should be assigned to the Hazmat function, the other to the Rescue function. Their duties would include planning, coordinating and monitoring special operations training programs in concert with the training division as well as coordinating activities with the operations division. Other duties would include development and review of operations procedures, development of equipment specifications, and accountability for testing and maintenance of special operations equipment. This is especially critical for tools and appliances such as lifelines, belts, connectors, and other rescue appliances.

### Hazardous Materials Program

Chicago is world class in its handling of hazardous materials incidents. Its experts have been called upon to testify in Congress and to provide advice to various federal agencies. On the organizational chart, the Hazardous Materials program formally reports to Emergency Preparedness, which in turn reports to the Commissioner. Directly reporting to the coordinator of the hazmat program are one Captain, two Lieutenants, three Engineers, and five Firefighters.

In day-to-day practice, the Hazardous Materials program essentially reports to, or at least closely coordinates with, the Deputy Commissioner for Fire Suppression and Rescue because most of the hazmat program implementation is done through line units under suppression, except for hazardous materials inspections, which are undertaken by the Prevention Bureau. However, the Hazmat units need to conduct walk-through familiarization inspections, something not being done enough. The results of the inspections by Prevention are not adequately shared with the Hazmat team; there is no formal mechanism for doing do.

The Hazardous Materials program responds to a wide range of incidents with one or more units from its "team." The team includes a special Hazmat unit (company), the four heavy rescue squads, eight cross-trained truck companies and ten cross-trained engine companies.

Most of the team engine and ladder companies are co-located pairwise in the same stations (with a few exceptions). This allows engine and ladder personnel to assist each other and share knowledge and training.

*Hazmat Units* – The full-time Hazmat unit (511) is stationed at Engine 22. It has a 1990 Spartan/Saulsbury vehicle staffed with one officer and three firefighters around the clock. It can be accompanied by Unit 511A, a tender with 500 gallons of 3-6 percent AFFF and other supplies. The tender is taken only to the larger incidents. The Hazmat unit has 16 level "A" protective suits, and is well equipped with a wide array of detection, research, and mitigation equipment.

The four heavy rescue squads, which primarily do technical rescue and firefighting, are crosstrained in hazmat. Each rescue squad runs with 5-6 personnel and carries four level "B" protective suits – enough for two teams of two people.

The eight "Hazmat team" cross-trained truck companies and 10 team engine companies have level "A" suits. The truck companies are considered the prime (first-due) responder to hazmat incidents with the engine companies used in support. The team trucks carry gas meters. Some of the firefighters assigned to a team company on a given day may not have hazmat training; substitutes are not required to have it – a significant issue.

The Hazmat unit (511) makes about 35 responses per month (420 per year) all over the city. They do not consider motor vehicle accidents, fuel or battery acid spills as authentic hazmat responses in their record keeping.<sup>23</sup>

There are a total of 150 level "A" protective suits available in the city for major disasters.

*Levels of Response* – The severity of hazmat responses are characterized as Level 1, 2, or 3. Level 1 responses are the least serious. They are small spills or releases, or investigations of possible hazmat incidents. Unit 511 plus the closest team truck, team engine, and Battalion Chief respond. Level 2 responses are incidents where chemical protective clothing is required. It gets the Level 1 response plus a team truck for decontamination and a team engine to assist the squad. Level 3

<sup>&</sup>lt;sup>23</sup> This needs to be considered when comparing Hazmat incidence with other cities, which often includes these more minor incidents in their Hazmat count.

responses are those most serious hazmat incidents in which evacuation of an area (e.g. a square block) is needed.

All ladder and engine companies in the city now carry CO detectors. These calls are not considered hazmat incidents; unless they are large scale incidents, they would not require any hazmat units or team trucks to be called.

*Hazmat Issues* – The single hazmat truck must respond all over the city, and can have quite a long response time. It has no back up when down for repair. Also, having a single unit means there is no "second strike" capability for dealing with two or more Level 2 or 3 hazmat incidents simultaneously. Hazmat calls often last for several hours, tying up the unit. There have been occasions where there are three significant hazmat incidents occurring at one time. Further, the Hazmat units are a key line of defense for counterterrorism attacks involving chemical or biological weapons. For a city as large as Chicago, they are an important part of risk management.

The present first-line vehicle is nearly 10 years old and has seen heavy service. It is not in good condition. While the vehicle was well planned and is highly functional, the state of the art has progressed far enough in the time since the last was purchased to permit significant improvements to the set-up of the vehicle.

It is difficult maintaining hazmat and rescue expertise because of the difficulty in finding adequate time to train. The units were said to be too busy to frequently spend the time to travel to the Training Center.

One of the great strengths of the Hazmat team is the depth of personnel resources; the central Hazmat unit, 511, is augmented by the 4 rescue squads, 10 engines, and 8 truck companies. However, not all personnel serving on those units (e.g. those temporarily detailed to it) are required to be Hazmat qualified. This could place the Hazmat team short of needed personnel in a critical incident. A minimum of 12 hazmat-qualified personnel are required for a level "A" entry, an incident where chemical exposure could result in serious permanent injury, or death. It also can be dangerous for the substitutes.

*Recommendation 4.15: Purchase new primary hazardous materials response vehicle.* It should incorporate design improvements with team member inputs.

**Recommendation 4.16:** Set up a second dedicated hazardous materials unit. It should be somewhere in the south central area, perhaps co-located with Engine 49. The second hazmat truck could simply be the current truck re-chassied and refurbished, at a significant savings over a new vehicle. The second hazmat company can be used for dual purposes: for hazmat incidents and also for support of rescues and firefighting (e.g., as an RIT unit) until it gets too busy. A less expensive,

less satisfactory alternative is to cross-train the team engine company to serve as the second hazmat unit.

Recommendation 4.17: Preferably all (but at a minimum four) of the personnel assigned, detailed, or working overtime at 511, E-22, the four squads, and the back-up Hazmat unit should have the appropriate specialized training. Rosters need to be maintained in each district with those qualified to be on a hazmat or rescue unit. At least four of the crew on each unit should have training for that unit's specialty.

**Recommendation 4.18:** A decentralized training system for hazmat and technical rescue should be developed on a shift/station level to augment the core training developed by the academy. More training can be conducted in the stations by instructors who travel to them. Also, core units could also be assigned some training role to relieve some of the time demands on unit 511, and the squads. Examples are TL63, T35, and T20. These units would not replace training conducted by the academy but rather relieve some of the burden of refresher training while instilling a sense of "ownership" and involvement in the field on the shift level. Coordination, administrative support, and quality control would be managed by the special operations chief. The part of training that requires just blackboards or videotapes can be done in the stations, which will save the specialty units from having to travel to the Academy and back. The trip is often longer than the class.

#### **Technical Rescue**

The CFD provides a full-range of technical rescue services. Its four rescue squads are trained in high-angle rescue, confined space, collapse rescue, and other specialties. Rescue Squad 1 has a still district in which it responds to fires because of the high population density where it is located.

For collapses, a collapse rescue truck is taken to the incident by Truck 2 and Engine 5, run out of Station 5. It carries the heavy-duty equipment not found on the ladders and engines, and is not staffed. The initial response to a collapse rescue brings six people on a rescue squad and ten on the engine and ladder companies. This may yield 12 people trained and rescue. The Chiefs interviewed noted that they need to be careful about using untrained people substituting for others on rescue calls, as is also the case at hazmat incidences.

A spare rescue squad unit is needed; a front-line unit should be retired and used as a spare while it still has useful life as a spare.

Uniformity of training, operations, and equipment accountability was observed as an issue. While the squad personnel and the core personnel of the collapse rescue truck at station 5 are proficient in operations, concern was expressed as to the consistency of training and the use of non-specialty trained personnel substituting for properly trained members. While any firefighter should be able to support specialty operations, it is an extremely dangerous practice to substitute untrained people in the prime, critical, specialized functions.

The recommendation above for hazmat addressed the above technical rescue issues, too.

#### Air/Sea Rescue

A helicopter operates out of Miegs field with divers for water rescues. Over 30 years ago, the Chicago Fire Department (CFD) placed a single engine, military surplus Bell UH-1B helicopter into service to provide diver insertion, water rescue, and rapid search capability. Since that time it has performed numerous life saving missions and has been a feather in the Fire Department's cap.

*Safety* – Air/sea rescue is a sophisticated operation where safety must be of paramount importance. The Air/Sea Rescue Unit has suffered only two recorded accidents in its history, and no lives were lost. Safety considerations in many aspects of the program generally are well thought out and the air/sea unit leadership and the crews generally believed they were operating in a safe environment. However, some areas need further attention. The pilots wear Nomex flight suits over their fire department duty uniform but do not wear leather boots. They instead rely on standard issue fire department foot wear, which is a low shoe. In the winter they wear a Mustang exposure suit in the event of a water landing, but flight helmets are not required, making the exposure suit moot if the pilot cannot safely egress the sinking aircraft due to a head injury. Eye protection (such as a helmet visor or similar) is not required even though open door operations are commonplace and allow introduction of foreign matter into the cockpit. Nomex gloves are not provided.

In the rear of the aircraft, the divers wear either a wet suit or a dry suit, and put on air tanks before entering the aircraft. Due to the limited space of the Bell 206 L-4, they must put on their fins while standing on the cross tubes outside the aircraft. (This issue is avoided when the Bell UH1-H is deployed.) Only one diver wears a radio headset, leaving the second diver to rely on hand signals for communication, not an efficient model for emergency work. Both operational aircraft are equipped with hoists; however, no airborne training of victim/diver extraction is practiced.

One aircraft, a Bell 206-L4 model, is equipped with salvage floats; the other, a Bell UH-1H model is not. The crews believed that the addition of salvage floats to the Bell UH-1H was imperative to increase survivability in the event of an accident; however, none of the crews have ever been trained in proper emergency egress procedures. The floats are viewed by the crews as safety equipment, while in reality they only prevent an inverted aircraft from sinking so that it can be salvaged to minimize replacement costs. There is a good chance that a helicopter that landed in the water with its floats deployed would invert due to its high center of gravity.

*Maintenance* – The helicopter maintenance program is very well organized and meticulous, thanks to the dedication of the highly experienced mechanic assigned to the unit. He is a one-man operation assigned to the Unit from the CFD maintenance shop. All of the daily maintenance and minor repairs are done on site during a regular day shift. A contract with a helicopter maintenance

facility in nearby Indiana is retained for parts supply, overhaul work, and complex repairs. The two aircraft currently in service are inspected in accordance with FAR Part 92 guidelines. A third aircraft in the inventory, but not in service, is inspected according to the military PHASE inspection schedule. The fuel system is maintained by the FBO contracted to Miegs Field. Signature Aviation refuels the Unit's aircraft and is responsible for the quality of the fuel. Maintenance records are excellent.

*Pilot Training* – Pilots are drawn from uniformed members of the department who have pilot licenses. They may have experience in rotor wing or may have a private fixed-wing license. A pilot is brought to the Unit and transitioned from fixed wing to rotor wing over a period of 3 to 5 years by one of the unit's instructor pilots. Average total flight time is less than 1000 hours. Each pilot logs approximately 25 hours a year as either a pilot or co-pilot. Few provisions are made for proficiency time in the aircraft due to budgetary restraints. The pilots' low flying time combined with limited aviation experience are a concern. In the civilian EMS and Rescue helicopter market, the major operators do not even consider applicants with fewer than 2500 hours of flight time in helicopters, regardless of total time as a pilot. The average EMS helicopter pilot in the U.S. logs approximately 400 hours a year as pilot-in-command (PIC). There is no formal pilot training program in place and mission-specific training is absent entirely.

*Diver Training* – Divers for the Air/Sea Rescue Unit are drawn from uniformed members of the department who are currently certified as divers. As is done with the pilots, divers may have limited experience in rescue diving and are transitioned through a modified "on the job" training program. No formal rescue diving classes are provided and each member relies for training on other members of the team or on classes that are taken on their own time. The divers assigned to the Unit are required to share equipment and suits from generic sizes on hand.

*Aircraft* – The Unit has three helicopters in its inventory. Aircraft One, a Bell UH1-B model, is very close to the end of its service life and has been pulled from the operations line. This aircraft was obtained from military surplus and is at a place where many of its components are due for replacement or refurbishment. The cost associated with refurbishing this aircraft is prohibitive when judged against the price to acquire new technology. This aircraft should be sold or traded.

Aircraft Two is a Bell UH1-H model that was recently refurbished, and is the most appropriate of the three aircraft for the mission profile. Equipped with a hoist and adequate operating space in the rear cabin, it is optimal for insertion of divers, rescue, and recovery of victims and divers. The only shortcoming of this aircraft is that it has a single engine, and the Unit's mission profile calls for extended over-water operations with long periods of hovering in ground effect when conducting hoist operations or inserting divers. In the event of an engine failure, few options but autorotation into the water are available. Aircraft Three is a Bell 206 L-4 model that was acquired in 1993 after one of the unit's aircraft was destroyed when it crashed into Lake Michigan during a rescue mission. It was selected at that time for its quick availability and reasonable cost. It is equipped with a hoist and has a very small cabin for the divers to work. This aircraft is equipped with salvage floats. Like the UH1-H, this aircraft has a single engine. It can carry less weight than the Bell UH1-H, and with the added weight of the hoist, the salvage floats, and four crew members in full rescue gear, the fuel load is limited, which restricts operational time to approximately 25 minutes.

*Regional Resources* – During the summer months, the United States Coast Guard assists in patrol of the lakefront with a helicopter. Additionally, rescue patrol boats from the CFD, USCG, and the Chicago Police are available. However, for nine months of the year, the USCG and the CPD pull their resources from the lake. The next closest rescue helicopter capable of diver insertion and hoist operations is the USCG aircraft approximately 90 miles northeast on the opposite shore of Lake Michigan.

Air Medical transport is readily available from two local operations in the Chicago area: the University of Chicago Aeromedical Network (UCAN) located in the south-central area of the city, and Loyola University LifeSTAR located in a near northwest suburb. The UCAN aircraft has recently (within the last 6 months) at the request of the Fire Department been authorized to operate within the city to transport patients to the hospital. Prior to this agreement, non-public safety or non-military aircraft were restricted from landing at "emergency" locations.

A limiting factor of air medical transport operations within the city is the number of tertiary care centers without helipads. In order for the patients to receive the highest level of appropriate care, specialty receiving centers such as Northwestern University Hospital (the regional spinal cord injury center) and many of the cities trauma centers need to build helipads to receive patients.

**Recommendation 4.19:** An aggressive training schedule that includes practice with the dive teams needs to be implemented for the air/sea rescue pilots. The number one consideration is to improve the safety of the Unit as a whole and to improve the quality of the pilots currently assigned to the Unit. The high performance environment of operating a rescue helicopter is compromised by the limited number of hours the pilots assigned to the Unit are allowed to fly. Also, a plan must be put in place to ensure the currency of each pilot. Low flying- time pilots are at a much higher risk of being involved in an accident. Each pilot should be required to fly a minimum number of hours that allows him or her to improve their proficiency under all circumstances (day and night flying, certain VFR weather conditions, navigation, diver insertion, hoist operations, search patterns, etc.). Pilots recently assigned to the Unit with considerable experience should be placed into the flight rotation so that the other pilots can benefit from their experience.

**Recommendation 4.20:** A formal diver training program should be developed to replace the current "on-the-job" training that now takes place. Ideally, the Air/Sea Rescue Unit could become the diver training resource for the CFD as well as the regional dive rescue teams and could offer state-of-the-art dive rescue training at its facility at Miegs Field. Short of that, trained dive instructors

should be used to provide mandatory annual training for the divers assigned to the Unit as well at the Squads in the city. Additionally, combined training exercises with the Unit and the Squads would improve operational safety and effectiveness.

**Recommendation 4.21:** The Bell UH-1B (aircraft number one) should be sold or traded. The Bell 206 L-4 (aircraft number three) is inappropriate for diver insertion and should not be used for that purpose; a twin-engine aircraft is needed. The Bell 206 can be used as a cost-effective pilot training aircraft or for aerial reconnaissance and non-rescue mission requests (fire ground command, photo missions, police assists, etc.). The acquisition of a twin-engine helicopter (e.g., Bell 412, American Eurocopter BK-117) more appropriate for the air/sea rescue mission should be considered in the future.

**Recommendation 4.22:** Air/Sea rescue should have access to a computerized weather system (e.g., DUAT). There is no formal, consistent means of obtaining updated weather forecasts. Decisions are made to accept or decline missions based upon the weather "out the window". A full weather reporting station is in the tower at Miegs Field, however it is rarely used. Pilots should check the weather on a recurrent schedule and/or before departing on a mission.

**Recommendation 4.23: The Air/Sea Rescue Units should undergo initial and then recurrent Cockpit Resource Management (CRM) training.** There is limited formal briefing of the flight crews. The sharing of aviation information is limited and often times it appears that the dive crews have no idea if the weather is flyable or if the aircraft are mechanically operational. This kind of information is needed to ensure adequate resource management in the aircraft. The CRM training is an outstanding approach to getting air crew, passengers, and ground crew to work together for safety.

**Recommendation 4.24:** An on-call aircraft mechanic is needed to back up the single mechanic being used. At present, if the aircraft is place out of service for a mechanical failure at night or on the weekend, the reserve aircraft is placed in service until the mechanic reports for his regularly assigned Monday-Friday shift. Also, if the aircraft requires major maintenance, the single mechanic performs this maintenance solo, often taking the aircraft out of service for an extended period that could be considerably shortened if a second on-call mechanic were available.

**Recommendation 4.25:** A contract for bulk fuel purchase should be considered., A contract agreement to purchase a specified number of gallons a month/quarter/year could save nearly 50 percent over current fuel charges. This is especially important to allow more tracking to take place. Local fuel suppliers provide bulk fuel purchase plans for civilian operators in the area, but the CFD pays full price for its fuel.

### Fireboats

The CFD has two fireboats to protect 24 miles of waterfront. One is designated Engine 58 and the other Engine 37. Both were acquired in 1949, making them fifty years old – an advanced age for fireboats. Their two main functions are marine emergencies and water supply. In 1997 Engine 37 was dispatched a total of 129 times, with 19 fire responses and 110 rescue and other non-fire responses. Engine 58 was undergoing extensive repair work during the period covered and had no

responses. Their maximum speed of 10 to 12 knots is satisfactory for fires but not for response to water emergencies.

In 1997 there were 14 water-related deaths, and the final toll for 1998 was expected to exceed that substantially. In addition to waterfront, the fireboats protect the ferries, some of which carry 50-100 passengers, and other boats that routinely carry 500 people in the harbor area.

At present only Engine 58 is in service. Engine 37 has been declared a "total loss" due to a number of problems relating to age and a need for extensive and extremely costly repairs. Engine 37 had not been out of the water for approximately 44 years – a significant maintenance oversight. The budget allocation to repair Engine 58 proved to be about half of the estimate subsequently provided by the private contractor. In order to get the needed work done and stay within the budget, many of the Shop's trades personnel were assigned to the Engine 58 restoration project, taking them away from their regular duties.

There appears to be a need to augment the CFD marine capacity, keeping in mind the two primary functions of marine emergencies and fire fighting. A four-point recommendation is offered.

**Recommendation 4.26:** One fireboat (E37) needs to be discarded and a replacement purchased; the one viable existing boat (E58) needs extensive maintenance. To improve provision of fireboat service:

- Strip Engine 37 of all parts and equipment that might be used in the maintaining of Engine 58 and discard the boat itself.
- Acquire a second fireboat with sufficient pumping capacity but much faster than Engine 58.
- Establish a land-based, pier-side facility where both boats, Engine 58 and the new craft, would be tied up. This facility should also serve as quarters for the crew.
- Develop operational plans and procedure whereby the same crew would staff both boats. The choice of boat taken on a call would depend on the nature of the emergency.

## F. Airport Operations

The airport firefighters are tied into the rest of the Department, and bear a brief note at least in passing, though airport operations were not studied in depth. (This was another topic triaged out early in the study.)

The CFD is responsible for airport rescue and firefighting operations at the three local airports. They protect the aircraft, people and structures. The airport firefighters also are given a

small first-due area outside the airport. They must still keep a minimum crew available at the airport at all times for the airport to remain open under FAA rules. Occasionally responding to fire calls and other calls outside the airport keeps the firefighters' skills up for when they may transfer elsewhere in the Department. The practice also improves response times in areas near the airports, and is a good use of those resources. The study team did not hear of problems with the service provided to the airports but did not examine it closely either.

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All in all, the Fire Suppression and Rescue Bureau has done an excellent job to protect Chicago from fires, assist in EMS calls, and provide an array of sophisticated rescue services. The next chapter deals with EMS, which works closely with the FS&RB.

## **CHAPTER V. EMERGENCY MEDICAL SERVICES**

The majority of the calls for service to the Chicago Fire Department (CFD) – about 72 percent in recent years – are for Emergency Medical Services. This chapter describes the EMS system and discusses various issues associated with it. Despite the many recommendations here, there is a high level of emergency medical service being given to the citizens; the intent here is to see that it is maintained and further improved.

## A. EMS System Overview

EMS is delivered mostly by the EMS Bureau (EMSB) of the Chicago Fire Department. Firefighters from the Fire Suppression and Rescue Bureau (FS&RB) provide "first responder" service and support to the EMSB. The members of the EMSB are uniformed (i.e., sworn rather than civilian) personnel, although they are not classified as firefighters. There are 740 paramedics in the CFD – 592 assigned to the EMSB and 148 cross-trained in the FS&RB. Additionally, there are 179 firefighters cross-trained and certified as Emergency Medical Technicians (EMTs) at the Basic level.

Chicago's EMS is delivered through a combination of ambulances and fire suppression apparatus. The use of fire apparatus as part of the EMS system has steadily gained acceptance throughout the United States since the mid-1980s. This so-called "first response" concept evolved out of the need to get trained medical responders to the scene of emergencies within the first few minutes after a victim's heart stops beating. Initiating resuscitation efforts within this window of time, even with basic CPR, gives the victim of a cardiac arrest a greater likelihood of survival.

Fire suppression units can frequently arrive at the scene of emergencies before an ambulance because there are 156 engine and ladder companies well distributed geographically throughout the City, versus 59 ambulances. There is a greater likelihood that there will be an available engine company rather than an ambulance close by when a medical emergency occurs. It happens that the time frames needed for intervention in fires and medical emergencies are strikingly similar – a response within five to six minutes from dispatch is desired, if not faster.

The "first responder" concept started with firefighters who knew basic first aid and CPR. The first arriving firefighters now are increasingly skilled. Many are EMTs, and some are even paramedics. The higher the skill of the first responder, the more that can be done on the early minutes: use of automatic defibrillators, start of IVs, opening airways, etc. Many fire departments today have virtually all their firefighters certified as EMTs. Chicago is lagging here somewhat because the line firefighters, union, and management were slow to adopt EMS as part of their mission, although cross-training is speeding up now.

While fire engines bring trained emergency medical personnel to the scene, they are unable to transport patients to the hospital. Also, not all engine companies or ladder companies have paramedics. Therefore, a two-pronged approach is used in Chicago and most jurisdictions to ensure that care is started rapidly by fire suppression personnel (when necessary) and continued by EMS personnel from the scene to the hospital. The first responder approach has proven to be an efficient and medically appropriate care delivery tactic in municipalities and counties throughout the United States and Canada. It makes sense in Chicago, too.

**Call Volume/Benchmark Analysis** – Chicago is a high-volume EMS system. Over the five years 1993 to 1997, the CFD EMSB responded to an average of 227,000 calls per year; in 1998 it was 248,000. To provide perspective on the relative EMS demand and how that demand is met, key EMS measures were benchmarked against U.S. cities of greater than 1 million population (of which Chicago ranks third).<sup>24</sup>

Though having high volume, Chicago has one of the lower rates of EMS demand per capita for large cities, as shown in Table 5.1. Chicago has about half the EMS demand per capita of Washington, D.C. One factor may be that the large number of hospitals with emergency facilities allows many people to get to a nearby emergency room on their own. But this is speculation: no one knows the answer for sure. In any event, efforts to keep the demand in check, to encourage people to "Make the Right Call" and not abuse the EMS system, should be an important element of the CFD's EMS strategic plan.

Citv	Population	1997 EMS Calls	Calls per 1.000 pop.	Rank
Now Vork	7 312 000	1 122 196	152.6	1
INEW I OIK	7,312,000	1,125,180	133.0	1
Los Angeles	3,448,000	234,000	67.9	7
Chicago	2,732,000	232,716	85.2	6
Houston	1,703,000	166,045	97.5	3
Philadelphia	1,553,000	145,000	93.4	4
San Diego	1,152,000	65,000	56.4	8
Dallas	1,023,000	127,000	124.1	2
Phoenix	1,050,000	90,000	85.7	5
Washington, D.C.	585,000	102,357	175.0	N/A

Table 5.1 EMS Demand Per 1,000 Population

Source: TriData research; CFD. Here and in later tables the per capita data and rank ordering might be slightly different with updated population estimates.

<sup>&</sup>lt;sup>24</sup> Washington, D.C. and Baltimore are included in some comparisons here not because they are in the "Big Eight" cities but because they are both old, dense cities and had data available.
#### Chapter V. Emergency Medical Services

Table 5.2 shows the number of EMS ambulances in each large city and the number per 100,000 resident population. Some cities deploy different numbers of ambulances at various times during the day, as demand varies; a range is shown for them in the table. Chicago staffs the same number of EMS units 24 hours a day.

			# Ambulances per	Rank at
City	Population	# Ambulances	100,000 pop.	Maximum
New York	7,312,000	395	5.40	1
Los Angeles	3,448,000	80	2.32	7
Chicago	2,732,000	59	2.16	8
Houston	1,703,000	56 - 59	3.29 - 3.46	2
Philadelphia	1,553,000	25 - 37	1.61 - 2.38	6
San Diego	1,152,000	21 - 28	1.82 - 2.43	5
Phoenix	1,050,000	28	2.67	4
Dallas	1,023,000	27 - 35	2.64 - 3.42	3

Table 5.2 Number of Ambulances Per 100,000 Population

Source: TriData research; CFD; U.S. Census 1990.

Chicago provides the fewest number of ambulances per 100,000 citizens (2.16) at times of peak demand, and is still relatively low compared to the minimum staffing in other cities. In other words, most other large urban EMS systems are devoting proportionately more resources to EMS. The main reason for this is that Chicago has lower demand than most of the others, and needs fewer units than they do. Thus raw comparisons of Chicago to other cities can be misleading.

The comparison is similar when other gross measures of the level of service are used, such as the number of dedicated EMS personnel per capita. Chicago ranks fifth of eight, compared with 23.1 EMS personnel per 100,000 population (see Table 5.3).

City	Population	# EMS Personnel	# EMS Personnel per 100,000 pop.	Rank
New York	7,312,000	2,937	40.17	2
Los Angeles	3,448,000	434	12.59	8
Chicago	2,732,000	631	23.10	5
Houston	1,703,000	534	31.36	3
Philadelphia	1,553,000	250	16.10	6
San Diego*	1,152,000	185	16.06	7
Phoenix	1,050,000	300	28.57	4
Dallas	1,023,000	462	45.16	1

Table 5.3 Number of Full-Time EMS Personnel Per 100,000 Population

Source: TriData research; CFD; U.S. Census.

\* San Diego's EMS system includes a private transport provider, so this number may not be comparable.

Similarly, in terms of per capita expenditures on EMS, Chicago again ranks in the lower half of the comparison group.<sup>25</sup> Five large cities spend from one-and-a-half to two times as much per capita for EMS as Chicago does (Table 5.4), and they need to because of having higher demand and/or a greater coverage area. The expenditures shown here include only the cost of the EMS units, and not any allocated portion of fire companies' costs (although the fire companies have more EMS-assist runs than fires in most cities).

City	Population	EMS Budget (in \$million)	Per Capita EMS Expenditures (in \$)	Rank
New York	7,312,000	142.6	19.50	3
Los Angeles	3,448,000	55.0	15.95	4
Chicago	2,732,000	32.5	11.90	5
Houston	1,703,000	38.0	22.31	1
Philadelphia	1,553,000	16.0	10.30	7
San Diego*	1,152,000	5.0	4.34*	8
Phoenix	1,050,000	11.0	10.52	6
Dallas	1,023,000	20.0	19.55	2
Baltimore	726,000	9.0	12.40	N/A
Washington, D.C.	585,000	19.3	32.99	N/A

Table 5.4 Per Capita Expenditures on EMS

Source: TriData research; CFD; U.S. Census.

\* Much of San Diego's EMS budget is not separable from its fire suppression budget. Therefore, this figure may be inappropriate to compare.

**Workload** – The EMSB responds on all calls for medical assistance. EMS calls have accounted for 70 to 75 percent of all calls made by the CFD in recent years, as shown in Figure 5.1. About 30 percent of EMS calls have an "ambulance assist" by a fire unit. An ambulance assist is dispatched whenever:

- An EMSB ambulance is currently more than 18 blocks from the location of the incident,
- A call is identified in the emergency communications center as an immediate lifethreatening condition (e.g., cardiac arrest),
- A call is identified in the emergency communications center as requiring specialized services (e.g., extrication from an automobile), or
- A call is identified in the emergency communications center as requiring additional assistance (e.g., an extremely heavy patient or one located in a relatively inaccessible area).



## Figure 5.1 Relative EMS Workload in the Chicago Fire Department

Ambulance assists have accounted for 40 to 48 percent of calls responded to by the FS&RB over the past decade. In 1998 it was over 50 percent (50.5) for the first time, which is new data not

<sup>&</sup>lt;sup>25</sup> Financial data were not available for all the cities in the comparison group.

plotted above.<sup>26</sup> Over the five years 1992 to 1997, the FS&RB responded to an average of 68,000 ambulance assists annually; in 1998 it was 89,500. The increase in EMS calls has averaged 2,800 per year out of an increase of 4,400 per year for the CFD in total (Figure 5.2).

The workload is unevenly distributed across ambulance units. As illustrated in Figure 5.3, there is a six-fold difference between the most heavily and least used ambulances. Three of the four lowest-volume units (ambulances #16, #26, and #59) are stationed at O'Hare Field; but because they are paid for by the airport and required to be there for keeping the airport open under FAA rules, they are generally unavailable for calls in the City proper. However, even without considering the airport units, there is still a group of ambulances that have triple the workload of another group.



Figure 5.2 Call Volume (CFD Total versus EMSB Total)

Note: Total Incidents = All FS&RB incidents – FR&R Ambulance Assists + all EMSB runs. This avoids double counting calls when both FS&R and EMS units respond.

<sup>&</sup>lt;sup>26</sup> Although many of their calls are for ambulance assists, the majority of the FS&RB workload is attributable to their fire duties and therefore is not in violation of the federal Fair Labor Standards Act, which effects when overtime is to be paid.

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## Figure 5.3 1998 Call Volume by Ambulance

Note: All ambulances are numbered here.

**EMSB Work Schedules** – Since 1995, EMSB personnel have worked on a four-platoon rotation, with each paramedic working a 24-hour shift every fourth day. This schedule averages out to slightly more than a 42-hour workweek.<sup>27</sup> It has worked well; the number of lay-ups has decreased by 16.5 percent per year since the schedule was implemented.

As with firefighters, some raise the question of whether paramedics should be placed on an 8hour shift. The argument for such a plan is that personnel could be more fully utilized during their on-duty time, instead of allowing them to sleep at night between calls. However, the majority of EMSB personnel are already working at as high a capacity as can be safely tolerated. (Actually it is still too high for many, as will be discussed later.) A benefit of an 8-hour shift would be lower fatigue levels. Paramedics working the current 24-hour shift are often very tired toward the end of their shift. Those interviewed said that their attitudes sometimes degrade toward the end of the shift, but not the quality of medical care they give. The emergency doctors interviewed generally concurred.

In our opinion, the main drawback to an 8-hour shift is that it would require hiring approximately 75 additional paramedics at a cost of approximately \$5.6 million annually.<sup>28</sup> The savings could be used to increase the number of ambulances. Also, there are other ways to manage the fleet and reduce overloads on the existing units. Representatives of the Chicago medical establishment did not express concern about the medical capabilities of CFD paramedics toward the end of their shifts, although they did acknowledge the possibility that tired paramedics are more prone to mistakes. Given the relative satisfaction with the job that CFD paramedics do under the current work schedule, it does not seem wise to bear the additional cost of an 8-hour shift.

**Medical Direction** – Medical direction refers to the physician-level oversight of the delivery of prehospital care. It is universally recognized as a desirable function in any EMS system, and an absolute necessity in EMS systems providing advanced life support. State law requires that emergency medical services be delivered through an approved EMS system, and that an EMS medical director be appointed through a local resource hospital.

In most EMS systems in the United States, EMS medical directors are responsible for the clinical practice of the EMS personnel working in that system and are charged with dictating the scope of practice for those personnel. In most states, EMS personnel work under the medical license of the physician medical director through a legal construct called "delegated practice."

Medical direction of the CFD occurs through a unique structure. Whereas most EMS systems have one medical director (who may be assisted by one or more assistant medical directors), the CFD

<sup>&</sup>lt;sup>27</sup> 91 shifts/year x 24 hours/shift = 2,190 hours/year or 42.11 hours per week.

<sup>&</sup>lt;sup>28</sup> 75 x cost/paramedic (\$75,000 with benefits).

has three medical directors and a medical advisor. These four physicians share essentially co-equal status and comprise the "Medical Directors Consortium." The Consortium meets on a regular basis to develop EMS medical policies (protocols). It nominally operates on a consensus basis; decisions affecting the delivery of EMS are supposed to have input, deliberation, and approval from all four physicians.

**Training** – There are two major types of EMS training conducted by the CFD: basic clinical education and continuing medical education (CME)/refresher training. Basic clinical education qualifies an individual for licensure as an Emergency Medical Technician (EMT) by the Illinois Department of Public Health (IDPH).<sup>29</sup> Both continuing education and refresher training are required to maintain licensure. The IDPH regulates the subject matter, number of contact hours, and conditions of instruction of EMT courses, including classroom locations, instructors, and textbooks, and other administrative matters (such as deadlines for filling required paperwork in connection with a training class).

Basic-level EMT classes (EMT-B) are offered to FS&RB personnel. The CFD does not offer paramedic-level (EMT-P) instruction; prior attainment of EMT-P licensure is a condition of employment as a paramedic in the EMSB or as a firefighter/paramedic in the FS&RB.

Continuing education for paramedics is conducted at the South Academy by the EMSB training staff. Training for EMT-Bs is conducted at the Quinn Academy. The EMS training staff reports through the Coordinator of EMS Training (an Assistant Deputy Chief Paramedic) to the CFD Director of Training, a District Chief in the FS&RB. The quality of EMS training observed was impressive. The EMS training staff exhibit a strong sense of mission and esprit de corps.

**Management Information** – In general, the ability of the EMSB to provide understandable and relevant management data is above the norm for most fire departments. Some further improvements are in the process, and some additional efforts are needed.

In progress is the implementation of a pen-based computerized data collection system – the WESTECH system. The system allows field personnel to enter medical and billing information into a portable computer using pen strokes on a special screen in lieu of a keyboard. The computers are small and rugged enough to be carried in an ambulance or fire engine and taken to the location of a call. The computer checks medical information as it is entered, facilitating patient documentation and medical billing. It eliminates illegible reports, improves completeness and accuracy and can download applicable management information for analysis. The system should be ready to go on-line

<sup>&</sup>lt;sup>29</sup> EMT is a generic term that covers basic life support personnel (EMT-B) and paramedics (EMT-P).

shortly. It will have a major beneficial impact on the ability of the EMSB to understand how well emergency medical care is being rendered and to collect patient revenues.

Other than the WESTECH system, data collection in the EMSB is accomplished using laborintensive, manual methods. For example, ambulance activity reports (which summarize the time spent by EMS units on different activities) are filled out by some paramedics on an on-going basis throughout their shift and by others at the end of their shift, when they are tired and have to remember the information. The EMSB is able to produce useful management reports from this data, but the process seems needlessly laborious, and the quality may vary by the different personal approaches to data recording. This is another area in which automation via the WESTECH project would improve management information.

**EMS Billing** – Patients transported to a hospital by the CFD are billed for the services they receive. The notion of sending a bill for a government-provided public safety service may seem unwarranted to some, but not billing for this service means foregoing revenue available from medical insurance that can offset costs. Most medical insurance policies provide 100 percent coverage for ambulance service. Almost all large municipalities bill for ambulance service. The amount billed and the aggressiveness with which collections are pursued vary widely. On average, cities bill \$376 for ambulance transport, but bills can range as high as \$850.<sup>30</sup> Some jurisdictions opt not to follow up on delinquent bills. Others only pursue bills of patients who have insurance, ignoring past due bills of "self-payers."

Collection rates vary across the United States and are highly dependent on the "payer mix" (especially the proportion with insurance coverage). The national norm is about 60 to 65 percent. Comparative collection rates for large cities are shown in Table 5.5. Chicago's collection rate is 50 percent. *Obtaining much higher collection rates should be possible*. The EMSB hopes to improve its collection rate to 60 percent with the advent of better data using the WESTECH hand-held computers.

<sup>&</sup>lt;sup>30</sup> Mayfield, T., "EMS in America's Most Populous Cities," Journal of EMS, February 1999 (24:2), p. 41.

City	Rate
Phoenix, Arizona	70%
Washington, D.C.	63%
Los Angeles, California	60%
Nashville, Tennessee	60%
San Diego, California	56%
San Jose, California	55%
Indianapolis, Indiana	55%
Chicago, Illinois	50%
Philadelphia, Pennsylvania	48%
El Paso, Texas	47%
New Orleans, Louisiana	42%
Memphis, Tennessee	39%
Detroit, Michigan	23%
Baltimore, Maryland	20%

Table 5.5 Comparative EMS Collection Rates

Source: CFD EMSB, Chicago Office of Finance, TriData research

**Complaints** – The EMSB has seen a remarkable decrease in the number of complaints filed against it over the past several years, from an average of 168 per year (from 1989 to 1995) to 42 in 1998, as shown in Figure 5.4. The complaints vary in nature and specificity, but most are about either patient care or the "bedside manner" of personnel. Not all complaints are substantiated; only 12 of the 42 complaints in 1998 resulted in the issuance of Investigation Request ("IR") numbers (the initiation of a formal investigation by the department). Based on the data in Figure 5.4 and interviews with EMS leadership and paramedics, the sharp decrease in citizen complaints is most likely attributable to the change to a four-platoon schedule which occurred in 1995. It resulted in better rested paramedics who had more time to recover mentally as well as physically between shifts.



Figure 5.4 Number of Citizen Complaints Filed with the EMS Bureau.

# **B.** Issues

There are a number of issues that need to be resolved to improve delivery of EMS. Several are major and will require long-term and focused work to rectify. Others are less severe and can be solved in the short-term.

**Response Times** – Ambulance response time is the most widely used measure of EMS system performance because of its importance, relative ease of measurement, and understandability.

There is a loosely applied "national standard" for ambulance response times. It is an amalgamation of several "standards" or rules of thumb, and is interpreted differently by various people and EMS systems. There really is no true standard; i.e., no standards-making consensus group has ever defined a standard for ambulance response times. The closest thing to a response time "standard" for EMS transport vehicles in an urban advanced life support system that has automatic defibrillation-capable first responders (as the CFD does) is 8 minutes on 90 percent of the critical (i.e., life-threatening) calls. This was proposed in a *Journal of American Medical Association* article. This form of measure is called a "fractile" measure because it is stated in terms of the fraction of calls responded to within a specified time. In other words, *the response time standard specifically* 

acknowledges that there will be some response time outliers in even the best-performing EMS systems -10 percent of calls can be over 8 minutes and still meet the standard). The standard specifically does <u>not</u> use average response time as its measurement because arithmetic averages can be distorted by a relatively small number of outliers.



Figure 5.5 Fractile EMS Response Times (First Three Quarters of 1998) – Cardiac Calls

Figure 5.5 shows the distribution of response times for cardiac calls in Chicago (the closest proxy for life-threatening calls that is recorded by the Office of Emergency Communications). About 85 percent of the cardiac calls were responded to in less than eight minutes versus the desired 90 percent. The CFD does not miss the "standard" by much.

The standard assumes the availability of first responders with automatic defibrillation capability. In a way, Chicago exceeds the first response expectations by providing a growing number of ALS engine companies. The FS&RB is often able to place a paramedic on the scene faster than the ambulance paramedics arrive because 20 of the 100 engine companies respond with paramedics, as of early spring 1999, which is an excellent improvement in ALS service.

Several caveats need to be kept in mind with respect to response times. First they are subject to a variety of measurement errors and only measure one aspect of EMS system performance. As with fire units, response time measurement of EMS units is subject to error when units report their arrival on scene prematurely or belatedly. Response times are frequently not comparable across EMS

systems because of the differing manner in which they are calculated. In Chicago, response time is calculated from the time the call is received at the Office of Emergency Communications (OEC) to the time the first unit (either ambulance or FS&RB first responder) arrives on scene. About half of the cities surveyed calculate response time from the time the first unit is *dispatched* to the time the first unit arrives<sup>31</sup>; one would have to add an estimate for the call-processing time to those cities' data to make their data comparable.

Response times reflect time to get "on-scene," meaning in the street, not the time to arrive at the patient's side. Only about 10 percent of first response agencies keep the clock running until EMS personnel reach the patient's side.<sup>32</sup> Vertical response times (the time it takes for paramedics to exit their vehicles, get their equipment, and reach the patient's side) are seldom measured. In a city with as many high-rise buildings as Chicago, the vertical response times can be significant. An attempt should be made to measure the vertical component of response times, but not to use this more complete measurement for inter-city comparisons (because most other cities do not report the vertical response time, so it would bias the comparison against Chicago).

**Adequacy of Number of Units** – The main reason for missing the response time target of 90 percent in under eight minutes is the high workload of the ambulances. There are too few transport-capable EMS units to handle the load.

1. Unit-Hour Utilization (UHU)

Ambulance response time is linked to the availability of ambulances, which is the inverse of ambulance usage. The primary measure of ambulance usage is unit-hour utilization (UHU), the ratio of the number of unit-hours spent delivering EMS to the total number of unit-hours that the system could possibly deliver. In Chicago, EMS runs take an average of one hour to complete. This makes calculations straightforward: the UHU is simply the number of EMS runs (times one hour each) divided by the number of unit-hours produced by the EMS system. The unit-hours produced is 8,760, the number of hours in a year, times the number of EMS units in service.

UHU 
$$\approx$$
  $\frac{\text{\# of EMS runs}}{\text{\# EMS units x 8,760}}$ 

Table 5.6 shows the two versions of the UHU calculations: one based on the full 59 ambulance units, and the other on 56 units, which excludes the three ambulances at O'Hare Field

 <sup>&</sup>lt;sup>31</sup> Mayfield, T., "EMS in America's Most Populous Cities," *Journal of EMS*, February 1999 (24:2), p. 30.
<sup>32</sup> Ibid.

(Ambulances #16, #26, and #59), because they do not provide much coverage outside the airport, and have low call volume.

		59 Ambulances
Factor	56 Ambulances	(includes airport)
Service Hours Delivered	224,000*	227,000
Possible Service Hours	490,560	516,840
Unit-Hour Utilization	.46	.44

Table 5.6 Unit-Hour Utilization Calculations

\*Approximate workload with three airport units removed.

The UHUs of individual CFD ambulances range from a high of .721 (Ambulance #10) to a low of .117 (Ambulance #26).

2. Impact on response times.

Chicago's UHU exceeds the UHU target level of .42. This target is based on the experience of managers of leading high-volume, high-performance EMS systems from around the country.<sup>33</sup> Systems that achieve a UHU of close to usually .42 are able to meet their response time goals, and stressors on their personnel, equipment, and vehicles to a reasonable level, but also get good productivity. (A UHU much lower than .42 would mean that there is relatively light loading and excess capacity.)

The Chicago UHU exceeds .42 regardless of whether the airport units are counted. In fact, over three-quarters of the EMSB fleet individually have a UHU in excess of the .42 target. Approximately a third of the fleet is significantly overloaded, with UHUs over .55. That is, they are out on calls for over 12 hours in a 24-hour period. The Chicago EMS system as a whole misses the target UHU by about four percent and misses the response time target by about five percent. By both UHU and response time measures, the EMS system is somewhat overtaxed.

The required number of transport units needed to reduce the UHU to .42 can be computed given an estimate of call volume. Chicago had been averaging 227,000 calls per year until 1998. A total of 62 ambulances are needed besides the three at the airport – six additional recruits – to bring the UHU down to an average of .42, assuming the 1992-1997 average demand was to continue. If demand continues at the 1998 level or grows higher over the next few years, which is likely, an increase of more than six ambulances will be needed.

<sup>&</sup>lt;sup>33</sup> UHU is a standard measure. The .42 UHU target was developed heuristically by some of the best people in the EMS business through trial and error.

#### Chapter V. Emergency Medical Services

The number of ambulances actually varies hour by hour. There are times of day when the current staffing pattern produces an excess capacity and times when it is highly inadequate. From 1:00 a.m. to 9:00 a.m., there is excess capacity in the system, and fewer than 59 ambulances are required to meet demand. From 1:00 p.m. to 10:00 p.m. the system is heavily overloaded. This pattern suggests a need to reconsider how EMS resources are deployed, and to consider more flexible alternatives to the current deployment strategy, as will be discussed below. From the multiple viewpoints of not meeting the EMS response time goals, having many EMS units with very high workloads (over 4,000 calls a year), the fatigue reported at the end of shifts in these busy EMS units, and the UHU data. There is a need for not only more ambulances but variable deployment of ambulances as well.

## 3. EMS Call Volume Projections

EMS demand is most correlated with the population and median income of the community served. In general, EMS demand is directly proportional to population (the more, people, the more calls) and inversely proportional to median income (low income households tend to be higher users of EMS for a variety of reasons). There are many other factors that influence demand, too, such as the self-reliance of the population (i.e., taking care of themselves or taking themselves to the hospital). EMS demand also is subject to external occurrences (exogenous factors) that cannot be anticipated or controlled, such as the heat wave of 1995 or the snowstorm of 1999.

A linear extrapolation of EMS demand (assuming continued growth in demand as occurred over the last ten years) suggests that EMSB will be averaging over 250,000 calls per year by 2003. (In 1998 demand was already up to 248,000, so it may well be higher.) At a volume of 250,000, the CFD would need 12 more ambulances than it has at present by 2003 to maintain a UHU of .42.

**Recommendation 5.1: Increase the number of ambulances and how they are deployed.** There is need for about six additional full-time ambulances, and for considering redeployment to meet peak demand, or creating some ambulance units that would serve "power shifts" (peak demand periods). The six full-time ambulances would lower the system-wide UHU closer to .42. These units could be deployed in areas that would lower the UHUs of the highest workload ambulances (some of which are above .70). Reducing the workload of the busiest EMS units would lower EMS response times, and improve the level of care toward the end of shifts when some duty units may be fatigued. To add ambulances requires purchasing more vehicles and equipment, and hiring new personnel. The capital cost for the six ambulances would be \$521,000, assuming \$65,000 per ambulance and \$21,500 for its equipment. The labor cost would be \$4,452,000, based on a blended salary average for paramedics, paramedic officers, and paramedics-in-charge of \$52,213, 45 percent fringe benefits, and a 4.9 staffing factor. About 59 paramedics would need to be added.

In the short term, some or all of the six reserve ambulances could be placed into service, as was done in January 1999 during a severe snowstorm; however, this would not be a long-term solution because those ambulances are needed to replace vehicles that go out of service for mechanical reasons.

Even with six more ambulances, there would be a significant shortfall of EMS transport capacity during times of peak demand. There are a number of ways to meet peak demand:

- 1. Add more than the six full-time ambulance units (creating additional unused capacity off-peak)
- 2. Add part-time CFD ambulance units
- 3. Add private sector ambulance resources for peak periods
- 4. Redeploy existing resources at peak times and fill gaps with ALS companies.

The first option would add a fixed number of ambulances to the system on a permanent 24hour basis. The next two options would add ambulances to the system during the periods that they were needed most (sometimes referred to as a "power-shift"). The fourth option is not to add units, but dynamically redeploying existing units.

Under the third option, the City would use private ambulances to help meet peak demand, possibly only for transport. A number of state-licensed ambulance services already provide service in Chicago. The City could arrange with private providers to make a certain number of their ambulances available during peak periods for dispatch by the OEC, such as is done in San Diego. The private provider would do its own billing for service, which would be its primary inducement to participate. The arrangement would benefit the City because extra ambulances would be incorporated into the citywide EMS system at the cost of some patient transport revenues foregone, but with no additional outlay. It would be necessary to link the private ambulances that were participating in this system into both the dispatching/communications and quality assurance systems of the EMSB. There would need to be some mechanism to deploy private ambulances to specific areas of the city as needed. The biggest obstacle to overcome would be the collective bargaining agreement, which prohibits contracting-out work performed by employees covered in the agreement.

Under the fourth option, some redeployment of the less busy ambulances would be redeployed to busier areas during the peak demand times (e.g., noon to 9 p.m.). This option is attractive because it capitalizes on the fact that the CFD's static staffing pattern is essentially a sunk cost. More efficiently using these resources will not cost the City more money. It may, however, cause some initial consternation in the neighborhoods that would see their local ambulance transferred to other parts of the city during the peak periods. These neighborhoods tend to be the more affluent ones, as EMS usage is inversely proportional to median income. There are two ways to address their potential concern. First, the EMS resources still will be stationed in the community at times when most of the people who live there are actually there and are in most need of the protection – at night. The ambulances redeployed to meet high demand elsewhere during the daytime and early

evening will most likely be tracking the natural commuting patterns of the city. The demand is low in the bedroom communities during the day because many residents are at work. Second, ALS engine companies should be assigned to these communities when they are redeployed, if not already there, so that citizens would still have rapid ALS first response even though a transport unit might be coming from a slightly greater distance. Shifting some transport units to meet peak demand, and training a few more firefighters as paramedics, is obviously much more cost-effective than adding more ambulance units full-time just to meet peak demand periods.

**Need for Long-Range Planning** – The most frequent complaint within the EMS Bureau was that it lacked a long-term plan or "vision" for EMS and therefore changes to EMS were often ad hoc and reactive. This sentiment was echoed by FS&RB and hospital personnel.

EMS represents about three-quarters of the CFD workload, and there is a need for a longrange strategic plan that has been well thought out by those most familiar with EMS, in full cooperation with the leadership of the CFD. It is crucial that EMS policies be implemented with adequate lead times.

Related to having a long-range plan is the need for a more participatory decision-making process for EMS. EMSB leadership, FS&RB personnel, and the Health and Safety Committee of the union all should be part of the decision-making process for EMS policies.

**EMS Supervision** – There are a number of unresolved EMS supervisory issues. It is unclear to whom FS&RB paramedics report. A number of engine company officers said they were unsure of their role in relation to a paramedic when their ALS engine company was dispatched on a medical call. Engine company officers and battalion chiefs are not in a position to oversee the care rendered by FS&RB paramedics because few are paramedics themselves, yet they are responsible for the actions of the company as a whole. The first-line paramedic supervisors – the ambulance field officers – have no supervisory control of FS&RB paramedics. Finally, there is no quality assurance program in place for the ALS activities of the FS&RB program. Accordingly, no means exist for examining whether acceptable care is provided by ALS engine companies. These issues all need to be resolved. (Recommendations for other issues discussed below will address these concerns, too.)

**Culture Gap** – The CFD suffers from a "culture gap" between the EMSB and FS&RB staff. This syndrome is common in fire departments that provide EMS through a separate bureau rather than by cross-trained/dual-role firefighter/EMTs. The "culture gap" stems from the differing perceptions of the organizational missions of the separate bureaus. Many, and perhaps most members of the FS&RB value their mission more highly than they value the mission of the EMSB, or at least give that impression in a variety of ways. The impression is conveyed by senior managers as well as line personnel. Usually where such a culture gap exists, it is characterized by the dominance of traditional firefighting over EMS, despite the fact that the EMS workload in these departments far outpaces that of firefighting. Many paramedics are made to feel like second-class employees. The dominance is perceived to affect decision-making processes, budgets, incident command authority, firehouse life, and pay levels.

One might question how disabling the culture gap can be when EMS calls are being answered and citizen complaints about EMS are few and decreasing. The gap manifests itself in ways that are not easily quantified and not often apparent to the patient. The culture gap most affects the lives of the EMSB personnel. To labor constantly under such conditions ultimately has deleterious effects on the quality of care rendered. The general quality of EMS care seems good but could be better, and the effect of the culture gap is one reason it is not better.

Most of the EMSB personnel interviewed did not know that they were describing a phenomenon seen repeatedly in many EMS systems, and, in fact, were surprised that the project team was familiar with what they were describing. They appreciated that someone listened and wanted to help – and that is a key to improvements, as will be reflected later in the recommendations.

Some EMS personnel have an excellent day-to-day rapport with the FS&RB personnel with whom they work. However, it is almost always the EMS provider who must seek the approval of the FS&RB member, rarely the reverse. The firehouse social order affords the firefighters' views greater weight. For example, standard practice in the CFD is to recognize the arrival of field officers in a station by sounding the station bell and having all personnel get into roll call formation in the engine room to greet the officer. Such courtesies are rarely extended to ambulance field officers (AFO).

EMS officers are not granted operational control of EMS units, even at purely EMS-related incidents. A veteran AFO of many years experience must defer to an acting FS&RB lieutenant of few years experience. When implementing the EMS plan for multiple-casualty incidents, an EMSB officer on the scene must request additional or specialized resources of the department through the FS&RB person on the scene. An argument can be made that an incident commander needs to authorize all such requests, but many other EMS systems have made it standard practice to incorporate mechanisms to empower EMS officers or make them incident commanders on EMS-related incidents.

EMSB paramedics wear a CFD shoulder patch on the bottom of which is a rocker (curved insignia) with the word "paramedic." FS&RB paramedics do not wear such a rocker.<sup>34</sup> Paramedics

<sup>&</sup>lt;sup>34</sup> The CFD is currently considering modifications to their policy with which we concur.

who take firefighting training to switch to the FS&RB must remove their old patches and substitute them with patches that lack the "paramedic" rocker panel. In other cities, an effort is made to do just the opposite – modify the uniform of specially trained personnel (such as paramedics and hazardous materials personnel) so that they can be easily identified at the scene of an emergency. This is done for the same reason that officers wear identifying insignia and color-coded helmets and uniforms.

EMSB personnel drive "hand-me-down" cars. New cars are designated for FS&RB use, and the EMSB gets the old ones. Many AFOs have vehicles with more than 100,000 miles on the odometer, while some FS&RB personnel are getting vehicles replaced at 40,000 miles.<sup>35</sup>

**Recommendation 5.2: Integrate EMS fully into the CFD or create a separate EMS Department.** The CFD should plan to become a fully cross-trained/dual-role fire department in the near- to medium-term future. A single, unified operations bureau would be staffed by personnel who can function on any piece of CFD apparatus and act as a firefighter as well as an EMT. The EMSB would then be a coordinating bureau to ensure the proper level of training, medical direction, quality assurance, support, and logistics throughout the entire department. Many departments across the nation function this way.

Chapter VII discusses a variety of additional ways to reduce human relations problems in the CFD, including the culture gap. Cross-training EMS and FS&RB personnel will help, but is not enough; the basic attitude of CFD toward EMS needs to change. The CFD's leadership need to demonstrate day-to-day that they are committed to closing the culture gap. The Fire Commissioner needs to send a clear message that archaic behaviors toward paramedics will not be tolerated. Each level of the CFD chain of command will need to discuss the role of EMS with its subordinates, and to practice what it preaches. If subordinates detect that their supervisors will look the other way when it comes to making the changes required to close the gap, then the gap will not close.

The CFD's mission has changed over the years. This should be recognized formally by rewriting the CFD mission statement (including the version that is in the City budget). In addition to a mission statement, a value statement should be written that clarifies the values by which the department operates. This statement should make clear that members of both bureaus are to afford the same level of respect to officers of the other bureau as they show for their own. The CFD will need to recruit, train, and promote people who accept that a central mission of the fire department is the provision of EMS, and are willing and able to participate in it.

An alternative way to address the culture gap is to make the EMSB a separate department. This is a radical step, but may be the only way to allow EMS to function to its full potential. It should be preserved as an option if the first and preferred approach – making the EMSB an equal player in

<sup>&</sup>lt;sup>35</sup> The current fleet of AFO vehicles has odometer readings ranging from 96,102 miles to 147,000 miles, with an average of 121,345 miles.

the CFD – will not work. Creating a separate department would have the advantage of empowering the leadership of the EMSB to manage the ambulance service free from the inequities that currently exist. There are two primary drawbacks to such a plan. First, unless separate facilities are found to house the ambulances and the EMSB staff, the day-to-day working lives of the line-level personnel will not be improved and might be exacerbated. Second, it would require setting up another department, which has the obvious financial implications of the associated management and overhead expenses.

Intradepartmental Communications – As discussed in Chapter II, internal communications need improvement. Communications between the EMSB and the rest of the department are one of the problem areas. Common complaints from EMSB personnel at many levels were that they felt "left out of the loop" on matters important to them. One example was the lack of adequate notification for scheduling paramedics for classes or special assignments. For instance, three days' notice was given to a class of paramedics to report to the Quinn Academy for FS&RB training. Several previously had arranged "work-trades" with other personnel. They were put in the position of owing a work-trade and not being able to repay as promised, not a big issue in the grand scheme of things, but important to them. Recommendations for improving Internal communications are given in Chapters II and VII.

**EMS Administration** – According to information from the EMSB, there has been no increase in the number of EMS administrative personnel since 1980, though the number of EMS units and the call volume has grown significantly. Personnel in the EMSB administration are stretched too thinly. They have to assume multiple and often unrelated roles. Routine administrative work falters from lack of continuity – the uniformed administrative staff works once every four days. The EMSB administration needs additional 40-hour employees.

A result of the inadequate administrative staffing is that there is no research and development function in the EMSB (nor is it being done in the department-level research and planning function). EMS is a constantly changing field. New medical techniques and pieces of equipment are introduced continually. The EMSB should be keeping up with the changes through an active R&D program. There also needs to be thought given to a different, more dynamic allocation of resources (i.e., varying ambulances by time of day and relocating some by time of day).

Another result of inadequate administrative staffing is that highly paid senior EMS personnel are reduced to performing clerical functions such as delivery of mail, data entry, secretarial functions, and scheduling. ADCPs must respond to scheduling problems as a collateral duty, which pulls from other duties. By contrast, and in acknowledgment of the level of effort required to conduct scheduling, the FS&RB has two full-time scheduling personnel at the Quinn Academy.

**Recommendation 5.3: Hire some 40-hour clerical employees to support the EMSB.** They will increase productivity of the highly trained senior paramedic officers who spend too much time on clerical functions.

**Utilization of Ambulance Field Officers** – Ambulance field officers (AFOs) are not being used as productively as they should be. They are the first-line, multiple-unit supervisors in the EMSB. Each of the six AFOs on duty at any one time supervises the operations of approximately 10 ambulances. Their primary functions are to handle the routine administrative matters that arise with their units, respond on emergencies, and provide concurrent quality assurance. Because each AFO supervises many units spread over a large geographical area, they spend much time as intradepartmental couriers, shuttling mail and memos between fire stations. The courier function could be more efficiently handled using a low-paid civilian, instead of experienced, highly trained, and much more expensive EMS supervisors. Their mail duties prevent the AFOs from spending much time at what should be their primary duty, supervising their units on calls. Running calls with EMS units allows an AFO to provide what is called concurrent quality assurance (i.e., observing the delivery of care, and proactively identifying and correcting problems before they become ingrained habits or liability issues). Having active supervision keeps EMS personnel on their toes. Poor customer service can result when line-level personnel know that the chance of an AFO appearing at an incident is minimal.

From a supervisory standpoint, the span of control at the AFO level is too large. Each AFO supervises 10 EMS units with 20 paramedics spread across 10 stations. Because each AFO covers about one-sixth of the geographic area of the City, they have a hard time arriving at incidents in a timely manner. Both AFOs and paramedics noted that AFOs usually arrive on the scene of major EMS incidents just as they are being resolved, instead of early enough to make a difference in the management of the incident. On a large-scale EMS incident, not having an EMS-trained supervisor on the scene can be highly problematic.

Another EMS managerial issue involving the AFOs is their relation to the FS&RB paramedics assigned to paramedic engine companies. The FS&RB paramedics have little or no quality assurance accountability because few of their first- and second-level supervisors (company officers and battalion chiefs) have paramedic training. AFOs are not even allowed to pick up ALS engine company EMS run forms or sign their journals. The EMS actions of FS&RB paramedics ought to be subject to the same level of medical supervision as those of the EMSB paramedics. A mechanism must be identified to provide medical supervision of engine company paramedics. (In the long-run, there will be company and battalion fire officers who have been paramedics and the issues will disappear, as it has in departments where cross-trained firefighter/paramedics have been used for over 5 to 10 years.)

Finally, the title "ambulance field officer" presents a seemingly innocuous but frustrating problem – how to address an AFO. Whereas FS&RB lieutenants are called "Lieutenant," and battalion chiefs are referred to as "Chief," there is no similarly usable nomenclature for AFOs. This problem could be easily remedied with a change of title (for example, Paramedic District Commander), and it should be put on the short list of quick fixes.

**Recommendation 5.4:** Add four more Ambulance Field Officers to each shift, an increase from 6 to 10. This will reduce the span of control of the AFOs to 1:6 (even with the addition of six ambulances) and allow them to have more oversight and quality assurance for the paramedics. It also would reduce their response time to significant medical incidents.

**Recommendation 5.5: Give the AFOs' mail delivery function to the mask service units.** This will improve the productivity of the AFOs and allow them to spend more time supervising paramedics. The mask service unit's trucks already make daily rounds to all the fire stations in the city to service the SCBAs, and could deliver EMSB mail as well.

**Recommendation 5.6:** AFOs should have supervisory authority over the provision of ALS by the FS&RB paramedics as well as by EMS. There must be some means of supervising the quality of care being delivered from engine companies. The AFOs have the experience and expertise to do this, and already are performing this function for paramedics in the stations and in the field.

**Medical Direction** – Medical direction of the CFD's EMS delivery is highly problematic as it is currently structured. The current tripartite "consortium" was baffling to each member of the project's EMS study team, who have experience in New York, Washington, D.C., Nashville, Philadelphia, St. Louis, and numerous other EMS systems. Virtually no CFD field paramedic felt that it was workable. To assure uniformity of approach and delivery of the same level of EMS medical care throughout the City, every CFD paramedic (and EMT-Basic) should fall under one medical director who has full medical authority over both the EMSB and the FS&RB paramedics.

An example of the problem inherent in the consortium was an incident that arose out of a heat wave in 1995. One medical director issued a directive to his paramedics that had not been approved in advance by the entire consortium, and which ran counter to the medical protocol established for the CFD. Although the issue was quickly resolved (the Chief Paramedic issued an order countermanding the change in medical protocol), it was frequently mentioned by paramedics as an example of how the EMS system direction can become fragmented.

#### Chapter V. Emergency Medical Services

The CFD has long wanted to create a "single medical authority," but a state-level lawsuit<sup>36</sup> has challenged the statutory authority of the Illinois Department of Public Health to authorize additional resource hospitals prevents consideration of any proposal to establish a single medical authority at present. Should that lawsuit be resolved in a manner that will permit the state to designate new resource hospitals, the City should pursue implementation of a single medical authority. If not, the City should pursue legislative remedies at the state level.

While a single medical authority is an important goal, the consortium concept does have the advantage of providing multiple viewpoints and a medical community "check-and-balance" with respect to CFD decisions that affect medical care, such as the addition and the subsequent removal of automated external defibrillators (AEDs) from CFD engine companies. A system of checks and balances should be preserved were the CFD to move to a "single medical authority." This could take the form of requiring the CFD Medical Director to obtain consensus of an independent Medical Advisory Board before changing EMS paramedical protocols, or to at least have protocol changes reviewed by an advisory board. This structure would preserve the consensus decision-making role of the consortium while ensuring that all paramedics in the CFD "reported" to the same medical director.

The primary question to be resolved about a single medical authority would be whether Cook County Hospital has the capability and interest to be the sole resource hospital for all the paramedics in the CFD – both EMSB and FS&RB.

**Recommendation 5.7: Revamp EMS medical direction to have a single medical director.** All CFD paramedics should operate consistently under the same medical director. The Medical Direction Consortium should be preserved in the form of a Medical Advisory Board to the sole Medical Director. As noted earlier, it will not be possible to create a single medical authority until a pending lawsuit (*Silver Cross Hospital* v. *John Lumpkin, Director of Public Health*) addressing the legality of certain resource hospital applications has been decided. Should that decision prevent the creation of a single medical authority, the City should pursue a change in state legislation to allow a sole medical director to be used.

The checks and balances built into the current system should be preserved. The CFD Medical Director should not operate in isolation from those physicians who wish to participate in deliberations about medical direction of the EMS system. The Medical Advisory Board could receive input from interested physicians and ensure that valid medical interests are represented in a consensus-driven decision-making process.

<sup>&</sup>lt;sup>36</sup> Silver Cross Hospital v. John Lumpkin, Director of Public Health, Sangamon County Circuit Court, 97-MR-299, filed 10/30/97.

**EMS Training** – The EMSB training staff is funded out of the FS&RB budget. The ADCP in charge of EMS training reports to the CFD Director of Training, but for administrative matters, the ADCP reports to the Chief Paramedic. That is, the EMS training coordinator has two bosses and their priorities sometimes conflict. Additionally, there is no direct tie between the CFD Medical Advisor and either the EMSB or FS&RB training divisions. As noted earlier, the EMSB training staff conducts all paramedic training for both EMSB and FS&RB personnel at South Academy, while EMT-Bs in the FS&RB are trained by FS&RB trainers at the Quinn Academy. This creates three problems.

First, the EMS training personnel at the Quinn Academy are less familiar than the South Academy staff with the IDPH's rules governing continuing medical education and the administrative requirements for EMS classes (such as expectations about how paperwork should be completed, and the filing deadlines for course approvals). According to representatives of the IDPH, there have been several instances of Quinn Academy personnel not complying with IDPH administrative requirements. This resulted in FS&RB EMT-B classes being shut down and a \$10,000 fine being levied against the CFD. Inability to comply with administrative requirements has required the South Academy staff to seek last-minute waivers in order to hold classes.

Second, because EMS education is being presented in two locations by two sets of trainers, it is more difficult to ensure consistency in subject matter and presentation style. Because EMS is delivered jointly in the field, it is important that all CFD EMTs be trained in a manner consistent with that employed by the EMSB. (This is even more critical if the idea to use some "one-and-one" ambulances is pursued.) There is little or no inter-bureau hands-on drills, which makes it all the more important to be trained consistently in the first place.

Third, the South Academy staff keeps the training records of all EMT-Ps, but the Quinn Academy staff has the records of the EMT-Bs. This unnecessarily duplicates the efforts of the South Academy staff, which has an excellent record-keeping system in place and which is practiced at keeping field personnel current for relicensure purposes.

**Recommendation 5.8: Restructure EMS training.** EMS training should be guided by the CFD Medical Advisor, and funded and run by the EMSB under the Training Academy. All CFD EMS personnel, irrespective of their level of licensure or the unit to which they are assigned should be trained by EMSB staff in the South Academy, to teach a single EMS medical approach, and have more qualified instructors.

Consolidating EMS training would create economies of scale because scheduling personnel and tracking the courses taken could be done in a centralized manner. This would reduce the errors associated with both processes. EMT CME requirements must be tracked correctly because failure to meet the CME requirements at either the EMT-B or EMT-P levels will lead to revocation of licensure and a consequent inability to work. Ensuring that EMS training records are maintained on an ongoing basis does two things. First, it allows the CFD to spot employees who are behind in meeting their requirements, allowing corrective action before it is too late to meet licensing deadlines. Second, it levels out through the year the huge workload faced by the EMSB training staff each licensing period. For example, 750 personnel are due to relicense in June 1999. It takes EMSB personnel 60 to 90 minutes per person to complete the individual record matching necessary to verify the CME requirements required for licensure have been met. This translates to between 750 and 1125 hours of work.

The Medical Advisor should be tied into training in a meaningful way because training needs to be driven in part by the problems identified through an active QA program headed by the Medical Advisor. The Medical Advisor should have a role in deciding what the overall training curriculum should entail (for both the EMSB and the FS&RB) in addition to approving the specific medical theories and techniques presented in the training. Training should follow state-approved and national standard curricula whenever possible. Involving the Medical Advisor in selecting and approving training enhances the credibility of such training.

Continuing medical education (CME) should be appropriate to the level of the provider attending the class. EMT-Bs should not attend CME designed for advanced life support personnel. Whenever possible, members of both the EMSB and FS&RB should attend EMS training together, especially for hands-on training (drills). The CFD should use closed-circuit TV to present CME in the fire stations. Watching such programs could be built into the daily training routines of all companies.

Conducting all EMS training at the South Academy will improve communication between the two bureaus and allow for sharing of resources, as well as the establishment of symbiotic working relationships, since the training missions are similar in many respects. A clerical support person should be assigned to the EMS training division to assist with the scheduling of personnel for training and the tracking of licensing requirements. This will free up training staff to develop and update training curricula and to deliver classes. Finally, an investment should be made to computerize the record-keeping process using an optical scanner to facilitate course registration and CME tracking.

**Recommendation 5.9:** To facilitate paramedic staffing of ALS engine companies, consider recognizing prior firefighter training for EMSB paramedics who transfer to FS&RB. EMSB paramedics who are state-certified firefighters can be given a short course on CFD procedures and do hot have to be retaught the basics.

**Quality Assurance** – EMS Quality Assurance (QA) appears less than needed in the views of the TriData EMS analysts who visited the City, though the department does some retrospective QA through chart audits for specific study topics identified by a standing QA committee. QA topics monitored in 1998 included pediatric asthma, cardiac calls, documentation, trauma triage, field

termination of resuscitation, diabetes, pediatric cardiac arrest, and patient refusals. It is good that these retrospective audits were undertaken, but they are only one component of a complete QA program. The main area in which the CFD's QA program falls short is in concurrent QA.

No CFD personnel are assigned to perform QA on a full-time basis. A department with as many paramedics as the CFD does should have a cadre of full-time QA specialists. Most cities a tenth the size of Chicago have a full-time QA coordinator for EMS.<sup>37</sup> Instead, QA is performed as an "as-time-permits" duty for the EMS training staff. Front-line, concurrent QA should be done through AFOs as part of their daily interaction with their paramedics, but, as discussed above, they have too little time to devote to it.

A good QA program should identify both high quality and substandard patient care and who delivers it. Quality patient care should be highlighted so that it serves as an example for other EMS personnel to emulate. Substandard patient care should be addressed through remedial continuing education or in-service training sessions. The nature of the problem and the corrective actions that were taken should be documented in both individual paramedics' training files and in general QA activity reports.

A number of sources reported inconsistent handling of both recurrent and systemic QA problems. This is a product of the trifurcated system of medical direction, lack of a well-established QA program, and real or perceived favoritism. Personnel from throughout the EMS system stated that two paramedics accused of the same problem or complaint might have the matter handled differently. Handling problems in a consistent manner helps promote confidence in the ability of the department to remedy patient care issues, and helps assure individual paramedics that QA activities will not be used in a punitive manner.

There appears to be no real QA of the ALS engine company program. As noted earlier, most engine company officers are not medically qualified to do QA on paramedics assigned to their engines, and AFOs are prevented from engaging in QA on firefighter/paramedics. The medical directors feel they are hamstrung in their attempts to enforce medical discipline of engine company personnel. This situation should not be allowed to continue. The CFD Medical Advisor should have the authority to ensure QA of ALS engine companies, and their QA program should be the same as that to which EMSB units are subject.

One of the QA efforts now in place is the assignment of field personnel to "clinical time" in area hospitals. This is done in partial compliance with IDPH licensure requirements, which specify

<sup>&</sup>lt;sup>37</sup> Over 80 percent of the EMS systems in the nation's 200 largest cities employ at least one full-time QA coordinator. Mayfield, T., "EMS in America's Most Populous Cities," *Journal of EMS*, February 1999, (24:2), p. 30.

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that some continuing education may be done by in-hospital clinical observation. While this program is well intentioned, it is not a good use of resources, and makes scheduling of field personnel more difficult. Under the program, paramedics are removed from the field for four-hour blocks of time during which they are required to "observe" in hospital emergency departments. For a low-volume EMS agency, this would be a good idea, because it ensures that providers who do not handle many calls are exposed to a range of medical cases that can improve their patient assessment and interaction skills. For CFD paramedics, this clinical experience adds little because they see such a high volume of patients. Furthermore, the hospitals do not seem to have the time to add value to the experience. The CFD personnel often get used as orderlies or, even worse, they don't get used at all and end up reading books or watching TV.

The recommendations above to add more AFOs and relieve them of non-professional duties should provide the time needed to address the above QA issues.

**Emergency Medical Dispatch** – The screening of medical calls by call-takers in the Office of Emergency Communications (OEC) is not consistent. Some do not use the medical interrogation protocol that is built into the dispatch computer. Also, that protocol itself is problematic, as it is "home-grown" and not medically validated. On one visit to the OEC, TriData observed a set of printed medical interrogation cards being used that dated to 1987. The primary use of the protocol appears to be for giving pre-arrival medical instructions to callers.

A validated emergency medical dispatch protocol is needed (especially if the "one-and-one" ambulances are to be used), and all call-takers should use it. This will ensure that callers are properly interrogated and that they receive the proper EMS resources and pre-arrival instructions that reflect the state of the art in emergency medical care.

Another concern with EMS dispatching is the lack of a QA mechanism for the medical dispatch function. This is needed to ensure that call-takers are properly recognizing high-priority medical emergencies and responding accordingly. An emergency medical dispatch QA function must be able to measure both the over- and under-triage rate (i.e., what calls are being categorized as high priorities when they are low priorities, and more importantly, what calls are being categorized as low priorities when they are high priorities).

**Recommendation 5.10:** Modify the CAD to advise EMS units of the closest appropriate hospital. There are 57 ambulance-receiving hospitals in Chicago. Under certain conditions, a hospital will go on "bypass status" to prevent the EMSB from delivering new patients.<sup>38</sup> It is difficult for EMSB personnel and commanders to keep track of which hospitals are not accepting additional patients. The computer-assisted dispatch (CAD) system should be modified to include the ability to

<sup>&</sup>lt;sup>38</sup> Reasons for this include unavailability of specialty beds (such as ICU), mechanical failure (such as loss of power or problems with a CAT scanner), overcrowding in the emergency room, etc.

advise an EMS unit of the closest available hospital appropriate for the patient's condition. The mobile data terminal in EMS units should be programmed to allow the unit to query the bypass status of any given hospital or a set of hospitals.

**Recommendation 5.11: Require dispatchers to respond to requests from EMS incident commanders** – The OEC dispatchers should fulfill EMS resource requests from the highest-ranking EMS personnel on EMS-related incidents. Such requests should not need to be communicated through an FS&RB officer. On large-scale incidents where an FS&RB officer has incident command, an EMS sector should be established and all EMS-related requests should be channeled through that sector.

# Recommendation 5.12: Develop a validated EMS dispatch protocol that all call-takers should use.

*ALS Engine Company Dispatch Policy* – There was a policy of alternating ambulance assist assignments in fire stations that housed more than one piece of fire suppression apparatus. This was done to distribute the ambulance assist workload more equitably. This policy resulted in situations where an ALS engine company might be sent on a BLS call simply because it was "next up," leaving a BLS truck company to respond on a subsequent ALS call. The ALS engine company should be sent on all ALS calls. ALS service should not be denied to a citizen in need simply because the other company in the station handled the last ambulance assist.<sup>39</sup>

**Recommendation 5.13: Clarify the ALS engine company dispatch policy.** If not already done, an order should be issued specifying that in fire stations that have ALS engine companies, they are to be sent on ALS emergencies and the other apparatus used to handle the BLS calls. Workload sharing should not be done unless both FS&RB units in a station have paramedics.

**Communications Problems** – There is no common channel for EMS and FS&RB units. EMSB supervisory personnel must have two radios in order to monitor FS&RB communications and communicate with FS&RB units. Non-supervisory EMSB personnel must rely on indirect communications through the OEC in order to share information with FS&RB units. This has a direct impact on operations. It forces EMSB and FS&RB personnel to communicate face to face or to go through the OEC. Either can be significant hurdles at large-scale events – the former because geography may limit the feasibility of face-to-face communications, and the latter because it necessitates extra work for OEC telecommunicators.

Another problem with the EMS radio system is weak signals in some parts of the City due to inadequate communications infrastructure such as radio repeaters, especially in the industrial areas of the City. Lack of communications can prevent ambulances from being dispatched in a timely

<sup>&</sup>lt;sup>39</sup> This policy may have been revised since this problem was originally noted. A short discussion is included in case this understanding is incorrect, and because it is another example of an implementation problem that could have been avoided had the planning process been more inclusive.

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manner, but it can also pose significant safety hazards to EMS personnel. Additionally, poor radio coverage can hamper the ability of paramedics to give satisfactory and timely patient reports to receiving hospitals.

A third communication system problem is the lack of an alternate EMS command channel, an alternate radio frequency that can be used to coordinate operations at large-scale EMS events. There is only one "fully repeatered" EMS command channel on the radio system. In a city the size of Chicago, a repeater is necessary on more than one channel to ensure that transmissions from one end of the city can be received at the other end. It is difficult to keep EMS commanders and supplementary resources apprised of the status of an incident without a repeatered radio channel. These channels can be used for routine events (such as the Taste of Chicago) or emergent, dynamic events (such as a heat wave). The alternate radio channel is needed so that EMS incident communication does not overwhelm the primary dispatch frequency. Attempting to handle such incidents on the main radio frequency overwhelms dispatchers and crowds out EMS units that are handling calls not associated with the major event.

Chicago regularly faces simultaneous large-scale EMS incidents. This can occur when the EMSB is handling a mass gathering and a car crash creates multiple victims elsewhere in the city; it can happen during rush hour when the EMSB is handling more than one multiple casualty incident (or in jargon – "EMS Plan"). When the possibilities of disaster-scale emergencies are considered, it is easy to see the potential for needing to handle more than one incident that requires the use of an EMS command channel.

Another problem with EMS command channel operations is that no dispatcher is assigned to control the channel when it is activated. In other words, the channel acts as a "talk-around" frequency for EMS units. A dispatcher is needed to provide a focal point for resource requests and to coordinate airtime usage. Not having a dispatcher forces EMS commanders to monitor two (or more) radio frequencies as they attempt to coordinate the deployment of EMS resources with the FS&RB incident commander, coordinate EMSB actions, and respond to changes in the situation status as reported by EMSB units. Assigning a dispatcher to the EMS command channel during such events would improve communications for EMS commanders and field personnel.

*Public Information* – The Chicago media market has been inundated recently with negative stories about EMS in Chicago. The fact is that on a daily basis, most of the treatment rendered is excellent. More stories of EMS "saves" and good deeds should be provided to the media. The Department's Public Information Office has worked to do this, and these efforts should continue.

## **CHAPTER VI. SUPPORT SERVICES**

This chapter addresses a number of functions that provide critical support to the line operations. They are not restricted to the functions currently in the CFD Bureau of Support Services, but rather include Dispatch/Communications, Training, Maintenance, Information Systems, and the Commissary.

## A. Dispatch/Communications

The Dispatch and Control Communications functions are provided to CFD by a separate City department, the Office of Emergency Communications (OEC), otherwise known as the "9-1-1 Center," which handles all police, fire, and EMS calls. While not part of the CFD and therefore not fully within the scope here, there were several dispatch issues open at the time this study was started, and some attention had to be given to this critical function. The project team spent considerable time at the OEC observing operations, interacting with on-duty personnel, and interviewing its management. In addition, discussions were held with various firefighters in the CFD stations to obtain a perspective of communications from the field. The project team also met several times with the ad hoc committee of battalion chiefs set up to help identify and resolve problems with the new 9-1-1 Center and its associated Computer Assisted Dispatch (CAD) system and report management software.

All persons interviewed at the 9-1-1 Center were highly professional, knowledgeable, and candid, and had positive attitudes. They acknowledged the existence of problems inherent in the new hardware and software system that is still under development.

**Recent History** – In mid-1998 the ad hoc committee of battalion chiefs brought forward a variety of dispatch and communications issues that were of concern to the Department and perceived by this committee to be the result of the changes brought about by the new technology and the establishment of the OEC, which replaced the CFDs own dispatch center. To research these issues a focus group composed of CFD, OEC, and TriData project staff personnel was established.

Generally the new 9-1-1 system is working well, with significant improvement having taken place during the course of this study, from summer 1998 to March 1999. Most of the issues open at the start of this period stemmed from two sources: 1) The changes initiated by the Fire Department regarding the unit assignments made to respond to a call, which are reflected in the data loaded in the CAD system. This contrasts with the previous approach that used hard copy "run cards" in fire stations that identified the unit assignment to a particular type of call in a particular area; in some cases the written assignments were conflicting. 2) The application of computer technology and data collection to processes that had for decades been done manually or verbally.

Below we describe a number of issues related to Dispatch/Communications, and recommendations for reducing them.

**Lack of Continued Liaison** – Some of the 9-1-1 Center issues raised by the ad hoc battalion chiefs committee were in part the result of there not being an adequate awareness of the effect that the changes requested by the Fire Department would have on dispatch and data when applied in a computerized dispatch environment. Despite good intentions and considerable efforts on both sides, some of the CFD's concerns were not fully appreciated in the design of the CAD's procedures, operating algorithms, and reports. Likewise, the CFD had difficulty in getting information – or articulating the right questions – to understand the constraints of the new technology, which is understandable since Chicago's state-of-the art 9-1-1 Center incorporates many complex and interrelated sub-systems, and there is no communications office in the CFD.

Fire and EMS operations can be expected to continue to evolve and impact the role of the OEC. Likewise, the technology systems used by OEC and Fire/EMS will continue to change, improve, and impact both departments. We therefore propose the following:

**Recommendation 6.1:** For at least the near future, the CFD should designate a full-time Communications Coordinator and establish a standing CFD-OEC Committee to identify and resolve dispatch and communications issues. The committee would meet on a regular basis to discuss needs, issues, solutions, and impacts from their respective viewpoints. The ad hoc committee of battalion chiefs has been extremely useful and done an excellent job in identifying issues; it might be useful to continue it, with a few of its members serving on the CFD-OEC Committee, or simply inviting the OEC to meet with the battalion chief's committee on a regular basis. The person designated as the CFD liaison to the OEC needs to understand both fire operations and computer technology, and may be a civilian or a uniformed position. The need for the position and committee may fade as the 9-1-1 system matures, but there is need for an active liaison for at least the next two or three years.

**Consolidating Dispatcher's Event Codes** – There are 174 different Fire/EMS event codes that must be memorized by OEC Fire/EMS calltakers and dispatchers, even though the number of different combinations of units dispatched to the various events are far fewer than that. That is, the same size complement of units may be dispatched to a wide variety of calls. As a calltaker receives and enters a call, time is spent selecting the specific type of event from the list of 174. The *specific* type of event is useful for the units who later report the event, but may not be necessary for the dispatch process.

**Recommendation 6.2:** Review the current list of 174 with the goal of combining event codes and significantly reducing the overall number from which the dispatcher must select. This should speed the time it takes for a calltaker to enter a call. Going the opposite direction, consideration should be given to adding the following event types: AIRP=Airplane; RES=Rescue (all types) or (unknown); SUBW=Subway (not EL Train); and TRAIN =Train (not EL Train).

**Dispatching Hazmat and Subway Calls** – The number of hazardous materials (hazmat) incidents continues to increase. The receipt and processing of a hazmat call by a calltaker is in many ways unique and challenging compared to a routine fire call. There are many specific questions that should be asked by the calltaker to better prepare the units for the response.

**Recommendation 6.3: The CAD should incorporate a hazmat call entry window that would open when a hazmat event (Code HAZ) was entered by the calltaker, and a subway call entry window that would open when a subway event (Code SUBW) was entered by the calltaker.** The HAZ window would include specific questions for the calltaker to ask of the caller to capture relevant information to be provided to the units en route. The questions should be developed with input from the CFD Hazmat unit. The concept is similar to the questions asked of the caller for EMS events. Similarly, below-ground subway incidents are unique and challenging for the calltaker to receive and enter in CAD, and require more information to be collected initially than a routine fire.

**Need for Ongoing Enhancements** – As the CFD fire and EMS managers expand their use of data from the CAD's Records Management System (RMS), there will be need for improvements in analysis capability and expanded information requirements. Many of these newly identified functions will have costs associated with their development.

**Recommendation 6.4:** A mechanism needs to be identified or developed that will provide CAD/RMS enhancement funding on an on-going basis so that enhancements can be achieved in a timely manner. Obviously we are not suggesting an unlimited budget, but rather planning for funding an evolution of the analyses needed to better manage resources of the whole department. The many other issues associated with improving the data from the new CAD system are addressed later in this chapter in section D, Information Systems.

**High-Rise Fire Advice** - Considering the large number of high-rise buildings in Chicago, there is need to have a procedure for responding to occupants involved in high-rise building fires who call 9-1-1 to ask for assistance or guidance as to what to do to protect themselves. This can be a very demanding and emotional experience for calltakers.

**Recommendation 6.5: Guidelines should be developed to assist calltakers in responding to** *occupants during high-rise building fires.* Similar guidelines already exist for handling other EMS situations while units are en route.

**Cellular Telephones** – Residents, workers, and visitors to the city are increasingly dependent on wireless (cellular) telephones. Although the number of wireless 9-1-1 calls currently comprises less than 20 percent of total 9-1-1 calls, this number will definitely increase. Since cellular phone callers do not always know where they are when they report every event, and the current caller ID does not work for cellular phones, the dispatchers often have a problem in knowing exactly where to dispatch units. This problem has been given much consideration by the City.

**Recommendation 6.6:** The OEC should request deployment of Phase 2 wireless enhanced 9-1-1 as soon as reliable caller location technology is developed for cellular phones. The OEC should continue to work closely with all relevant parties – legislators, regulators, industry, and service providers – to achieve cost-effective implementation of the Federal Communications Commission Report on the subject and Order 94-02, Phase 2. The technology should be calltaker- and dispatcherfriendly.

**Handling Bomb and CBW Threats** – The reality today is that there is a threat of terrorists using chemical and biological weapons (CBW) as well as bombs as weapons of mass destruction. The 9-1-1 calltakers may be the first to receive the report of a threat. The manner in which this type of report is handled can have a direct bearing on the safety of fire/EMS/police personnel dispatched and on the general public.

**Recommendation 6.7: Procedures should be developed regarding how calltakers are to handle CBW as well as bomb threats.** Training should be provided to all calltakers/dispatchers regarding those procedures and the important role of the calltaker/dispatcher in this type of event. The fire dispatchers need the training as well as the police dispatchers.

**Updating "White Pages" Directory** – The first page of the current (1997) Ameritech Illinois Chicago white page telephone directory contains information relative to 9-1-1 usage. Considering the recent implementation of 3-1-1 and the extensive use of 9-1-1 by wireless telephone users, neither of which are addressed, the current page is out of date and not as informative or as instructive as it could be.

**Recommendation 6.8:** The OEC should work with Ameritech and other appropriate agencies in redesigning this page of the telephone directory.

**Use of Internet to Report Incidents** – With the rapid development and use of the Internet, the role, if any, this technology will have as a means of reporting a fire/EMS/police emergency in the future is unknown, but there are a few simple steps to take to prepare for the possibility.

**Recommendation 6.9: The EOC should select one or more unique Internet addresses such** as "CHIC911.com" and register or reserve them. If in the future the Internet becomes a means of reporting an emergency, Chicago will have an easy-to-remember Internet address to receive such calls.

# B. Training

Training is a major and increasingly time consuming activity in the Department. The Fire Academy provides recruit training, EMS training, fire prevention training, engineer training and qualification, EMS refresher training, CPR training, new equipment training, and training for newly promoted personnel.

As in most fire departments, a large amount of training is done in the stations, and by taking whole units to the Academy or other sites for refresher or specialized training. An average of 12 companies go out of service a portion of their daily tour each day for training. An average of about 10 uniformed personnel are detailed into the Fire Academy each day to act as instructors.

Fire Academy personnel have a number of auxiliary tasks, such as serving as photographers, running the departments graphic and reproduction shop, running the department's mail car, distributing paychecks, and maintaining training records. All of these are candidates for further civilianization to free uniformed personnel for the training duties requiring expertise.

Much of the training staff consists of personnel who are detailed to training from the field. This was said to work well. It keeps the trainers fresh and their skills sharp, since they are teaching what they have been doing in the field. That also helps establish their credibility.

**Issues** – Some of the most important training issues were discussed elsewhere in this report. By far the most important training issue in the opinion of the project team – and by most of the department members interviewed – is the need for better supervisory and management training. This subject is discussed at length in Chapter VII, Supervisory and Human Relations Issues.

A second major training issue is the delivery and coordination of ever more challenging EMS training to both firefighters and paramedics, including their especially required continuing education. This was discussed previously in Chapter V, Emergency Medical Services.

Overall, there is a shortage of trainers, and a lack of adequate "training of the trainers" in education methodology. Many people in the field are reluctant to be detailed to Training for the same reasons that it is difficult to get staff for Prevention. Unlike Prevention, however, the shortfall cannot be made up by civilians.

**Recommendation 6.10:** There is a need for more trainers assigned full-time or detailed to the Academy. At present, all instructors receive a pay grade increase while serving as an instructor. Incentives to get more instructors for training might include four 10-hour days and a minimum base pay for firefighters and paramedics while serving as an instructor. (The current pay incentive yields very little extra for firefighters and paramedics.)

**Training Center** – There is a need for a new, state-of-the-art training center. This has been proposed, and we urge its implementation. As the number of significant structural fires drops, it is important to keep firefighting skills up. Because of environmental pollution considerations, live burns of old structures are no longer possible, and they also are not as safe as modern, highly controlled burn facilities and simulation. A new training center is needed to have training fill the gap

left by declining experience. Also, firefighters are expected to become trained in an expanding array of technical services and it is difficult to learn and maintain skills. Good training leads to good productivity.

Some firefighters are sent to the Illinois Institute of Technology labs for training on fire simulators, but that is impractical for training most of the Department. There also is a need for district training capabilities to reduce the time spent out of service. A set of four to five small satellite district training centers to reduce overtime costs to travel out of district, and even the need to back the units up while in training in their district. (A cost-benefit analysis is needed to determine if they truly would pay off.)

**Recommendation 6.11: Invest in a new state-of-the-art training center over the next several years.** Consider the establishment of satellite centers in the districts for more of the day-to-day training activities.

**Video Facilities** – All fire stations have a TV and VCR, all will soon have free basic cable TV with descramblers added for use in closed circuit programs by the Fire Department. There should be much more use made of this capability for keeping the Department informed about Department policies, personnel changes, etc. The Portland, Oregon Fire Department is a good example of how this capability can be used.

There also should be much more use made of the TV and VCR for mandatory training. Viewing video tapes is an excellent way to teach, and can be tied into training sessions. The firefighters spend much time in front of the television, and there is no reason it can't be used for more training.

Recommendation 6.12: Increase efficiency and retention of training by making greater use of the existing TV and VCR capabilities.

# C. Maintenance

Virtually all the maintenance of vehicles, equipment, and facilities of the CFD fall under one of the three units reporting to the Deputy Fire Commissioner for Support Services: Apparatus Maintenance and Supply; Building and Property Management; and the Air Mask Service. These will be discussed in this section in turn.

**Vehicle Maintenance and Fleet Management** – The CFD operates an automotive fleet of about 550 vehicles that include engines (pumpers), ladder trucks, ambulances, squads, cars and vans, and a number of more specialized apparatus. Beyond warranty work, some bodywork, and extensive or complicated repairs handled outside the Department, the CFD maintains the fleet in-

house at its own repair facilities ("The Shops"). This is one of the three largest fire and EMS fleets in existence in the United States.

The shops are headed by the Director of Equipment and Supplies, who has a staff of 90+ civilians and 25 uniformed firefighters. There are two vehicle maintenance sites situated close to each other. One is for the repair of pumpers, aerial equipment, and larger vehicles and the other for ambulances, vans, and cars.

*Fleet Replacement Schedule* – The National Fire Protection Association (NFPA) provides the following guidelines for the life expectancy of first line and reserve engines and ladders:

"The normal life expectancy for first line fire apparatus will vary from city to city, depending upon the amount of use of the equipment and the adequacy of the maintenance program. In general, a 10 to 15 year life expectancy is considered normal for first line pumping engines. First line ladder trucks have a normal life expectancy of 15 years. In some areas of high fire frequency, a limit of only 10 years may be reasonable for first line service. The older apparatus may be maintained as part of the required reserve as long as it is in good condition, but in almost no case should much reliance be placed on any apparatus more than 25 years of age."

– NFPA Fire Protection Handbook, 18<sup>th</sup> Edition

The identical finding is echoed in The Fire Chief's Handbook, 5<sup>th</sup> Edition published by Fire Engineering.

Generally, these guidelines are followed across the fire service. They are reasonable, proven in practice, and provide some latitude or discretion as a function of the busy-ness of a Department. The CFD would, by any standard, be regarded as "busier than most" and one that operates in a severe weather environment. Therefore the lower end of the active first line service span, 10 years, is the desirable standard lifetime for engines, and 15 years for ladder trucks.

The age distribution of the current fleet of engines is shown in Table 6.1.

Table 6.1 Age of thist Line Lingines		
Age	Number	
10 years old or less	47	
10 to 15 years old	28	
15 to 20 years old	19	
20 to 25 years old	2	
Total	96	

Table 6.1	Age of First	Line Engines
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Based on a ten year first line service criteria, about half of the engines (49) are due or overdue to be moved into reserve status by NFPA standards. Two front line engines are two years away from being too old even to be used in reserve. Many of these "overage" vehicles are still quite serviceable, but the age profile does underscore the need for a structured apparatus replacement program. The consequence of not having a replacement schedule that is adhered to is that at some point in time a large number of engines may have to be purchased at one time. Major accidents or other disabling events can increase the number of replacements needed.

Turning next to the ladder truck fleet of 58 vehicles, Table 6.2 shows the age distribution for the 35 ladder trucks that have not been refurbished, which will be addressed separately below. Again, using the NFPA standards, eight ladder trucks qualify to be moved to reserve status, with four more only two years short of that milepost.

Age	Number
10 years old or less	17
10 to 15 years old	10
15 to 20 years old	6
20 to 25 years old	2
Total	35

Table 6.2 Age Distribution of First Line Ladder Trucks

In the course of visiting many fire stations and inspecting their apparatus, the study team saw many examples of first-line vehicles with significant problems: leaking water tanks that require continual topping off with garden hoses; broken windows on the driver's side; torn driver's seats; etc. The firefighters interviewed generally felt that their vehicles were serviceable and that the spares were adequate. They felt that the quality of repairs had significantly improved over the past decade.

Overall, it is apparent that the CFD has an aging, beat-up fleet of first line apparatus. What has prevented this from being a critical problem is the outstanding effort by the shops to keep the fleet serviceable. Rarely if ever is a company taken out of service for lack of a vehicle – a key test of the overall maintenance system.

Besides increased maintenance, some of the older vehicles pose another problem: not having the enclosed riding positions recommended for safety in NFPA 1901, Standard for Automotive Fire Apparatus (1996 Edition). CFD pumpers purchased before 1988 and all of the ladder trucks that have been refurbished are not in compliance. This is a serious safety issue with liability exposure that should be addressed.

The CFD does have a vehicle replacement plan but it has not been regularly implemented over the years. This situation is rather common in many major cities, where purchases must be delayed due to budget problems. However, not replacing the older vehicles increases maintenance costs and raises the potential for liability.

A more structured, evenly spaced apparatus replacement program could make planning budgets easier. Since the number of companies is not likely to change much, there can be fewer budget surprises. Resorting to major, costly catch-up purchases can be avoided. Additionally, the disposing of fire apparatus within reasonable age parameters offers some value return by salvage or by auction.

**Recommendation 6.13:** Accelerate vehicle purchases for the years 2000-2003, and then establish an apparatus replacement program with constant annual (or bi-annual) purchases. Once established, the program should be adhered to to avoid the need for surge purchases. Sometimes special deals are possible by ordering two years worth of vehicles at a time. Another alternative is to consider lease/purchase arrangements, which spread out vehicle capital costs over time, which is often attractive when a catch-up surge in investments is needed.

A replacement schedule to get the CFD apparatus into better shape over the next decade should look something like that in Table 6.3. The approximate cost in near years is above \$6-\$8 million.<sup>40</sup> The current funding has been \$4-\$5 million per year. There are enough overage vehicles now that a larger purchase will be needed up front before leveling out. "Special Units" includes squads, command vans, light wagon, hose wagon and others that fall into the "Special" group of apparatus.

	· ····································							
Year	Engines	Ladder Trucks	Tower Ladders	Special Units	Approximate Cost			
2000	15	10	1	7	\$7.8M			
2001	12	6	1	7	5.7M			
2002	12	6	1	3	5.5M			
2003	12	6	1	3	5.5M			
2004	10	6	1	3	5.1M			
2005	10	6	1	3	5.1M			
2006	10	6	1	3	5.1M			
2007	10	6	1	3	5.1M			
2008	10	6	1	3	5.1M			
2009	10	6	1	3	5.1M			

Table 6.3 Proposed Apparatus Replacement Program

Annual Apparatus and Ground Ladder Testing – An annual test of all front line and reserve engine and ladder trucks should be conducted using NFPA test procedures and standards. Considering the age of some of the vehicles in the CFD automotive fleet, it is doubtful if all would pass a test of this nature. Repairs needed to bring each vehicle up to standard should be evaluated for cost effectiveness. Some vehicles may be too expensive to repair, or their age will preclude repairs being made.

In addition to testing hydraulic ladders, the ground or portable ladders carried on both engines and ladder trucks should also have annual testing. These ladders are among the most used tools in the fire department inventory and should be subjected to these tests in the interest of both firefighter safety and the safety of any civilians that have occasion to descend them.

**Recommendation 6.14:** All departmental vehicles and ground ladders should be tested annually against NFPA standards. For vehicles, the standards are: NFPA 1911, Standard Service Tests of Fire Pump Systems on Fire Apparatus (1997 Edition) and NFPA 1914, Standard for Testing Fire Department Aerial Devices (1997 Edition). For ground ladders, the standard is NFPA Standard 1932, Use, Maintenance and Service Testing of Fire Department Ground Ladders.

*Reserve Apparatus* – The NFPA Fire Protection Handbook recommends that a reserve fleet range in size from 25 percent to 30 percent of the first line equipment, including ladder trucks, rescue trucks, and ambulances. The reserve apparatus substitutes for front-line apparatus when the latter must be taken out of service for maintenance or replacement. The reserve apparatus also can be used by off-shift personnel for major fires or disasters.

At present, there are 12 reserve engines, half of the recommended number for a fleet of 96. There are about 23 engines in the front-line fleet that are ready for reserve status, and many would make suitable reserves as new vehicles arise at no extra cost.

At present, there are 10 reserve ladder trucks plus 2 reserve tower ladders on hand, close to the 14+ reserve ladder trucks needed according to the NFPA standard. This reserve fleet has proven to be just barely adequate. While we heard of no problems of actually running out of reserve vehicles, significant efforts have been required to repair vehicles and get them quickly back in service to keep this from happening. That the CFD can operate in this manner is a commendation to the shops and to the willingness of the firefighters to do the best with what they are provided.

**Recommendation 6.15:** In the long term, an attempt should be made to build up the engine reserve fleet closer to 24 and the reserve ladder truck fleet to 14. This does not require extra purchases, just the retention and maintenance of the best front-line vehicles that are retired.

<sup>&</sup>lt;sup>40</sup> In the 1999 budget, costs were \$230,000 per engine, \$350,000 per ladder, and \$500,000 per tower. We used an average of \$60,000 per miscellaneous support vehicle (some less, some more than this).

*Refurbishing* – The "Fire Chief's Handbook" has a list of questions for deciding on whether a vehicle is a candidate for refurbishment. The last question on that list is whether the fire department is willing to delay extensive safety upgrades for another five to seven years, which is considered the added life expectancy of a refurbished vehicle. Table 6.4 shows the year of purchase of the refurbished CFD ladder trucks, and the year they were purchased.

Number of Pieces	Year Purchased	Year Refurbished
4	1982	93 (1), 94 (1), 95 (2)
3	1980	92 (2), 95 (1)
2	1978	93 (1), 94 (1)
2	1977	93 (1), 94 (1)
1	1976	93
3	1975	93 (2), 94 (1)
2	1974	92 (1), 93 (1)
2	1973	91
4	1970	91

Table 6.4 Refurbished Ladder Trucks

All of these refurbished trucks are first line ladder trucks working day and night in a busy urban environment. The four oldest refurbished pieces were purchased in 1970 and their refurbishment life is at its projected end. The 11 trucks purchased in 1970-1977 are also past their nominal extended useful life. Though some vehicles may be in good shape for their age, the updated safety elements found in newer vehicles are important. Also, it is our understanding that the benefits and savings realized from refurbishing are not what was expected by the CFD. The decision has been made to cease this concept of vehicle life extension versus outright replacement. The need to start replacing the refurbished vehicles was a consideration in the apparatus purchase schedule suggested above.

## Recommendation 6.16: Reaffirm the policy that refurbishing operations on ladder trucks will be discontinued.

*Deployment of Fill-In Apparatus* – When a front line fire vehicle becomes inoperative or disabled, it should be replaced as quickly as possible, even before a determination is made of how extensive are the needed repairs.

At present, a replacement vehicle is delivered from the automotive shop to the station with the inoperative vehicle as soon as the automotive shop is notified of needed apparatus repairs. Due to Chicago's large geographic area the delivery could take considerable time, during which the unit is out of service. An alternative to consider is strategically deploying some reserve apparatus throughout the city. Two levels of reserve vehicles could be established: apparatus that are fully equipped; and apparatus stripped of equipment.

The closest fully equipped reserve vehicle could be immediately dispatched to the unit unable to respond or in need or repair, and be utilized until a determination is made of the extent of needed repairs. This method would reduce the time the unit is out of service. A second use for the fully equipped reserve vehicles is the augmentation of fire suppression or EMS forces in times of critical need, such as for a major fire or disaster when off-duty members are called up to create additional units. If the department had a number of fully equipped pumpers stationed throughout the city, all that would be needed is to assign personnel coming from off-duty to the station where these units are housed. When a sufficient number firefighters arrive, the unit is ready to be used either on the fireground or to fill in an area of the city in need of back-up coverage.

The replacement reserve vehicles without equipment on board, again strategically located throughout the city, would be used when a regularly assigned pumper, ladder or ambulance will be under repair for an extended period (weeks or months). The equipment from the first line piece in need of repair would be transferred to the replacement piece. When the company's original vehicle is repaired, the process is reversed.

**Recommendation 6.17:** Consider setting up a two-tiered reserve apparatus fill-in program. A practice of assigning two fill in pieces of each type to each District would make for an efficient fill in procedure and save a great deal of down time.

*Preventive Maintenance* – Preventive maintenance is now done by having the vehicle report to the shop, no matter how distant the unit, which can consume much time. Some preventive maintenance could be done at the stations, using mobile mechanics. Consideration might be given to doing all the vehicles in one station on the same visit.

## Recommendation 6.18: Set up a program to do preventive maintenance at the stations instead of the shop, to the extent feasible.

*Spare Parts* – The NFPA publishes and updates standards for most fire vehicles. They are based on the actual use the vehicles will get, and are a good starting point for the apparatus specification process. The CFD uses these standards in developing its RFPs for vehicles. Some jurisdictions now are including spare parts, doors and body parts, etc. in the RFP. In this way costly replacement parts can be avoided or at least bought at a fairer rate than would be the case if they were purchased individually. This is a particularly good practice when a number of vehicles are of the same general vintage and manufacturer, increasing the likelihood of using the spares purchased.

## Recommendation 6.19: Consider including spare parts in the original request for proposal when purchasing fire vehicles.

*Vehicle Maintenance Records* – At the present time it is difficult to determine what maintenance has been done on any particular piece of apparatus, what that work cost and how much time was spent on it. To pull out this information requires a search by hand through the files, and is extremely time consuming. Maintenance records need to be computerized. The City is about to put out an RFP for a Vehicle Management System that should be adaptable to the Fire Department eventually.

**Recommendation 6.20:** Acquire a vehicle management system (VMS) and computerize all shop maintenance records. The system should support the Department's fleet management activities including inventory control and management, labor and materials costing, scheduling, etc. As noted earlier, management would be better equipped to make operating decisions that increase productivity and service levels and reduce costs if real time data is accessible through such a computerized system.

The starting step in developing a VMS should be a comprehensive systems requirements analysis with specifications tailored for the CFD shops, including a training program and continued user support. Before a system is implemented, departmental needs should be defined and an analysis of any gap between the new system's features and the Department's defined needs. The system should have procedures for flagging and tracking warranty repairs, recalls, and repeat work, and internal accounting procedures that track expenditures by equipment/vehicle type, vehicle class and shop location. These tasks can be organized on an interim basis until a VMS is purchased. The efficiencies gained from improving or establishing procedures would be cost beneficial.

Transmissions - A number of pumpers in the fleet are equipped with manual transmissions. Many instances have been reported where newer or younger fire service drivers are unfamiliar with these transmissions and, consequently, the vehicles are frequently in need of costly transmission repairs. The obvious alternative is to purchase automatic transmissions exclusively.

### *Recommendation 6.21: In the future, purchase fire vehicles with automatic transmissions.* This should reduce repairs.

*Civilianization of Vehicle Maintenance* – There are a large number of uniformed firefighters assigned to the shops who do work that could be done by civilians. The duties of current uniform CFD personnel on shift duty in the Shops include: the delivery of replacement engines, trucks, and ambulances from the shop to the stations; towing fire vehicles; fixing/replacing tires; delivering supplies; and delivering fuel to stations and to fire vehicles on the fireground. There also are four 8-hour-day uniformed firefighters who repair and deliver hose lines, act as storeroom persons, keep records and track firefighters time, and work the switchboard.

Up to the present, the prime justification given for having uniform employees do the above tasks was the need to have vehicle maintenance available on a 24/7 basis, but that service can be

provided by civilians as well. (Furthermore, there really is no need to keep the same number of people – the equivalent of a four-person fire company – on duty seven days a week.) Another justification for using firefighters has been that they have greater respect than civilians for the maintenance and careful handling of their vehicles, and may put other firefighters' minds at ease when delivering vehicles. But there are many places where trained firefighters could be better used, and the savings from civilianization can be put toward the purchase of new vehicles. A lower paid Motor Truck Driver (MTD), garage attendant, or laborer would be more cost effective and more functional in a fleet maintenance facility than firefighters. If the Department would be uncomfortable with having all-civilian leadership of the shops, one of the top two positions could be retained as the uniformed input or liaison.

The present uniformed firefighter staffing and two civilian staffing alternatives are shown in Table 6.5. The two civilian staffing alternatives are as follows: replacing the current firefighters person for person with civilians (middle columns); and the proposed plan, which would use a slightly reduced number of civilians that the project team felt was adequate for the job (right-hand columns). The cost savings would be on the order of \$377-\$632,000 per year. The proposed new civilianized staffing plan is based on three 8-hour shifts and requires that four people per shift perform the current duties of the shift firefighters on the platoon schedule. The responsibilities of the current four 8-hour day workers would be split between a laborer and a garage attendant. The timekeeper's duties would be reassigned to existing civilian personnel staff and the responsibility of the switchboard operator would be switched to a civilian operator. Actual cost savings might be even greater than projected above when overtime and other costs associated with firefighters are factored in.

*Recommendation 6.22: Civilianize most if not all firefighter positions assigned to the shops.* This wasteful use of firefighters should end as soon as possible.

*Maintenance Privatization Opportunities* – Of all the Fire Department services that have potential for privatization, the leading candidate to consider, in the opinion of our team, was maintenance of light-duty vehicles – basically, the ordinary cars and trucks as opposed to specialized fire vehicles. The types of routine repairs made at the maintenance shops on cars are comparable to similar repair services within the automotive industry.

*Fuel Delivery* – Fuel delivery is another area where the benefits of civilianization or centralization should be explored. At present, firefighters handle this function for the CFD, and, again, this is not part of their job description. This service could be provided around the clock all year long by a centralized city entity, or by civilians. Fire ground deliveries should be assured in those cases of extended fire service activity.

*Recommendation 6.23: Gasoline and diesel fuel should be supplied or delivered by a single city agency.* The assurance mentioned above should be an integral part of any program developed.

Ui	niform CFD (	@ Shops		Similar Civilian Titles			Proposed Staffing		
Title	# of Positions	Base Salary	Total (w/ Benefits @ 45%)	Title	# of Positions	Base Salary	Total (w Benefits @ 35%)	# of Positions	Total (w/ Benefits @ 35%)
Director of Equip./Sup.	1	\$94,716	\$137,338	Deputy Commissioner	1	\$82,092	\$110,824	1	\$110,824
Assistant Director of Equip./Sup	1	87,756	127,246	Director of Maintenance Operations	1	\$73,116	98,706	1	98,706
Lieutenant	1	59,550	86,348						
Lieutenant	1	57,696	83,659						
Fire Engineer	1	55,782	80,884	Mgr. of Vehicle Maintenance	7	\$53,748	507,913	3	217,677
Fire Engineer	2	54,186	157,139						
Fire Engineer	2	50,526	146,525	Laborer	1	\$38,698	52,242	1	52,242
Firefighter	2	51,552	149,501	Garage Attendant	5	\$26,377	178,041	3	106,824
Firefighter	2	50,106	145,307	MTD	4	\$42,432	229,132	3	171,849
Firefighter	2	48,324	140,140	MTD – Tire Repairer	3	\$42,942	173,913	3	173,913
Firefighter	7	46,692	473,924	* Garage Attendant		\$26,377		3	106,824
				MTD		\$42,432		1	57,283
Total	22		\$1,728,011		22		\$1,350,771	19	\$1,096,142
<b>Cost Differences</b>							\$377,240		\$631,869

Table 6.5 Comparison of Civilian vs. Uniformed Personnel for Shops Tasks

**Note**: The civilian titles used for comparative purposes are actual City of Chicago titles used in other departments. The manager level salaries are averaged and the non-managerial salaries are actual entry-level rates.

\*Vacation/sick relief factored into the manning calculation.

*Procurement* – As was discussed in Chapter II, Organization and Management, the city's procurement system is an impediment to smooth operations of the vehicle maintenance program. Automotive personnel reported many delays in acquiring outside repair services. Recommendations were already made to address this.

*Electrical Mechanics* – The electrical aspect of automotive repairs is growing with the increased use of electronics in engines, transmissions and other components. Just about every vehicle today comes equipped with electronic or computer-controlled devices. The automotive shop is struggling to stay abreast of technology with their current staffing levels. The Shop can make a compelling argument for a staff increase of at least two, and possibly three, electrical mechanics.

### **Recommendation 6.24: Shop command personnel should submit a budget and justification** for the needed number of new electrical mechanic positions. Support should be given this request.

*Physical Condition of the Shop* – On the grounds of the Shop is what appears to be a stagnant creek that if filled in would provide much more space for the maneuvering of fire apparatus in and out of the Shop. By adding the additional space, fire apparatus could enter by the East end of the Shop grounds and exit the West end, eliminating the need to pull in and then backing out. This concept has been explored in the past but there was no resolution. A new look should be taken at this project and it should be undertaken if deemed feasible.

The shop is dingy inside and has aspects of a junkyard outside. Once a fire engine, pumper or ladder or any other type of fire vehicle is no longer of use to the CFD it should be stripped of anything valuable and then discarded. It should not sit in an open yard exposed to further deterioration by weather. There is a possibility that these discarded vehicles might be of interest to some salver. If not, they should be sold for scrap but not warehoused.

### Recommendation 6.25: Discard all vehicles that are of no further use to the CFD.

*Privatization* – Available data on CFD repairs for cars, ambulances, and other so-called lightduty vehicles for part of the year 1998 are shown in Table 6.6. They indicate that about 36 percent of all monthly jobs are classified as preventive maintenance and 14 percent are minor brake jobs.

	Jan	uary	May July		ly	Average		
Type of Repair	#	% of Total	#	% of Total	#	% of Total	No. of Monthly Repairs	% of Total
Major Engine	0	0%	1	0%	0	0%	0	0%
Minor Engine	36	10%	31	8%	28	6%	32	8%
Major Trans	8	2%	4	1%	1	0%	4	1%
Minor Trans	12	3%	10	2%	12	3%	11	3%
Major Brake	17	5%	35	9%	65	14%	39	10%
Steering/Suspension	6	2%	16	4%	18	4%	13	3%
Minor Brake	60	16%	55	14%	60	13%	58	14%
Periodic Maint.	143	39%	147	36%	151	33%	147	36%
Safety Test	21	6%	16	4%	12	3%	16	4%
Miscellaneous	29	8%	20	5%	30	7%	26	6%
Heaters	15	4%	0	0%	1	0%	5	1%
Accidents Repairs	8	2%	2	0%	10	2%	7	2%
Air Conditioning	1	0%	35	9%	37	8%	24	6%
Cooling Systems	10	3%	29	7%	19	4%	19	5%
	366	100%	403	100%	457	100%	409	100%

Table 6.6 Types of Light-Duty Vehicle Repairs (3 Sampled Months – 1998)

We tried to get answers to the following questions in order to analyze the costs: What are the costs of the materials and supplies that are used for each type of maintenance job? How many staff are assigned to each job? How many jobs are performed in a year, month, week, or days, by job type? Although some general assumptions about manpower and jobs could be made, *no cost data were available at this level of detail*. The industry standard – \$1,000 per vehicle per year for routine maintenance on light-duty vehicles – can be used as a benchmark for making comparisons on the 130 cars maintained. However, to truly evaluate the cost of outsourcing light-duty vehicle preventive or minor brake maintenance, detailed cost information must be provided. This reinforces the needs for a good Vehicle Maintenance System.

A cost-benefit analysis of outsourcing a service must consider focus on two aspects of competitiveness, cost and quality of service. In this case, the CFD shop (and most "customers" in the department) would rate its operations as providing good service with decreasing cost. It is currently assumed by some outside the shops that there is a high cost associated with shop operations. This is based on the fact that cost overruns have occurred in previous years' budgets. However, since costs cannot be determined and internal budgets are not established by shop or equipment class, a comparison of competitive bids should be used to evaluate the comparison for outsourcing, and not how well the shops did relatively to their estimated budget. If demand is greater than predicted, the extra burden would occur for an outsourced operation as well.

The types of repairs currently outsourced include engine rebuilds, transmission rebuilds, glass repairs, major accident repairs, and muffler repairs. Management indicates that staff time constraints (too few mechanics), not lower costs, were the determining factor for originally outsourcing these functions.

Recommendation 6.26: Request the shops provide cost data for a sample time period, and then undertake an analysis of the potential for privatization of light-duty maintenance, or expanding the shops.

**Building and Property Management** – The maintenance and repair of CFD fire stations, headquarters, training facilities, shops and other buildings is the responsibility of the Building and Property Management Unit. This unit is headed by a Director who reports to the Deputy Commissioner for Support Services.

In addition to the Director, the staff includes 13 custodians who clean the Fire Academy and other offices and/or buildings; 7 engineers who maintain the heating and air conditioning units in fire stations; 2 clerks who handle maintenance requests and order supplies; 1 project manager who oversees major capital improvements; 1 coordinator who works with tradespeople and sets work schedules; 1 purchase officer who does the buying and monitors budget expenditures, and 1 warehouse person. It is the responsibility of this group to see that all 113 CFD buildings are maintained in a livable condition and that needed repairs are accomplished properly and in a timely manner.

As mentioned earlier in this report, the building stock is aging. The newest off-airport fire station was constructed in 1982. Table 6.7 shows that 51 of the CFD buildings are over 50 years old, with 22 over 75 years old.

Table 6.7 Age of CFD Buildings					
100 years or more	4				
75 to 100 years	18				
50 to 75 years	29				
Under 50 years	62				

Table 6.7 Age of CFD Buildings

All of the buildings need regular cleaning and maintenance, and, the older buildings require more continual care and a greater degree of repair. Most of the 113 buildings are fire stations that are lived in all day, everyday. Considering the wear and tear this implies, especially for buildings from 50 to 100 + years of age, the Building and Property Management Unit play a vital role in the operation of the CFD. It affects the safety, welfare, and morale of the department's personnel.

The project team visited a sample of stations during the course of this study. They were said to be in better condition than they once were. Kitchens, the heart of any fire house, are being renovated. Floors have been shored up to bear the added tank weight of new vehicles. However, the maintenance of stations still leaves a lot to be desired. Many of the stations visited had obvious problems with broken windows, heating systems not operating correctly, inadequate lighting, leaks, damage from break-ins, or other problems that most people would not tolerate in their home, which this is. The members of the Department were remarkably tolerant of their living conditions, and the condition of stations was not raised as a major source of complaints; there seemed to be a certain degree of resignation about their condition.

Annual Property Surveys identify the needed maintenance and the nature of the repairs made to the entire inventory of CFD buildings. Consideration should be given to conducting an in-depth and detailed survey of all buildings by a team of experts in the various construction disciplines. This team would inspect each building from roof to basement, listing the repairs or improvement needed. They would look at the plumbing, electric service, concrete areas, roofs, floors, windows, and other features of the station. A prioritized program would then be developed to address systematically all items identified.

# Recommendation 6.27: An in-depth survey of all CFD buildings should be conducted by a team of construction experts, and a program developed to address problems found or improvements identified as needed.

To address the aging condition of the CFD structures and related problems, several programs or initiatives are on-line or coming on-line. A prototype fire station is being designed that will be used as a model for the construction of 18 new stations. This program is under the auspices of the Public Building Commission working in conjunction with CFD representatives. Planning for a new combined headquarters and training facility is in the embryonic stage. Computerization of the Building and Property Management Unit's various records and activities was projected to be operational by the onset of 1999.

# Recommendation 6.28: All three of the planned improvement programs – replacement of 18 fire stations; construction of a new headquarters/training facility; and computerization of the unit's records – should be implemented.

During the course of interviews, it was learned that needed roof repairs can take as long as 8 or 9 months to get done once identified and requested. A continually leaking roof can cause all kinds of related problems, so it is imperative that repairs to roofs be accomplished in a timely manner.

**Recommendation 6.29: The CFD administration should make every effort to get the station roofs repaired expeditiously.** If other city agencies are adding to the delay, they must be made to understand the importance of providing suitable quarters for their firefighters. To the credit of the Building and Property Management Unit and others, all underground fuel storage tanks at CFD sites have been removed or made inert in compliance with Federal regulations. Asbestos removal is at the 99 percent completed point, and this too is a commendable accomplishment.

**Air Mask Service Unit** – Good testing and maintenance of breathing apparatus is essential to the safety of firefighters. The responsibility of this specialized function lies with the coordinator of the Air Mask Service Unit, which reports to the Deputy Fire Commissioner for Support Services. The unit is a well run activity, and supervised by people who are paying attention to the details that are so very important to making this a successful enterprise. Their physical plant was found to be outstanding and their record keeping complete and up to date. In addition to the Coordinator, the unit is staffed by 26 people, 19 of whom are firefighters (4 lieutenants and 15 firefighters). The civilian staffing includes a Supervisory Air Mask Technician, four Senior Air Mask Technicians and a secretary. At the time of this writing there was an unfilled existing budgeted position for a civilian Air Mask Technician, a job that is similar to an apprenticeship. The air mask technicians are all certified to maintain and repair the 1200 Scott 4.5 self contained breathing apparatus (SCBA) presently used in the CFD as well as all oxygen related equipment, extended service breathing units, scuba equipment and a number of other items.

Besides repair and maintenance of equipment this unit is responsible to fill or replace empty cylinders and to pick up or deliver these pieces to the various fire stations located throughout the city by way of the three assigned trucks. These pick-ups and deliveries are made by the uniform firefighters assigned to the unit. These firefighters are all certified to the SCBA "Field Maintenance" level. The firefighters in this unit, with the exception of one lieutenant, are all assigned to the same platoons as the suppression forces and work the same twenty-four hours shifts.

While the unit is working well, and firefighters may feel more secure if fellow firefighters maintain their breathing apparatus, it is not a function that requires uniformed firefighters. Many cities use civilian technicians to test, maintain, and deliver the apparatus. They must be trained and must care about performing the work well, but parachute packers do not have to be parachutists, and neither do breathing apparatus technicians have to be firefighters.

The potential savings for civilianizing this function is \$300,000 per year, and freeing firefighters for jobs more appropriate to their training.<sup>41</sup> A few uniformed personnel might be

<sup>&</sup>lt;sup>41</sup> The FY 1998 budget includes 4 fire lieutenants and 15 firefighters assigned to the Air Mask unit. Average salary and benefits for the lieutenants is \$83,059 annually; average salary and benefits for the budgeted firefighters is \$69,472. The same unit has senior air mask technicians budgeted at a salary of \$36,672; with benefits at 35 percent of salary, the cost of the technician is \$49,507 annually. Assigning air mask duties to

retained to help in a transition or on a permanent basis. Some of the personnel need to be available 24 hours a day on shift to deliver breathing apparatus to stations after calls or during emergency calls, and to bring the air unit to the scene of major fires.

Recommendation 6.30: Consider civilianizing most or all of the positions now held by uniform firefighters for maintenance and delivery of air masks.

### **D. Information Systems**

The Chicago Fire Department uses at least 14 distinct information systems applications in addition to several citywide applications for financial, personnel, and payroll functions, but needs better information systems than it has for management and operations. The 14 IS applications being used are summarized in Table 6.8 on the next several pages. Most of the Department's significant information systems issues are in some way related to the Computer Aided Dispatch (CAD) system and to the four other systems that are, or should be, closely integrated with this system. The most critical IS issues facing the Fire Department are related to the magnitude of the changes resulting from the new CAD system and the direct impact this system has on fire operations. (The CAD system was implemented for the Fire Department in January 1997.) Therefore, of the 14 information systems applications in regular use by the Department, the five systems directly related to the CAD system were the focus here. The others were considered in the discussions of the functions they support (e.g., the purchasing, payroll, and financial systems were discussed in the section on Finance and Fiscal Management in Chapter II; the fleet maintenance information needs were discussed in section C of this chapter).

There is little overall coordination between the key information systems projects and the Fire Department operations they directly affect. Partly because of the amount of change brought about by the introduction of the CAD system in the last two years, appropriate IS resources are not being adequately planned, prioritized, deployed, and monitored. The information that Fire Department management needs from the various information systems is considered suspect because of questionable data reliability, timeliness, and consistency. If the data cannot be trusted, one of the most significant benefits of having information systems is denied to the Fire Department.

civilian senior air mask technicians, assuming the same number are needed, and retaining the four lieutenants for supervision would save \$299,475 annually.

Chapter VI. Support Services

	Application Name	Purpose	Key Application Features	Platform/ Support	# of Remote Access Sites	Integration with Other Systems
1.	Chicago Fire Incident Reporting System (NFIRS) (old system)	To provide a repository and report system of 9-1-1 dispatch data. To provide a repository and National Fire Incident Reporting System (NFIRS) report system of fire incident data that can be compared with data collected throughout the country.	Data entered by Records Division from paper forms completed by field personnel.	City mainframe BIS	HQ and Records Division	
2.	9-1-1 Computer Aided Dispatch (CAD)	To dispatch fire suppression and EMS staff from fire stations.	Automated routing and automatic time stamp and data collection on all incidents.	PRC/OEC	HQ and all 100 fire stations	FMRS and FRMS
3.	Fire MIS Reports System: FMRS (new system)	To provide a repository and report system of 9-1-1 dispatch data from the PRC system.	Data collected from 9-1-1 CAD.	PC servers at OEC	HQ R&D, Internal Affairs, Training Academy, OEC	9-1-1 CAD
4.	Fire Records Management System: FRMS (New NFIRS) (not in use yet)	To provide a data entry front end and repository of NFIRS data that is consistent with data collected throughout the country.	On-line form data entry front end for non-dispatch data has been developed by PRC in conjunction with 9-1-1 CAD; field training initiated summer 1998.	PC servers at OEC	New front end to be provided HQ and to all districts and fire stations	9-1-1 CAD
5.	<b>Emergency Medical</b> <b>Service (Husky EMS)</b> (under contract; not yet implemented)	To automatic collection of patient care data for management, QA, and billing purposes.	Application for hand-held computers collects incident data, and providing management reports from the data.	Westech, Inc.	Unknown at this time	Manual reconciliation of incidents with 9-1- 1 CAD
6.	Air Mask	To track maintenance history and inventory control of air masks.		PC D-Base Research and Planning		

### Table 6.8 Overview of Information System Applications (as of January 1999)

Chapter VI. Support Services

Application Name	Purpose	Key Application Features	Platform/ Support	# of Remote Access Sites	Integration with Other Systems
7. Alarm Box Cards	To provide pre-planned response to any fire or EMS incident for every city address.	The output of this application was provided to PRC for determining the appropriate company to send for every address, as well as for the Change of Quarters.	N/A	HQ (Research and Planning)	
8. Fire Investigation	To track procedures and information related to fire investigations.		PC D-Base Research and Planning	Office of Fire Investigation	
9. Fire Prevention *	To facilitate the inspections required by ordinance for all new construction and buildings requiring annual inspections.	<ol> <li>Preprints inspection forms with all known relevant building data.</li> <li>Stores building inspection data for subsequent retrieval.</li> </ol>	City mainframe BIS	HQ and district offices (one terminal at each of 4-5 locations)	Department of Buildings Inspection Application
10. Firehouse Planning	To provide information to support the planning for locating new firehouses or closing existing fire houses.	Geographic Information System for providing color-coded mapping.	Intergraph Research and Planning, and Department of Planning	Research and Planning	Research and Planning uses an Intergraph workstation connected to the Dept. of Planning's system.
11. Manpower **	To track deployment of personnel to assure minimum manning levels.	Facilitates easy and immediate recording of daily use of company relief staff for fire suppression.	PC (D-Base) Research and Planning	HQ (two systems) and one system each in six districts: all stand-alone.	Updates are coordinated via telephone then key entered into PCs.
12. Personnel	To manage personnel records within the Department.	Enhances basic records provided by Department of Personnel system. Uses RAMIS as a reporting tool.	City mainframe BIS	HQ and 1338 Clinton	Position control (basic personnel and budgeting application)

Chapter VI. Support Services

Application Name	Purpose	Key Application Features	Platform/ Support	Access Sites	Integration with Other Systems
13. Supplies	To track supplies ordered for fire stations.		PC D-Base Research and Planning	Districts	
14. Training	To manage schedules and records pertaining to initial and on-going training requirements	<ol> <li>Uses ODE and SAS as reporting tools.</li> <li>Provides reports required to qualify city for state reimbursements.</li> </ol>	City mainframe BIS	Training academy	Personnel Division system

\* **Fire Prevention -** Forms for repeat inspections are preprinted with all known data relevant to the scheduled inspection. The forms are completed in the field by the inspectors. Data from the forms are all key-entered by data entry operators at the Fire Prevention Bureau office in order to maintain data integrity. The application is maintained by the City's Department of Business Information Services.

The Fire Prevention application is integrated with the Department of Buildings inspection application, although the forms generated for inspections are tailored to the requirements of each department. There is a perception that the needs of the Department of Buildings, as the "real" owner of the application, have taken priority over those of the Fire Department.

Legislative changes requiring different data to be captured have not always made it into the application in a timely manner. One data field that appears to the inspectors to not being much used might be "reassigned" in the field to have a different meaning. This can cause problems in comparing historical data over time.

**\*\* Manpower -** The Manpower system was developed by Research and Planning to meet the needs of the contracted manning level minimums. There is a copy of the application on a PC in each of the six Districts, and copies on two PCs at Headquarters. At Headquarters, generally two staff persons each manage changes for their three assigned districts (six in total). Staff persons in each district update their own systems with relief manpower for changes within their own districts. If a district must look to relief manpower outside its own district, it contacts headquarters (via telephone) to coordinate. All of the PCs running the application are stand-alone (not networked as a single application).

**Organization of Information Services (IS)** – The Fire Department does not have its own Information Systems division. Instead, information systems services for the department are spread among several groups internal and external to the department. The internal groups are the Records Division and the Research and Planning Division. The external groups are the City's Department of Business Information Services (BIS) and the Office of Emergency Communications (OEC). Although OEC is budgeted as a division of the Police Department, it operates as an independent City department whose head reports to the Office of the Mayor (as does BIS).

The Records Division is headed by a Deputy District Chief. Its responsibilities include data entry and distribution of mandated reports, especially the National Fire Incident Reporting System (NFIRS) reports, using systems running on the City's mainframe computer. The Records Division has a staff of five though budgeted for nine, plus the Commanding Officer. Their duties are mostly concerned with data entry from the paper incident forms (Chicago Fire Incident Reporting System or "FIRS"); satisfying citizen requests for copies of fire incident reports; storing and retrieving correspondence related to litigation, hazardous material, and ambulance incidents; and responding to Aldermen requests for information. Data entry is done by one data entry operator and one supervisor. One clerk is primarily responsible for staffing the ambulance desk, processing data complaints, preparing correspondence, and answering the phone. Another clerk is responsible for filing. An Office Manager supervises the clerks and attends court as required.

The Research and Planning Division is headed by a civilian Director who formally reports to the First Deputy Commissioner, and on an ad hoc basis reports directly to the Fire Commissioner to satisfy information needs. The responsibilities of this Division include data analysis, planning activities, development of new applications, and implementation of some information systems and computer and network hardware. The Division has a staff of seven including the Director. The Division provides technical computing support for the department's administrative offices, especially for the office of the Fire Commissioner. This support may include the selection, installation, development, and troubleshooting for PC based applications, upgrading old computers for network connectivity, and using standard PC packages such as D-Base and Microsoft Access to quickly develop applications for users. This group is also heavily involved in the requirements specification and procurement process for most significant information technology acquisitions. Despite its name, this is not the area of the CFD that does the planning; they really are the "IS" section.

The City's Department of Business Information Services (formerly MIS) provides support to the Fire Department for major mandated applications (like fire prevention inspections, violations and fire incident reporting) that run on the City's mainframe computer. The data for these applications are entered by the Records Division. BIS, which supports all City departments, has historically had a staff of 100 to 180 people. However, the BIS staffing by City employees is anticipated to decrease significantly because most operational functions are being outsourced. Changes by the Fire

Department are significantly backlogged in BIS and little is communicated to the Fire Department on the status of the changes or the support being provided.

The Office of Emergency Communications (OEC) provides emergency communication services for both the Police Department and the Fire Department. Its responsibilities related to the Fire Department include a) 9-1-1 Computer Aided Dispatch (CAD), including systems support and daily operations; b) applications development and support for reports generated from the CAD system, and c) applications development of a new National Fire Incident Reporting System (NFIRS) data entry system (not yet implemented).

**Recommendation 6.31:** The Department should expand the explicit role of the Research and Planning Division to include Information Systems support. The division might be renamed "Research, Planning, and Information Systems." The head of this Division would be the acknowledged "Chief Information Officer," acting on behalf of the Department on matters related to information systems. (Many large organizations now have a designated CIO.) The CIO would report to the Deputy Commissioner for Support Services. The mission statement of the unit would be expanded to include IS consulting, procurement, implementation, and project management support; it does much of this function de facto today. The mission of this unit also must be clarified as to whether it is the primary research unit, or whether that function is delegated to the Office of Emergency Management, which currently does much of that function.

The consolidation of IS responsibilities would not necessarily entail increasing the number of budgeted IS positions in the CFD, although avoiding an increase would probably be possible only by outsourcing some technical and project management resources on an as needed basis, and/or moving existing IS support staff into the restructured division from other Fire units. Restructuring the mission of this unit will make it easier to explain funding and resource requests for this division to the Office of Budget and Management. OBM will understand that the resources are going to support IS related positions and projects. Lastly, it is important to clarify this role and provide sufficient resources because of the unique relationship the Fire Department has with the OEC for CAD support. OEC staff needs a single focal point within the Fire Department as the liaison for the applications it provides.

**Recommendation 6.32: Form a Fire IS (Information Systems) Steering Committee.** The committee should convene on a periodic basis to:

- Evaluate significant Departmental IS project priorities;
- Review IS project statuses; and
- Discuss issues associated with proposed, planned, and in-progress IS projects.

Meeting once per quarter generally would be sufficient unless there are critical or high-risk projects involved, in which case more frequent meetings might be called for. The Steering Committee should be comprised of the heads of the various Department Bureaus or their technical IS representatives, but the person must have stature and authority. The meeting agenda should be set and meetings conducted by the Department "CIO."

**Technological Infrastructure** – All 100 fire stations, as well as Fire Headquarters and the Training Academy are connected to the OEC for access to the 9-1-1 CAD system. The PCs being used are in the process of being upgraded by OEC staff from OS/2 to the NT operating system. The upgrade is anticipated to be completed by mid-1999. Fire engines, trucks, and emergency medical service (EMS) vehicles are equipped with Mobile Data Terminals (MDTs) which communicate via radio signal with the OEC for dispatching and dispatch response.

All administrative offices in the Fire Department have some level of automation, although not all devices are networked to one another. There is a mixture of old equipment being used for the mainframe legacy applications along with new and old PC equipment. Most PC equipment in Fire Headquarters is networked through the City's Enterprise Network, which is separate from the OEC network, and likely to remain separate for reasons of data security. Besides PC and mainframe system access, the Research and Planning Division has workstations to access the City's Geographic Information Systems computers, in order to perform GIS analysis and planning activities. The Records Division currently has access to the City's mainframe system and will shortly have access to the OEC systems.

As more and more computerized systems come to be used at the fire stations themselves as opposed to Headquarters or district offices, the problem of finding adequate and secure space for installing the hardware becomes more significant. *Most fire stations were not designed to accommodate computer equipment.* Field staff are being asked to spend more and more time in front of computers whose displays and keyboards are installed in locations or at heights that are uncomfortable or in the only spaces that were previously available for paperwork (which is still necessary). Field staff often request that computers be installed in locations that are convenient from a usage standpoint, but which subject the electronic equipment to damaging levels of fumes, extreme temperatures, and exposure to breakage or theft, which in turn causes frequent outages and requires high levels of on-site support.

The constant activity of the fire stations, the limitations of available office space, and the unusual security requirements of firehouses that are frequently left vacated at various times of the day or night means that these issues will probably be with the Department for some time. It also means that there is a high level of computer systems maintenance required which takes time away from the Department's few computer experts, instead of their developing better MIS or doing research and analysis with the existing systems.

Fortunately, the City's BIS department has contracted with Unisys to perform network maintenance and support citywide including all CFD facilities and station houses starting March 1999. It is recommended that the CFD utilize this new service to the maximum extent possible.

Application Systems – The five key applications evaluated in depth were the following:

- Chicago Fire Incident Reporting System (NFIRS) This is the Department's "legacy" mainframe system for capturing and reporting on a) incident response times (alarm time and arrival time), b) data mandated by City ordinance and State law, and c) National Fire Incident Reporting System (NFIRS) data. This application is commonly referred to as the NFIRS (pronounced "niffers") system, since it collects data for the Illinois Fire Incident Reporting System and the National Fire Incident Reporting System.
- 9-1-1 Computer Aided Dispatch (CAD) This is the fire and emergency medical service (EMS) dispatch system run by OEC on behalf of the Chicago Fire and Police Departments. It is commonly referred to as the CAD system. The vendor responsible for software development and modifications is PRC, Inc. The system has been used by the Fire Department since early 1997. A series of documented and contracted custom changes to the original CAD system (called "Category 7 Enhancements") will enhance end-user and system-wide operations when implemented. There were over 125 changes planned for the CAD system as of early 1999, involving operating systems, screens, reporting functions, etc., affecting OEC, CPD, Fire and EMS.
- *Fire Management Information System Reports System (FMRS)* This is the reporting system provided by the 9-1-1 CAD vendor to report on response times as a by-product of the 9-1-1 dispatching system. It reports only on data directly related to dispatch; it does not report on ancillary incident data such as civilian involvement or hazardous materials found at the scene. It is referred to as "CAD Reporting."
- *Fire Records Management System (FRMS)* This is the City ordinance, State law, and NFIRS data entry and report tracking system developed by the 9-1-1 CAD vendor. It does NOT include ad hoc reporting on the data being collected. This application is not yet being used in production mode. While training has taken place, the actual implementation schedule is unknown. The system is intended to replace the 'legacy' mainframe system known as NFIRS which is currently used for National Fire Incident Reporting. It is referred to as "New NFIRS." Unfortunately its abbreviation, FRMS, is very close to FMRS, but they are not at all the same.
- Husky Emergency Medical Service (Husky EMS); sometimes called the Westech System

   This system is being developed by Westech, Inc. and Zoll Medical Co., and is not yet
   implemented. It is an application for "Husky," a brand name hand-held device to collect
   incident data and provide management reports for EMS calls. (This was discussed in
   Chapter V, EMS.)

**Evaluation of the Key Applications Systems** – The degree to which an organization successfully uses information systems technology to enhance performance and management is dependent on many interrelated components. Three key aspects were evaluated for each of the five applications listed above:

• Data Quality – This refers to the data used or stored in the applications in terms of its <u>timeliness</u> (how old is the data before is can be accessed), <u>availability</u> (how easy it is for the right people to get the information), <u>reliability</u> (can the data be trusted to mean what it

is supposed to mean), and <u>completeness</u> (are all the necessary data being collected in the application). The criteria for acceptable data timeliness, availability, reliability, and completeness can vary widely, depending on the application involved.

- Application Support and Integration This refers to the teams organized to support each application and to the interfaces between applications that need to integrate or share data with one another. It includes the necessary communications between application users, developers, support groups, and management. It considers whether an application is adequately supported in order for the organization to achieve the benefits that justified the application in the first place. It includes <u>User Input</u> for ease of use and enhancement requirements, especially for new applications; <u>Help Desk</u> support for problem reporting and user assistance; adequate <u>Developer Staffing</u> for new or changing applications; and adequate <u>Project Management</u> for applications being deployed. It also considers whether the need for <u>Integration</u> (i.e. data sharing/transmittal) across applications is being met in order to maximize application benefits.
- Organizational Support for IS This refers to the organizational structures that provide Information Systems technology and support to the Fire Department. The role of Information Systems varies widely by the type of organization using it and the historical pressures that helped or hindered the introduction of IS. Information Systems can be crucial to conducting daily operations (as in a bank), or an enhancement to activities that can take place without it (sales in a store or management reporting), or serve mostly a planning function (budget spreadsheets). For the Fire Department, Information Systems serve as enhancements to operations and as the basis for many planning decisions pertaining to manpower staffing, budgeting, and facilities.

The applications directly tied to daily operations are 9-1-1 CAD, the Manpower system and the reporting systems for fire incidents and other mandated reporting. The Fire Department could accomplish its primary missions of fire suppression and emergency medical services without CAD, albeit *much* less effectively, as long as radio and telephone services were available. Perhaps this is part of the reason there are several different groups, instead of one focused functional unit, which have roles in Information Systems support for the Fire Department.

In most departments of the City, ownership of the application is within the department, even though technical support may be provided by BIS. *Most large city departments have an internal information systems group that provides support to the end user division or bureau. This is not the case for the Fire Department; several distinctly separate support entities are involved.* It is therefore necessary to identify the "Application Owner" for each of the key applications. The Application Owner is the party that has primary responsibility for:

- Defining requirements
- Setting application priorities and performing risk analysis
- Identifying resource requirements
- Securing funding and other resources
- Planning and managing the IS project into implementation

Being able to perform these responsibilities means that the Application Owner is being provided organizational support for IS. If the Application Owner can not or will not do these things, then organizational support for IS is lacking.

Below is a brief evaluation of the five key application systems in terms of the above considerations.

**NFIRS** – The National Fire Incident Reporting System (NFIRS) record keeping was started in Chicago only within the last five to seven years, although computerized record keeping for fire incidents has been in place since the early 1980s. The fire incident data collected was originally geared towards the requirements of the City's ordinances. The NFIRS application software was originally provided to the City by FEMA. This means that there continues to be some conflict in the data being collected between the City code and what NFIRS asks for, but there is better compatibility for comparing Chicago with other cities and the nation.

The NFIRS data suffers from a lack of timeliness. The fire incident data is provided on paper forms filled out by fire officers subsequent to each incident. Then the forms are sent to the Records Division for key entry. Consolidated NFIRS data is sent to the State each quarter. There is a time lag between the time the incident occurs and the time the form reaches the Records Division for data entry into the system. Then there is a time lag within the Records Division, where the data entry has generally been from two to six months in arrears. Therefore, for many years the last few months of data for key statistics (like fire-related deaths) has been handled manually, sidestepping normal data entry by the Records Division.

The reliability of the data is also questionable. While the data entered on the forms is generally good, there are still too many errors by the company officers filling them out. The necessity to key in the data from the handwritten paperwork also causes some errors. In addition, there is a discrepancy between data on the NFIRS forms for alarm time and arrival times and the dispatch and on-site times in the CAD system for the same incident. The alarm time and arrival time on the NFIRS form is based on the memory and record-keeping of the person completing the NFIRS form. There is no cross-check or other control mechanism to assure that the times in the two systems match one another, which leads to inconsistent computation of response times.

For the most part, all of the data needed to report national and Illinois fire incidents is captured. The most apparent incompleteness in the data is the lack of CAD response data. Also, there is some conflict between the City code and NFIRS data requirements.

As a mainframe legacy application, NFIRS fares fairly well with regard to application support and integration. The users know the application well and probably require minimal training. It is a stable application requiring few, if any, bug fixes or changes. It is fully deployed, hence needing no project management, and its data is routinely extracted by Research and Planning for reporting purposes. The NFIRS application owner is the CFD Records Division. The lack of integration with the CAD system and the lack of an automated means to download data for reporting are major weaknesses.

Since the application is mature and few changes have been requested, it is difficult to determine if the Records Division is in a position to perform the functions of the Application Owner when changes are needed. The owner is responsible for defining requirements for changes and for planning and managing the IS project for implementing these changes. The Records Division may be too far removed from the use of the reports output and from the preparation of the NFIRS1 forms to satisfactorily serve this function if it is decided to enhance this system rather than replace it with the NEW NFIRS (FRMS) system.

**CAD** – The CAD rates well across most areas, as would be expected for such a critical, timedependent application. CAD is a newer and much more complex application than any of the others, but it is now in full production mode. The timeliness and reliability of the data are excellent because the data is entered as the 9-1-1 call is being worked. This degree of accuracy should be expected for such a critical time-dependent application. Data availability also is excellent; 100 Fire Stations and Fire Headquarters are connected to the OEC network. Access to this network also is planned for the Records Division. However, more training is needed before the system is fully used.

As the system matures, it is likely that more data will be automated, which will further eliminate errors resulting from manual entry. The system captures all the data needed by the 9-1-1 operators to dispatch Fire, EMS and Police units. As more experience is gained with the system, the Fire Department may request additional data to meet specific needs.

User input is provided via a committee of Battalion Chiefs established to provide feedback on problems to the Communication Center and the vendor. While this structure for feedback could be formalized and provided with more resources in order to be more effective, it has provided a useful conduit for user requests, many of which have been, or are in the process, of being met. For example, the output from the Alarm Box Card system of preplanned responses to fire incidents (including Change of Quarters) was the input to routing data provided to the CAD System. The algorithm used for dispatch is based on the fastest estimated response time as opposed to the shortest distance in determining which companies to send to a fire incident, but that did not always result in the fastest response; some units traveled past the doorways of other available units en route to a call. The Battalion Chiefs committee requested in early 1998 that this algorithm be changed back to the more reliable shortest distance. The OEC plans to implement this request, and the CAD was expected to start using shortest distance in early 1999. Minutes of the meetings with the Battalion Chiefs from August and December 1998 are included in Appendix B. The minutes were prepared by a TriData

project team consultant who participated in the meetings and forwarded the documented issues to the relevant Fire Department and OEC individuals. As a result, a number of the issues open in August 1998 have been closed.

Developer availability and expertise for the CAD are generally good. However, the Fire Department has the perception that its requests are often given a lower priority than those of the Police Department, and that the Fire Department does not have adequate input. The previously mentioned "Category 7 Enhancements" are a case in point. The enhancement requirements and specifications have been determined primarily by OEC, without adequate input from the CFD Research, Records, Internal Affairs, Media Affairs, and EMS offices. The Category 7 Enhancement contract reviews have not been provided to Fire and EMS, so their status is not easily tracked by CFD. The contract for Category 7 Enhancements specifically states that "*PRC* [the outside contractor] will not be required to substantially interface with, rely on, or obtain the approval of non-OEC personnel for system planning and development, hardware and software ordering and receipt, installation, acceptance or replacement of failed items." Therefore, it is most important that that Fire Department establish a single point of contact with OEC to insure that the Fire Department requirements are meet in both the CAD and CAD Reporting systems.

Project management by the OEC for upgrades of software and related hardware is generally excellent, as would be expected for this high profile, critical application. OEC plans to deploy new MDT equipment, upgrade fire station PC operating systems, and continue making software enhancements related to CAD, but these should not significantly impact Fire Department operations, assuming that these changes are well communicated and phased in over a reasonable period of time.

**CAD Reporting** – The Fire MIS Report System (FMRS) is the part of the general CAD system that provides reports based on data collected through the 9-1-1 Dispatch Center. FMRS became functional in the spring of 1997. It provides timely and accurate information about data collected during call taking, dispatching, and field handling from the opening of an event until the event is closed. A closed event is called an incident. Incident information includes event data and company data. The Fire MIS Reports System makes it possible to report information by incident type, companies, time period, geographical area, particular personnel, and other data specific to the selected report, and for selected incidents.

The system provides a broad range of standard reports that allow dispatch data to be viewed and analyzed from many perspectives. General types of reports available include company response by geographic area(s), incident type at the time of dispatch, actual incident type as reported by the company, companies dispatched, and times associated with the call taking and dispatch activities. However, several groups within Fire who might strongly benefit from the use of this system are not using it for various reasons including lack of appropriate network connections, lack of training, lack of time to use the system, or lack of awareness of what the system is capable of providing. The system does not provide an easy-to-use method for creating routine, average response time reports by predetermined needs, though there are several Response Time Reports available that could be set up for this purpose. Physical access to CAD Reporting is currently available to Research and Planning, Internal Affairs, and Media Affairs. There is a planned milestone in the Category 7 Enhancement project for training and for meeting the management reporting needs for OEC employees, but not one for non-OEC employees.

User input from outside of the OEC has been minimal. Users might in fact be very pleased with the application, but not enough people have had a chance to use it to make this determination. It is therefore not possible to rate either the (OEC) help desk or project management support, since users will not call about an application that they are not using. There is currently no plan to promulgate the use of the application.

The integration with CAD is excellent. Data from CAD is usually available, within seconds or minutes of the incident occurring in the CAD system. While some individuals within CFD might see need for changes if they were to start using this application, its use is likely to be limited to several dozen users across mostly administrative units.

**New NFIRS** - In part to deal with the lag between the incident occurrence and data entry into NFIRS, the Department started the roll out of a distributed on-line data entry system, the Fire Records Management System (FRMS), referred to as New NFIRS. Training for this PC-based front end started in 1998. The application was provided by the vendor of the CAD system; it is maintained (bugs fixed and enhancements added) by this vendor and by OEC staff.

New NFIRS is not yet in production mode and is currently being used for only a small proportion of all incidents; data is far from being complete. Field personnel are not required to enter incident data using New NFIRS; they are still required to complete the paper-based Chicago Fire Incident Reporting System form for entry into old NFIRS.

Field personnel find the access to the application inconvenient because they cannot enter data while in transit (which is possible with the old paper form), the application response time is perceived to be slow, and document routing (workflow) for approvals is insufficient. New NFIRS data is also incomplete from another perspective: new requirements for National Fire Incident Reporting were released (NFIRS 5.0) in 1998, but the Category 7 Enhancements contract does not include these requirements and there is no plan to include them.

The timeliness of data can only be estimated at this time based on the system design. Entry of data should be good since this system is designed for field personnel to enter the data. The

physical problems inherent in locating PC hardware in fire stations and the lack of portability of the hardware could reduce the timeliness of the data entry. The availability of the system may be limited by restrictions on where the PC hardware can be physically locationed in fire stations and the lack of portable devices for data entry. Data reliability should be good because the personnel responsible for preparing the NFIRS reports ultimately will enter the data.

New NFIRS presents some of the same Application Support issues as CAD and CAD Reporting, as well as some differences. Because training for New NFIRS was initiated in the summer of 1998, there has been a mechanism for collecting and passing on User Input. The process includes accepting requests and comments from the Fire Department trainers as well as the periodic Battalion Chiefs meetings, which convene specifically on CAD and New NFIRS issues. While the process has not always worked perfectly, and, as stated earlier, was never entirely formalized, it has enabled a number of bugs to be fixed and minor enhancements to be added. Some of the most significant concerns outstanding are the following:

- *Document Routing* Does the NFIRS document get routed to the appropriate parties for review and sign off prior to updating the mainframe NFIRS application?
- *Security* Can the PC-based front end log the user off the system after a specified time of no interaction? (This is of great concern in a fire station environment where users could suddenly be called away and have no time to perform normal log off steps.)
- Log-On ID Consistency Does the application accommodate using the same log-on ID as the other applications that fire station users need to access? (Keeping use of the computerized systems as easy as possible is important in assuring optimal use of the systems.)

The users have not been entirely satisfied with the OEC help desk support. Since they are not *required* to use the system, many have in fact stopped using it, so the lack of good help desk support is somewhat moot. It is the trainers who have to deal most with any help desk or application inadequacies. OEC developer expertise has been provided over the last six months to address many problems, partly due to the documentation of issues raised in the August 1998 Battalion Chiefs meetings and on-site meetings last fall and winter between our project team and OEC technical staff. Dissatisfaction with development work may be caused by competition with the CAD system for available resources and the lack of systematic feedback to users on the status of user requests.

The integration with CAD is excellent: New NFIRS continues to be fed all incident dispatch data (but not the rest of the data associated with the incident, which must be supplied by the fire officers). New NFIRS is being maintained by OEC from a backup and recovery standpoint like all other production systems.

The biggest issue for this application now is project management. While the application development work has been handled by OEC, the deployment of New NFIRS as an operational system of the Fire Department has stalled. It is not clear what priority or importance this application has in the Fire Department. Training on the system is being halted and it appears that relatively few of the trained users are using the system. There is no plan in place to implement a reporting tool (such as SAS or Oracle) using the New NFIRS data, nor to assure that users requiring such reporting capabilities are given appropriate access and training.

The New NFIRS was designed to eventually supplant the existing NFIRS in order to take advantage of the direct data fed from the CAD system, assuring a higher degree of data accuracy and consistency for incident reporting. It is an application that affects activities which the field staff must perform on a daily basis. However, it appears that while New NFIRS was handled adequately as an application development project, it was not provided appropriate support as an information systems implementation project. It is now an application in need of a project sponsor, a project mission and scope, a project manager and team, a project plan, and resources to accomplish the identified tasks.

**Recommendation 6.33:** The status of the "New NFIRS" application should be reviewed and evaluated as soon as possible by the Office of the Commissioner (or the new Fire IS Steering Committee). If it is determined that this application will in fact be deployed and will eventually replace old NFIRS, then the deployment of New NFIRS should be handled as a full-fledged project. This includes the formal documentation and communication of the project mission and scope, the assignment of a Project Manager (ideally no less than 50 percent FTE), the creation of a project team, and the establishment of project plans, budget, and schedule.

If the application is not going to be implemented, the Fire Department field staff and OEC development staff should be formally notified that use of the system is terminated and resources assigned to the application should be reassigned. Consideration should then be given to analyzing the old NFIRS system to determine how the data could be interfaced from the CAD system and how the incident data could be more efficiently and effectively entered and reported.

**Westech (Husky) EMS** – The Fire Department has entered into a contract with Zoll Medical Co. to provide software, hardware (the Westech, Inc. Husky brand hand-held devices), training, reporting, and support for the collection and management of incident data generated by the EMS program. The goal of this contract is to put the Husky portable computers into ambulances for paramedics to enter all relevant information such as address of incident, name of person, hospital sent to, patient status and other relevant medical information. The system was not yet operational at this writing in early 1999.

While the Westech EMS system cannot really be evaluated at this early developmental stage, there is an overall design consideration that casts some doubt on its future reliability and the completeness of the data within the system: the plan to implement an EMS system does not use CAD-collected information. As defined in the contract, the paramedics will manually key data into the

hand-held devices. This would include the incident ID number, dispatch time, acknowledged time, en route time, arrival time, transport to hospital time, hospital arrival time, and return time. The plan is to have both the CAD Mobile Data Terminal and the Westech EMS hand-held computer in the ambulances. The paramedics must respond back to the 9-1-1 dispatch center for status update to the CAD system, and then key the same data into the Westech EMS handheld computer. This doubles the paperwork and the data entry, and it may not be reasonable to expect the paramedics to do both. In addition, the vendor contract for the Westech EMS system states that reconciliation of CAD incidents with the incidents entered into the Westech EMS system will be a "manual process." Taken together with the number of manual processing steps involved and the urgency and distractions of an EMS event, data reliability for the proposed Westech EMS system may be questionable. The lack of an automated interface with the CAD system could set the Department up for serious data collection and reconciliation issues for years to come.

There is another data integration issue at the back end of the EMS processes that causes some concern. The justification given to the BIS steering committee for the computer expenditure was the need for timely collection of data to be provided to the Department of Revenue's EMS Billing application system. The Department of Revenue has since written an RFP (Request for Proposal) for the outsourcing of EMS Billing. However, Research and Planning professed no knowledge of DOR's RFP, and it is unknown how easily these systems will be able to share the requisite data. The data integration issues are extremely important. The situation should be addressed before too many sunk costs hinder finding a solution that will be best for the department in the long run.

Data completeness will also be deficient in another area. The NFIRS 5.0 (requirements released in 1998) requests collection of certain EMS information. The contract to implement the Westech EMS system does not account for this and there are no plans now in place to collect the data as part of the project scope.

The new Westech EMS system will require major change for the Department. Like New NFIRS, it will eventually affect field personnel on a daily basis. It is far more than installing software and hardware. It implies changes to procedures carried out by all staff responding to EMS calls. That means documentation, pilot implementations, evaluations and feedback, and critical user training. Project management will be crucial. This means that appropriate levels of organizational support must be forthcoming. Yet it is not entirely clear whether Research and Planning or another operational group should be considered the application owner, with responsibility for requirements definition, resource requests and allocation, and implementation plans.

Recommendation 6.34: The status of the Westech (Husky) EMS application should be reviewed and evaluated as soon as possible by Fire R&D and the OEC CAD staff in order to determine how a direct link can be established between the CAD incident data and the Husky EMS *hand held computers.* Without such a link, the Department will establish the need for a large amount of manual re-keying of data, even as it attempts to automate existing manual record keeping.

**Summary** – The following charts present evaluation summaries for the five key IS applications. For each criterion previously discussed, the application is rated as being Poor (serious deficiency noted), Adequate (meets minimum operational requirements most of the time), Good (meets most known operational requirements most of the time), or Excellent (meets all known operational requirements close to 100 percent of the time). The evaluations are based on our interviews with users, the application owners and support staff, and our own knowledge. They are subjective but portray approximately where these applications stand.

Table 6.9 Data Quality						
Application	Timeliness	Availability	Reliability	Completeness		
NFIRS	Poor	Adequate to Poor	Poor to Adequate	Good		
CAD	Excellent	Good to Excellent	Good	Good		
CAD Reports (FMRS)	Good	Poor	Adequate	Excellent to Good		
New NFIRS* (FRMS)	Good	Adequate	Good	Poor		
Westech EMS**	N/A	N/A	May be poor	May be poor		

### Table 6.9 Data Quality

#### Table 6.10 Application Support and Integration

Application	User Input	Help Desk	Developer Availability & Expertise	Project Management	Integration	With
NFIRS	N/A	Adequate	N/A	N/A	Poor	SAS, Oracle, etc.
CAD	Good	Good	Good	Excellent	Excellent	CAD Reporting
CAD Reports (FMRS)	Poor	?	Good	?	Excellent	CAD
New NFIRS* (FRMS)	Good	?	Adequate	Poor	Excellent/ Poor	CAD/ Oracle, etc.
Westech EMS**	N/A	N/A	N/A	N/A	Poor**	CAD/EMS billing

Application	Application Owner	Organizational Support
NFIRS	CFD (Records Division)	Poor
CAD	OEC	Good
CAD Reports (FMRS)	OEC	Poor
New NFIRS* (FRMS)	CFD (Records Division?)	Poor
Westech EMS**	CFD (Research & Planning?)	?

Table 6.11 Organizational Support

\* New NFIRS is not in production mode; rating is based on current status.

\*\* Westech EMS is still in contract stage; rating is based on expected status.

Table 6.12 presents an overview chart of the evaluation of the five key applications. This table depicts on one page the interfaces between systems, which are at the production stage, the highlights of the data captured and reporting processed, and highlights of some of the primary deficiencies.

Aspect Evaluated	'Old' NFIRS	CAD	CAD Report (FMRS)	'New' NFIRS (FRMS)	EMS (Husky)	
Data Quality	Adequate	Excellent to Good	Good	Good	Poor	
Application Support	Adequate	Good to Excellent	Good to Poor	Poor to Adequate	N/A	
Integration	Poor	Excellent	Excellent	Excellent	Poor	
Organizational Support	Good	Good	Poor	Poor	Moderate to High	
Summary Evaluation	Adequate	Good to Excellent	Good	Good	Poor	
Necessary Improvements	Develop a distributed front-end entry system; integrate with CAD	Establish a CFD liaison to OEC; define a CFD is project	Archive the data for more than 90 days; improve reporting tools	Define a CFD is project fully implement	Integrate with CAD; integrate with billing; integrate with MDT	
Recommendation	Replace with FRMS or enhance	Enhance for CFD specific requirements	Enhance for CFD specific requirements	Complete development and implementation	Consider other options	

Table 6.12 Evaluation Summary of the Five Key Applications

**Special Data Issue: Response Time Data Consistency** – In the course of reviewing and evaluating the Fire Department's key IS applications, a serious data reliability question arose: "Why does it appear that fire response time increased since the implementation of the new CAD."

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Reports generated from the NFIRS (non-CAD) data base provided response times (i.e., dispatch to arrival times) averaging in the three minute range. Reports generated from the CAD reporting system (FMRS) provide response times in the five-minute range for the last two years (i.e., since the implementation of the CAD system.)

Response data in NFIRS is taken from the Chicago Fire Incident Reporting System paper forms which are completed after the responding platoon has returned to the station house. This includes data fields for "alarm time" and "arrival time". "Tab cards" have been used in the past to record this data on scene, presumably using the watch of the platoon commander. As of January 1998, the tab reports were no longer forwarded to Records as the CAD system tracks the dispatch and arrival times and reports are available through the FMRS. However, the Chicago Fire Incident Reporting System (NFIRS Reports) paper forms are still manually filled out after the platoon returns to the station house. The alarm time and arrival time is subjective, based on the clock and memory of the person writing the report. Also, times are recorded in NFIRS to the nearest minute, not to the second.

Response time data for CAD Reporting (FMRS) are collected from the CAD system, time stamped from the real time activities of dispatch and arrival on scene. The "arrival on scene" time stamp can be generated either by the responding platoon pushing the "arrival on scene" button on their MDT device or by dispatch, upon receiving a radio call that the platoon has arrived on scene. Times are recorded to the nearest second. Clearly, there is a significant difference in the degree of precision between the two methods of capturing time data, even if it assumed that both methods provide the same level of accuracy. Rounding both alarm and arrival times up or down by 30 seconds can have a significant impact on response time durations ranging from three to five minutes. The differences in measurement precision may account for at least some of the apparent inconsistency of the response times being reported by the two systems.

To our knowledge, no one has run side by side comparisons for response times covering exactly the same date ranges and including exactly the same incidents (for fire suppression and/or EMS). Data for such a comparison is available for the period of January 1997 through the present, although it should be noted that early FMRS data may be inaccurate because of possible system or training problems, and recent NFIRS data may be unavailable, depending on the current backlog of data entry from the paper forms. Both sets of data, from NFIRS and from FMRS, are subject to error and inaccuracy, although stemming from somewhat different sources. There is no definitive means of assessing whether the actual response times have in fact increased or whether the CAD system is simply reflecting more precise measurements of time.

There may not be a significant difference in response times at all, only a difference in what incident types may have been included in the averages. <u>The basic Average Response Time (ART)</u>

<u>reports from CAD do not sort out "in service" vs. "out of service" vehicles</u>. This means that unless the user is careful, the report will include travel times for out of service vehicles, such as engines going for fueling, trucks headed out for training, and other administrative tasks not related to "in service" activities. Specific incident types such as Academy, Drill, Fuel, Hydrant Inspections, and Refill Air Bottles need to be excluded from any report purporting to provide meaningful fire suppression or EMS average response times.

It should also be noted that several of these non-emergency call activities with long "response" times, such Academy or Fuel, are likely to take place shortly after the 8:00 a.m. change of shift. When these incident types are included in response time averages for the hour from 8 to 9 AM, an erroneous response time peak results.

Table 6.13 shows selected data from a CAD FRMS report for the period of November 1-30, 1998. Of the 142 incident categories provided on the FRMS report, at least 10 could be considered as "out of service" or administrative status. While this may not be a large number, these "incidents" have extremely long durations relative to a true call for service activity, and would distort average response times if included in the computation. The table illustrates the importance of understanding what data are being included in any "average" response time figures.

Incident Type	Number of Total Incidents	Gross Average Response Time (HR:MIN:SEC)
Academy	48	1:21:17
Drill	18	0:30:52
Fire	1,093	0:03:01
Fire in high-rise building	74	0:03:04
Fuel	35	0:13:30
Hydrant inspections	2	0:29:43
Out of service EMS	22	0:55:15
Total (for all 142 types of runs)	25,681	0:04:40

Table 6.13 Average Response Times for SelectedCAD FRMS Incident Categories (November 1-30, 1998)

According to the FMRS user's guide, and information provided by OEC staff, the standard CAD response time reports do allow one to select just the "in service" incidents for the report. Incident "type" selection is limited to FSR (Fire Suppression and Rescue), EMS, or all incidents. Finding the true "in service" response times requires one to manually subtract out those incidents and recalculate the overall average. This is a significant effort when there are over 25,000 incidents in a single month. A far preferable solution would be to add a flag to all incident descriptions that indicates whether the incident is "in service" or "out of service", and then to add that selection criteria to report selection screens in FMRS.
Recommendation 6.35: Improve the Average Response Time report from the CAD System so that users can easily distinguish between emergency Call for Service response times and times recorded for routine administrative activities. Add a flag to all incident descriptions that indicates whether the incident being reported on is "in service" or "out of service," i.e., whether for emergency calls or other activities. Add that selection criteria to the report selection screens in FMRS.

**Recommendation 6.36:** Rename the Fire MIS Reports System (FMRS) and the Fire **Records Management System (FRMS) to names that are immediately recognizable and distinctive.** These systems are referred to in this document respectively as CAD Reporting and New NFIRS. The current names are both confusing and uninformative to users as to the identity and purposes of the applications.

# E. Commissary Operations

The current commissary, located at 555 W. Roosevelt, is operated by and contracted to the Chicago Fire Commissary Company. The contract expires 8/31/99 with the option for a one-year extension. The contractor has six people assigned to the operation: one manager, two counter clerks, two tailors, and a part time data entry clerk. The CFD has one Commissary Coordinator (uniformed chief) and one Staff Assistant (civilian) assigned to this function. This system was instituted primarily as a safety measure, to ensure that firefighters had protective outfits in satisfactory conditions. In a previous system, allowances were given directly to firefighters, but they were not always spent to maintain their outfits.

A number of complaints were heard about the Commissary operation from CFD personnel during interviews. The complaints focused on the estimated mark-ups by the vendor, lack of adequate procedures for determining worn items and issuing satisfactory replacement items, and the failure to install an automated inventory management system.

The project team's review of the Commissary operation found the following:

- Alterations to clothing items generally are completed within two days after drop-off.
- One-hour turnaround times on classified items (as defined in the contract) are usually being met by the vendor.
- Special order items are generally received within 40 days of the initial order.
- Ten percent of stock uniform items for Class B and C (as defined in the contract) usually are kept on site.
- The appropriate CFD specified items usually are issued.

- Acceptable turnaround times on alterations (two days), certain classified items (one hour), and special order items (40 days), as defined in the contract.
- It has acceptable stock levels and loaner material on site (about 10 percent of the stock outstanding)
- It honors warrantees and replaces worn items
- It is rarely penalized for non-compliance with the current agreement
- It generally satisfies the requirements of the CFD.

Two problems found with the Commissary operation were that:

- In general, the commissary has not established written procedures for issuing equipment.
- The commissary has not implemented a computerized inventory system.

Other than the lack of an automated inventory management system on site, the vendor appears to be in compliance with the current contractual agreement.

A cost evaluation of the Commissary operation was performed based on information supplied by the Commissary Coordinator. A sample of fifteen items commonly requested by the CFD was used to compare prices of the current vendor with those of two local vendors that provided price schedules for every specified item that was used in 1997. The two local vendors, Amerisafe and Vallon, prepared and provided the cost sheets for the CFD Commissary Coordinator. Total cost was determined by multiplying the unit cost of each type of item by the number of items of each type used during the 1997 fiscal year. The comparison, shown in Table 6.14, found that the costs of the current vendor were 14 to 15 percent higher than the cost of directly purchasing the goods from local vendors. However, other expenses must be considered if the department have to resume purchasing on its own, including the cost of the facility, equipment, the vendor personnel stationed at the commissary, and administrative overhead.

In addition to the above comparison, a three year average (1995-1997) of actual annual expenditures for items purchased at the commissary was analyzed. The average expenditures totaled \$1,708,120 per year. Using the 14 percent figure computed above as the approximate premium paid for the contractor's services above purchasing them directly, the estimated premium paid averaged \$239,137 per year on the existing contract.

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			Current Ame		Ameris	safe		Vallon			
Commodity	97 Usage	Unit Cost	Total Cost	Unit Cost	Total Cost	Unit Cost Diff	% Diff	Unit Cost	Total Cost	Unit Cost Diff	% Diff
Belts Trousers	1099	\$10.00	\$10,990.00	\$7.88	\$8,660.12	\$2,329.88	-27%	\$7.80	\$8,572.20	\$2,417.80	-28%
Boots, Hippers	1317	\$109.00	\$143,553.00	\$108.33	\$142,670.61	\$882.39	-1%	\$107.25	\$141,248.25	\$2,304.75	-2%
Caps Dress FF	333	\$39.00	\$12,987.00	\$33.89	\$11,285.37	\$1,701.63	-15%	\$33.55	\$11,172.15	\$1,814.85	-16%
Coats/Top, Dress, Blouse	47	\$215.00	\$10,105.00	\$177.92	\$8,362.24	\$1,742.76	-21%	\$176.00	\$8,272.00	\$1,833.00	-22%
Turnout Coat	270	\$671.00	\$181,170.00	\$652.13	\$176,075.10	\$5,094.90	-3%	\$645.61	\$174,314.70	\$6,855.30	-4%
Shoes Work/Soft Toe Men	1400	\$65.00	\$91,000.00	\$52.50	\$73,500.00	\$17,500.00	-24%	\$51.98	\$72,772.00	\$18,228.00	-25%
Gloves, FF	2700	\$26.50	\$71,550.00	\$26.11	\$70,497.00	\$1,053.00	-1%	\$25.85	\$69,795.00	\$1,755.00	-3%
Insignia Cap, Company	247	\$1.50	\$370.50	\$1.11	\$274.17	\$96.33	-35%	\$1.10	\$271.70	\$98.80	-36%
Insignia Collar Lieutenant	113	\$10.50	\$1,186.50	\$9.44	\$1,066.72	\$ 119.78	-11%	\$9.35	\$1,056.55	\$129.95	-12%
Jacket Mod Dress	317	\$155.00	\$49,135.00	\$114.72	\$36,366.24	\$12,768.76	-35%	\$113.58	\$36,004.86	\$13,130.14	-36%
Frontpiece Helmet	232	\$232.00	\$53,824.00	\$224.38	\$52,056.16	\$1,767.84	-3%	\$222.13	\$51,534.16	\$2,289.84	-4%
Shirt Dress Male LS	1253	\$25.00	\$31,325.00	\$20.56	\$25,761.68	\$5,563.32	-22%	\$20.35	\$25,498.55	\$5,826.45	-23%
Shirt Work LS Male	3122	\$44.75	\$139,709.50	\$39.67	\$123,849.74	\$15,859.76	-13%	\$39.27	\$122,600.94	\$17,108.56	-14%
Trousers Dress	48	\$69.00	\$3,312.00	\$69.22	\$3,322.56	\$(10.56)	0%	\$68.53	\$3,289.44	\$22.56	-1%
Trousers Work	7714	\$51.50	\$397,271.00	\$40.83	\$314,962.62	\$82,308.38	-26%	\$40.43	\$311,877.02	\$85,393.98	-27%
			\$ 1,197,488.50		\$1,048,710.33	\$148,778.17	-14%		\$1,038,279.52	\$159,208.98	-15%

 Table 6.14 Comparison of Unit Costs for Protective Gear: Current Commissary Costs vs. Two Other Vendors

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CFD provided its own proposal for an in-house CFD Commissary for comparative purposes. The one-year operating costs estimated by the CFD Commissary totaled \$1,125,310, compared to the \$1,708,121 in averaged contract costs. This represents a 34 percent difference between the two. However, when the same parameters are used for the CFD proposal and the current contract, the CFD cost would be approximately \$1,428,620, which represents a 16 percent difference between average expenditures using the current commissary contractor, and the projected CFD costs. Although the inhouse cost appears to be less than the current contract, other factors must be considered.

Currently, the contractor is responsible for all equipment procurement. Many of the same vendors are used, but the process is simplified and accelerated. By bringing the operation in-house, the Department would be saddled with significant contracting and order processing requirements that could result in slow processing, poorly performing vendors, and higher procurement costs; inventory loss and obsolescence associated with inadequate inventory controls and associated inventory carrying costs are also possible. In addition, dealing with multiple vendors creates the need for auditors and voucher coordinators in the Finance Division to handle the billing function and a contract administrator in the Safety Division to oversee all of the vendors that the CFD will be responsible for monitoring. None of these overhead costs were factored into the CFD estimate for running the commissary internally.

If a contract is strictly enforced, managing the single commissary vendor should be much less difficult than managing the multiple components necessary to run this function in-house. While at first glance it appears to be more cost effective to perform the function in-house, overhead expenses such as costs to the Department of Purchases, Division of Finance, and the Division of Safety have not been factored into the overall cost, nor the impact of delays in procurement on the safety of the firefighters.

**Recommendation 6.37: Representatives of the CFD and the Purchasing Department should work as a team to reevaluate amending or re-bidding the current contract.** As the contract expiration date draws near, the team should develop a time-line; redefine CFD needs; request that each bidder submit a price sheet with the vendor cost and the vendor mark-up; select a group of items (unknown to the bidder) to evaluate and compare; work with the selected vendor to create a set of guidelines that distinguish repairable from replaceable items; and create incentives that would reward good performance and penalize poor performance.

Before rebidding the Commissary contract, a decision must be made as to whether to purchase an entire new set of protective clothing, as recommended for improved safety under the Safety section of Chapter IV, Fire Operations. If the protective gear will be changed, it may be purchased under a long-term lease/maintenance contract, which would change the nature of the Commissary operation.

## **CHAPTER VII. SUPERVISORY AND HUMAN RELATIONS ISSUES**

This chapter discusses a wide variety of issues dealing with supervision and management of the human resources of the CFD. Many of these are sensitive issues that have led to much internal turmoil, labor-management relations problems, and some negative publicity. This assessment is part of an initiative designed to improve the work environment for all members of the Department.

Most large organizations have human relations issues. It is commonly the case that fire departments spend much more time training supervisors on technical issues than on human issues, and then spend disproportionate amounts of time dealing with grievances and related problems. The CFD has had an unusually large amount of human relations problems, but there is much that can be done to reduce them.

The Request for Proposal (RFP) for this study identified a task to assess the Department's supervisory structure:

Review the supervisory structure within the Department for the purpose of determining whether any modifications should be made in order to ensure effective supervision of employees, and whether existing personnel policies adversely impact the ability of the command structure to provide effective supervision.

The approach to this part of the study recognized that the fire service is a unique working environment. Many of the people who work in the fire service live together on 24-hour shifts, unlike most occupations. In addition, fire service organizations are complex, diverse entities challenged by a number of significant trends that affect the work environment. These trends include multitudinous workplace laws, disputes over the application of affirmative action goals, acquisition of new services that cause significant cultural clashes with existing operations, and the hiring of new personnel who represent generational differences in values.

The supervisory structure is the backbone of an organization. Its function is crucial to the ability of the organization to achieve its mission and to address the ever-present challenges. Supervisory personnel exert considerable influence over the day-to-day operations by modeling positive behaviors, assisting work groups in achieving optimal performance, evaluating and guiding work behaviors, interpreting and carrying out departmental policies and procedures, intervening in situations that pose obstacles to accomplishing tasks, and ensuring communication between all levels.

The principal consultants for this section of the study, Dan Bay and Kenneth Hawkins, brought considerable and varied experience in assessing organizational needs, strategic and operational management, diversity issues, conflict management, training, and communications for a variety of private and public sector organizations, including fire departments. They also drew on the

expertise and observations of other members of the TriData project team to add to the sample of firefighters interviewed and to cross check perceptions about the material they collected.

This chapter is divided into five subsections. The Methodology section describes how data related to supervisory and human relations issues was collected from department employees. The Summary of Responses section summarizes the data collected by the set of questions the study was seeking to answer. The Observation and Analysis section interprets the data from the consultants' perspective. The Recommendations section suggests initiatives the Department should consider to address the supervisory and human relations issues identified, and offers recommendations for institutional changes that will have a lasting impact on the Department. The Implementation section suggests an approach and timetable for implementing the recommendations.

# A. Methodology

The review of the supervisory structure and human relations issues involved three steps: assessment, analysis, and recommendations. The assessment included examination of relevant documents, but relied especially on interviews of a sample of the Department's hierarchy, work groups, and employee associations.<sup>42</sup> A cross-section of department personnel participated in the interviews, including management, supervisory, and line personnel. Though not a random sample, it should be reasonably representative of various viewpoints. Appendix C lists the sample groups that participated in the interviews and the questions that framed the discussion during the interviews. The consultants identified the individuals and work groups to participate in the interviews. Some participants recommended other people to be interviewed. The consultants had complete independence as to who they interviewed.

The assessment focused on five key elements of the Department's supervisory system: policies and procedures, practices, structure, style, and skills. These were defined as follows:

**Policies and Procedures** – Formal documents that define and/or guide department members on various aspects of individual and organizational behavior.

**Practices** – The actual behaviors that are demonstrated by department personnel, in particular, supervisory personnel.

**Structure** – The organizational structure that defines supervisory responsibilities and span of control.

<sup>&</sup>lt;sup>42</sup> Reference to employee associations or groups include Local 2, the labor bargaining group, and affinity groups such as the African American and Hispanic Firefighters.

**Style(s)** – The desired supervisory technique(s) that the Department deems to be essential to effectively manage its employees.

**Skills** – The knowledge areas that require demonstrated competency to manage and supervise a diverse work force.

The assessment did not use an investigative methodology to determine facts or conclusions such as might be used in an EEO complaint. Rather, the process captured the feedback and perceptions of participants (which are not the conclusions of the consultants). This approach allowed participants to express their point of view in an honest, confidential manner without seeking corroboration of their claims. The intent was to provide information to city and department officials for use in a constructive manner. The participant's responses were used to shape the recommendations in this chapter. They were not intended for use in current or future litigation or grievances.

An orientation was held with department and city officials in August 1998 to review the methodology and scope of work. Interviews started with the executive staff in late September and continued with various groups and individuals throughout the remainder of the project through March 1999. They involved a sample of fire station, administration and civilian personnel. Select city personnel who have a significant relationship with the Department were also interviewed.

The initially proposed target number of interviewees was 90-110; in fact, 136 participated. Table 7.1 shows the number of interviewees by work group: management (above the rank of district chief), suppression, emergency medical service, prevention, civilian, and non-department personnel. Many more department personnel were interviewed informally for other parts of this report.

Mgt.	Fire Sup.	EMS	Prevention	Civilian	Non-Dept.	Total
13	80	19	11	6	7	136
10%	59%	15%	8%	3%	5%	100%

Table 7.1 Interviewees by Work Group

Approximately 26 percent (35) of the participants were line personnel and the remaining 74 percent (99) were supervisors. By gender, 113 were male and 23 female. Table 7.2 shows the distribution by ethnic group; about 37 percent were minority.

White	African Am.	Hispanic	Asian	Unknown	Total
81	35	13	2	5	136
59%	26%	10%	1%	4%	100%

Table 7.2 Interviewees by Ethnic Group

The length of the interviews ranged from one-and-a-half to four hours. Some individuals were interviewed more than once. The interview process was guided by a set of 23 questions designed to collect perceptions concerning 1) issues that affect the department supervisory structure, (2) participants concerns, and 3) their recommendations.

## **B. Summary of Interview Responses**

The summary of responses here is based on the anecdotal data and perceptions provided by the participants. The consultants' role in this section is to characterize their responses, and then offer their comments about participants' opinions in the analysis and recommendation sections (Sections C and D below).

The results of the interviews are presented here in a manner intended to protect confidentiality but still be detailed enough to enable the Department to use the information to define needed program initiatives. Of course, a participant's view of a particular incident or situation may depend on a number of variables, including group status (as defined by position, length of service, or job assignment) and individual characteristics (e.g., age, race, gender).

Also, an assessment of this nature is conducted in a dynamic environment. Changing events and other forces can cause a dramatic shift in the responses of participants at different points in time. This report represents a snapshot of the Department during late 1998 – early 1999.

Relevant aspects of participants' responses are briefly summarized below according to the questions asked. Since time was a factor in the interviews, not all participants were asked every question. Some went into great depth on just a few key issues. Nevertheless, the project team is confident that the information from the set of interviews is representative of the supervisory trends and related human relation issues affecting the Department.

Before discussing the supervisory and human relations issues, it is important to note that among all the numerous interviews, no one offered any evidence that the current issues were affecting the delivery of services to the public. In fact, participants reported that they liked the role they played in providing emergency services to the public, and many stated that working in the fire department is a great job, despite the numerous concerns and issues raised.

The response information is presented below in six subsections: strategic issues, policies and procedures, practices, structure, styles, and skills. These subsections correspond to the categories and groups of questions used in the interviews and described in Appendix D.

## Strategic Issues

Early in each interview, information was gathered to establish a strategic context for the subsequent questions. Participants were asked to describe major changes that occurred in the Department over the last 3 to 5 years that in their view affected the supervisory structure and function of supervisors. In addition, they were asked to describe current and likely future issues. This context was important because organizational and individual behavior is not static. Current concerns often reflect a history of events that have been shaped by past perceptions and behaviors.

The vast majority of participants felt that the Department was currently experiencing a particularly negative and difficult era in its history of human relations. They described a department beset by a number of serious challenges that are anchored in the past yet pose serious contemporary implications. They cited divisive issues that have fractured numerous relationships including racial groups, labor and management, and other work groups. They offered a range of opinions about what had happened to cause the current set of problems. Among the most common points cited were:

- Inability to change
- Racial polarization
- Nepotism and favoritism
- Growth of emergency medical services
- Stressed union and management relationship

**Inability to Change** – The inability to change with the times was a characterization of the Department used by many participants. Some acknowledged that one of the reasons this management study was needed was that the Department had not effectively addressed current issues nor dedicated time to prepare for the future. Some commented that many of these issues date back to previous CFD administrations, but little had been done to address them over time. They cited the reactive and controlling nature of the organization as the cause for inaction. An issue only gets addressed when a problem becomes serious enough. It was reported by many participants that the organizational culture does not encourage change. Rather, it upholds the status quo and imposes sanctions on people whose behavior threatens the stability of existing practices.

Some participants commented that the management structure is antiquated in design and style. They believe the Department suffers from outdated management and leadership methods. One example cited was that the Department still operates on a pyramid management system, which many organizations in the business world have abandoned in whole or in part. Department supervisory practices emphasize control, punishment and limited participation from the rank and file, mixed with

poor internal communication practices that make it difficult for department management to stay in touch with its members.

While the department has a clear mission to protect and preserve the life and property of the citizens of Chicago, it does not have a similar set of values or mission statement that guides its organizational development, which is the process of preparing for and managing change. Instead, according to some participants, "tradition" has become a euphemism for resistance to change. The predominant view is that there is little being done to shape organizational and individual behavior. There is no aggressive plan advanced by department leaders to bring people together to address the supervisory and human relations problems. Further, the participants contended that Department managers have not been equipped to lead change, nor have middle and lower level supervisors.

The lack of a solid relationship with the community is another area that reflects the department's inability to change with the times. Community fire protection has evolved throughout a number of departments in the United States. It recognizes that the fire service has a unique role and location in the community. While there are some outstanding exceptions, many fire stations appear to the community as fortresses that house work crews. They respond to emergency needs, but do not open their doors beyond the sound of a siren. According to some participants, the Department is in the community, but not a part of it. There is too little interaction with residents outside of emergency responses.

**Racial Polarization** – Most participants acknowledged that racial polarization has been part of the CFD's history. It is perhaps the most serious issue affecting the Department's human relations.

Some minority participants recall one of the incidents that triggered the 1965 race riots: the rear end of a ladder truck swerved onto a sidewalk and killed an African American woman. The tillerman, who was from an all-white firehouse, had been left behind because he was drunk. The riot forced the Department to make efforts at integration, but it continued to resist hiring minorities. As some described, the Department began integration overnight, but the Department did not embrace the hiring of minorities with open arms.

During the early 1970s, the Department came under fire from the Federal government for longstanding practices that prohibited fair access of jobs to minority candidates. City and Department leaders resisted changes. The City subsequently entered into a consent decree with the Justice Department that required major reforms in hiring practices. For minorities, the message seemed to be that equality and change were only going to happen through outside pressure. It also established a belief that they were not really welcome in the Department and that, although there was an agreement

to open the doors to them, organizational obstacles to minority acceptance and advancement would remain.

The consent decree began to bring about changes and a number of minorities were hired. While various minority groups and women have been integrated into the Department since the 1970's, there are strong concerns over the continued application of affirmative action efforts. There are deep divisions between and within racial groups about what constitutes fair standards for entry and promotions. A considerable number of white males, as well as some members of minority groups believe it is time to eliminate "out-of-rank" promotions.<sup>43</sup> For many, the act of promoting someone who scores lower than another person on a promotional test is unfair. It has left many white males bitter and angry. They argue that it is the public who ultimately will be harmed by such practices. They believe that promotion should be based on a set of standards that favors advancing the best technically qualified people for the job. A significant number of white participants reported that most members can deal with anything as long as it is fair, and they feel that promotions based on race is highly unfair. There is an intense belief on the part of these members that everyone has access to the same information and opportunities, and that minorities do not need the additional help. It was suggested that eliminating such practices would go a long way to establishing racial harmony.

Another perspective of some interviewees was that affirmative action causes a great deal of controversy and angst. Many Department members do not understand the scope and purpose of the program, they reported. Affirmative action is designed to remedy the lingering affects of discrimination in hiring and promotions. This perspective believes that historical and contemporary factors create barriers to fair hiring and promotional practices. It was also noted that affirmative action was constructed to meet the goals set by the consent decree with the Federal government and to satisfy the requirements of Appendix G in the labor agreement. It also minimizes potential Title 7 violations. Lastly, the program was thought to diversify the workforce to enhance community outreach to City neighborhoods. This perspective contends that the abolishment of affirmative action would not eliminate racial attitudes and behaviors and would not allow the Department to remedy the impact of past discrimination.

The contention that unqualified people are being promoted based on test results is not true, according to some interviewees. While someone may be selected ahead of another candidate, the increments between technical scores represent small differences. In addition, the testing process does not measure other important elements such as attitude and leadership ability, they said.

Despite current affirmative action efforts, there are members of minority groups who believe that enough is not being done and that institutional racism has severely obstructed their advancement.

<sup>&</sup>lt;sup>43</sup> "Out-of-rank" refers to skipping some people on the rank order list of test grades.

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They believe that, after all these years, the make-up of the Department still does not reflect the demographics of the community. They have a basic distrust for Department systems and practices that govern hiring and promotions. They acknowledge that these are hard, divisive issues that take on everyday meaning when someone is passed over to promote another person. However, they are committed to ensuring a fair distribution of job opportunities.

Shifting to non-affirmative action issues, there was a very strong sentiment expressed by some that the Department has continued to use practices that isolate and divide white and black members. Initially, according to these participants, blacks could only work in their own neighborhoods. Today, there continue to be some all-white and some all-black firehouses. Sometimes when firefighters are placed in a station of a different racial group, they rapidly seek a transfer because they expected adverse conditions, or experienced negative peer pressure. Participants reported that some members who are placed in these stations against their wishes are resentful and refuse to follow the orders of an officer who is of a different racial background. Ironically, stations in minority neighborhoods often have a high proportion of white firefighters because of the higher level of fire incidence, which makes these locations desirable training and work experiences, and the first choice of those with enough seniority to select them.

Management feels that its hands have been tied in allocating personnel to stations because the collective bargaining agreement prohibits the rotation of personnel, except by seniority. (Members are allowed to bid on station assignments based on their years in the Department.) Members tend to pick station assignments that offer what they consider to be a desirable work experience or are located close to where they live. The only other means management has to affect transfers is to use the bargaining agreement rule that enables the Commissioner to assign up to four percent of personnel for any reasons, within each position classification, based on total vacancies.

There are strongly disputed perceptions about the degree of support the union has provided its minority members. The union leaders interviewed generally believe that they have tried to reach out to minority members, but that their efforts have been rejected. They believe that the primary obligation is to produce the best technically skilled workforce for the public. At least some minority members believe that the union does not adequately represent them on issues that inhibit minority progress, that the union is dominated by a membership that does not share their interests, and is influenced by retired firefighters who harbor biased attitudes about minorities.

As noted above, participants reported a long history of racial discord in the Department. Some believe there has been a further increase in tension over the last five years. Some participants said that recent incidents captured on videotape at a south side station reflect what goes on in the Department much more frequently than many people realize. Participants cited a number of examples, from overhearing conversations featuring jokes about minorities, to use of offensive terms to describe minorities. The use of pejorative words was not isolated to a few line personnel, but was even part of the vocabulary of some chiefs. In some cases it is not clear that there was awareness of which words are offensive; one older chief-level officer interviewed spoke of the "coloreds" who work for him in a context suggesting he thought he was being politically correct.

Some white participants cited examples of minorities who demonstrated racist behavior. They complained that such incidents go unnoticed or do not receive the same attention as those of affronts by white members.

These issues have affected members of both races. Some white male participants reported that they were shunned by other whites for associating with or attempting to help minorities in particular situations. One person spoke of an attempt to tutor some minority members to improve their test taking ability. He was told that he was not a team player and subsequently transferred to another location.

As further evidence of racial discord, some minorities reported that they have, at times, been excluded from the food clubs for racial reasons. Others state that the deck has been stacked against minorities and that they have become the target of resentment.

Another major issue relating to race is the perception that the Department and union condone or do not adequately deal with racist and bigoted behavior. Within the last year or so, department managers suspended a number of personnel who had been involved in the videotape incident and another harassment incident. A few department members organized suspension parties for the people who were disciplined as a means of compensating them for lost wages. The parties were advertised by word of mouth and posters were prominently displayed in some stations. These parties are described by some as one of the positive aspects of being part of the 'brotherhood.' While these parties were not formally sanctioned by management or the union, they appear to receive tacit support. The company officers usually do not intervene, nor does management or the union speak out against such practices, which sends to many – correctly or incorrectly – the implied message that the Department and union supports racist or harassing behavior.

Others believe that many incidents in the department do not have racial origins, but are manipulated and presented in ways that increase divisiveness and polarization. Some say these actions are largely the work of racial opportunists who do not necessarily seek fairness or the overall well being of the department, but rather have their own agenda.

**Gender Issues** – It is common to hear CFD members refer to suppression personnel as firemen, not firefighters, the more contemporary term that includes females. The dominant attitude is

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that males are "carrying" the female members most of whom do not have the physical attributes to do a good job, and do not have to test at the same level as males.

Many men reported that the hiring of what they considered to be unqualified females has caused a great deal of resentment. Some participants noted that the anniversary of when the first female was hired is "celebrated" by some as a day the department changed for the worse.

Some participants reported that women are treated differently in other ways. If a complaint is made about a woman, no action is taken out of fear of a harassment or discrimination suit. On the other hand, if women complain about men, there is a quick response. A few participants stated that many women are reluctant to complain out of loyalty to their crews or fear of retaliation.

Several participants stated that having women in the department has worked out better than most expected. But some noted that when women were not able to pass the physical test requirements for entry into the department, a remedial program was arranged on a private basis. While the women who participated were able to increase their upper body strength, men were resentful that women were being paid to train, because the opportunity had never been afforded to men. A number of participants said that the goal of recruiting qualified women in the department has not been achieved, and that the current program is just an attempt to be politically correct.

Other participants offered the observation that there are some men as well as women who are not physically fit, or who do not perform well at a fire, but they are not targeted for their perceived deficiencies. Many male members complain or quietly hold negative attitudes about their female crew members, and will not extend themselves to help them be successful. Proponents of females believe that a stronger mentoring and team approach will overcome many of these problems.

**Favoritism and Nepotism** – Several participants pointed to a long pattern of favoritism that benefits certain members of the department. They believe that the elements of favoritism are grounded in historical practices that are both a part of the City's and Department's social and political culture. Trace the names of certain families over past decades, they assert, and you will find that their children, relatives, and friends have done far better than the average member. They benefit from preferential treatment in special assignments and placement after the academy. These assignments can have a great impact on one's career. The post-academy placement is the first major step in a career. Getting one of the few "plum" spots will provide a new member the opportunity to hone critical skills and learn from a veteran crew. These active spots are highly coveted and, according to some participants, go to a select few.

Some participants spoke of the impossible task of showing impartiality when supervising one's own relatives, friends, or the relatives of a close friend. Such relationships have a high potential

for conflict of interest that pit organizational responsibilities against strong personal relationships. In contrast, a few participants reported that the identification and enforcement of discipline at the field level can fall disproportionately on those members, especially minority members, who do not have the same familial or social relationships in the Department.

Another example cited of favoritism was that other special assignments (beyond the initial placement out of the academy) are not given proportionately to minorities and women. Others reported that many members, including non-minority, do not have access to these special assignments because they do not have the connections. Some members cited examples of minorities who had to sue or challenge the department to obtain special assignments.

The competition for promotion is fierce. The promotional processes, which are supposed to guard against undue influences, are believed to be suspect by many. There is a strong perception that if a relative or good friend of a high ranking chief appears before a panel, he will get preferential treatment. In addition, out-of-rank promotions that benefit minority candidates hit a very sensitive nerve and are viewed as a form of favoritism. The majority of promotional candidates spend a considerable time preparing to take the exam in hopes of being considered for advancement. Many participants report that if a white male finishes high, but not right at the top, there is a strong probability that he will be passed over to pick up a minority candidate. Contrary to this perception, others pointed out that candidates at the high end of the list do eventually get promoted. It is true that some people on the list do get passed over for a particular promotion, but it is not an accurate picture of the process. Candidates who score high do get promoted. In the last four completed examinations prior to the current list being utilized for promotions, the vast majority of candidates received rank order or delayed promotions. Individuals who were not promoted are in the bottom 5 percent – 24 percent of the respective lists.

**Growth of Emergency Medical Services** – Since its inception, the primary focus of the Department has been responding to fires. More recently, however, there has been a dramatic change to taking more of an emergency medical service focus. The department infrastructure, staffing, facilities, and equipment are heavily invested in fire suppression. According to a number of participants, City and Department officials are belatedly trying to transition into a dual role that will provide flexibility. They point out that cross-training of suppression and EMS personnel should have been undertaken a long time ago. Now everyone is hustling to get it done.

The majority of CFD members still want to be viewed as firefighters, not medical personnel and strongly resist service and cultural changes associated with the transition. A by-product of the increased focus on emergency medical services is conflict between suppression and EMS personnel. Some participants report that the relationship between these groups is getting a little better. However, most participants describe a situation in which there is considerable conflict between the EMS and

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fire cultures both under and above the surface. There are basic disputes about wages, workload, and status that separate the groups. Suppression personnel are viewed as having a soft job by some EMS crews, who make significantly more runs throughout the day than fire personnel. Some firefighters even appear to feel guilty about this, when at the end of a shift the paramedics are exhausted and they [the firefighters] are not. On the other hand, some firefighters commented that while EMS crews may make more runs, they do not understand the firefighting job and do not have to face the risks inherent in suppression. EMS personnel respond that they face a wide variety of health risks, as well as a heavy workload. Representatives of both sides have described many petty and sometimes serious disputes, some of which occurred in the presence of suppression supervisors who did not do anything out of loyalty to their peers. At a minimum, these feelings have caused poor work group dynamics, and potentially hostile work relationships.

Firefighter attitudes seem to dominate social practices in the department. As noted in Chapter V, a past practice (just recently ended) required paramedics who became firefighters to remove their paramedic patch as an apparent sign of loyalty to suppression (in contrast to many departments where the extra paramedic credential is highly respected). Also, according to some participants, it is common practice for a station crew to assemble when a suppression chief visits. This same courtesy is not extended to an EMS field officer. Lastly, rank and compensation for EMS personnel is perceived by the EMS personnel to be lower than for their suppression counterparts; some feel this is to demonstrate fire culture superiority.

Some firefighters believe that EMS personnel have elitist attitudes and see themselves as more educated and intelligent than firefighters. They report it is much easier for EMS members to cross over to the firefighter position than for firefighters to cross over to the EMS positions.

**Stressed Union/Management Relations** – The relationship between labor and management has been deeply strained since the 1980 strike. Participants from both groups say the relationship has grown more adversarial over time. The strike has drawn a hard line between individuals and groups in the department and embedded the element of conflict into department culture and practices. A few participants said that members of the "Brotherhood of the Barrel," a strike group, maintain a list of non-strikers. When non-strikers are transferred to a strike crew house, they are met with subtle or openly hostile behaviors designed to force them out.

For many veterans of that time, memories of the strike shape the belief that management and the City cannot be trusted to consider the needs of labor. The strike is just like yesterday to them. A few participants recognize that neither group has found common ground on which to move beyond past events for the benefit of their members. Many people now in top management crossed the picket line to work during the strike and have never been forgiven for it. The main reason for the defeat of the so-called "brass bill," a revised pension plan for exempt employees, is attributed to the hatred of strikers for non-strikers. Some interviewees believe that management in turn retaliates on union members whenever possible. Another perspective from an exempt-level member was that the defeat of the bill disrupted an otherwise effective working relationship that has addressed a number of labor/management issues over the years.

From a union perspective, field personnel often commit blatant violations of the bargaining agreement. The district chiefs impose their own interpretation of the rules, which is often contrary to the agreement with the City. This results in a large number of unnecessary grievances, and unnecessary conflict between management and union representatives. As noted by some participants, this is very costly; many disputes are not settled early in the process and fall into arbitration, which can take up to three years to resolve.

According to union representatives, communications between both groups have been poor. In general, they say they have not been involved in strategic decisions that affect the department. In addition, communication on routine matters often is lacking. As one example, an incentive payment for having EMT qualifications was due in January 1999. There was an administrative oversight, and it was not included in the paychecks. Union representatives only found out about it when members complained. They say that actions like this only serve to embarrass them and cause hard feelings with management, when they could have been avoided by informing them of the delay and its reason, to pass on to the members.

Management has been equally frustrated with the union, and appears to have grown very leery and distrustful of working with them. Management feels entrapped by outdated work rules that inhibit effective administration of the department. There is a belief that battalion chiefs and company officers are more loyal to their union peers than their supervisory responsibilities. Staffing deployment is governed by restrictive rules that create unnecessary overtime and raise operating costs. For example, in order to conduct needed classroom supervisory training for veteran officers, the department would be required to pay overtime to back-fill personnel released for the class. The other option is to take whole companies out of service while the supervisors participate in training. While both sides try to deal with each other, there appears to be no rational means to discuss or resolve such issues.

Most participants reported that the many issues noted above had not been adequately addressed and still affect the Department. Over the past three to five years, the Department had fallen into a state of organizational inertia with respect to these issues, they feel. A few participants stated that the racial and EMS/suppression conflicts have gotten better, while others felt they have gotten worse, as evidenced by media articles on the tape incident, public news of other in-house misbehaviors, and the open media debate about the number of ambulances needed in the City. Some participants commented that management does not have a long-range plan and is seriously divided, and that palace politics erode management authority and the ability to lead the department to a better place. They feel that the lack of trust has pushed managers into a bunker mentality and forged divisions among the people who are essential to leading the department out of this morass. Management has inherited the past, but it was also part of that past. According to some participants, to break from the past and form a new future, it must act aggressively, and in unison.

## **Policies and Procedures**

A number of participants provided comments on the Department's policies and procedures, which are very prescribed, but often open to interpretation. Respondents cited the *Code of Professional Conduct* and the voluminous compendium of general orders that cover much of what should be considered important guidelines for members of the department. For instance, the general orders include a *Discrimination/Harassment Investigation Policy & Procedure*. This document contains standard, appropriate steps for addressing alleged discrimination or harassment situations.

The general orders also enumerate the responsibilities for the supervisory positions listed in the table below. In addition, there are position descriptions for exempt ranks.

Suppression/Prevention	EMS	
Battalion Chief	District Commander	
Captain	Field Officer	
Lieutenant	Paramedic Officer	
	Ambulance Commander	
	Paramedic in Charge	

In general, participants said that there is ample written definition as to the role, authority, and behavior of supervisors, but there were many concerns about the execution of supervisory responsibilities, inconsistent application of discipline, and lack of support from management for supervisory decisions. There is a belief that many supervisors at the battalion chief and company officer levels are overly influenced by their subordinates, to the detriment of their organizational roles. Some describe this condition in terms of the lack of accountability, which is code for not getting the job done properly or not at all. Participants provided numerous examples which ranged from minor to serious. One of the most talked about incidents was the previously mentioned videotape of a raucous drinking party punctuated with racial parodies that was held in a department station. This was viewed as a serious breakdown in accountability, with supervising personnel not exercising appropriate action to prevent the incident or properly investigate it after it occurred.

Allegations of supervisory failure to act emerged in a more recent publicly announced case paralleling the dynamics of the tape incident. Apparently, supervising officers observed or should have been aware of behaviors that were contrary to department regulations. Some believe that their failure to act allowed a manageable situation to become a major incident.

Participants presented other examples of officers who failed to manage work group behavior and conflicts, ranging from the use of inappropriate language, to the baiting of individual crewmembers, to supervisors who do not hold subordinates to department dress and performance standards. Some firefighters mentioned the lack of supervisory attention paid to paramedics who stay at the hospital to relax after dropping off a patient.

Some participants expressed the belief that top department managers also are not held accountable and that they should be doing more to support line supervisors. They believe that top managers have become isolated and do not understand the pressures that occur in the field. When something goes wrong, they are quick to pull the trigger and come down on anyone in the vicinity of wrongdoing. Rather than institute proactive measures such as training, they have been punitive.

Generally, there appears to be widespread awareness and acceptance of the key policies and procedures that are imbedded in the respective supervisory roles. Candidates must test to promote to these levels, thereby subscribing to the responsibilities for the position. However, as noted above, for some supervisors there are serious breakdowns when it comes to execution of their responsibilities. Many participants stated that some company officers behave more like 'one of the guys.' While duties and responsibilities may be defined, management and some supervisory personnel are not on the same page regarding the discharge of supervisory responsibilities.

### Practices

The discussion of practices covers the realm of actual behaviors irrespective of policies and procedures. For instance, a procedure may require supervisory intervention into situations in which a subordinate is harassed by another member of the department and/or work group. A number of participants said that such interventions do not always happen according to Department guidelines, a gap between desired and actual supervisory behavior.

Participants reported numerous examples illustrating actual practices vs. written procedures and policies. The examples do not represent the behavior of all supervisory and line personnel but, as some participants noted, are intertwined in a web of organizational practices and culture that are supported by management and union practices. These examples are based on actual scenarios:

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*Example* – Noticeable friction appeared between EMS and suppression crews in the same station house. The EMS crew felt it was not treated appropriately by the suppression group. Conversely, the suppression crew believed the EMS personnel were a bunch of whiners who are 'wannabe' firefighters and do not hold up their station responsibilities. The company officer, a career firefighter, agreed with the suppression crew. The battalion chief picked up the hints of trouble, but did not pursue it further, believing or hoping it would eventually get resolved without his intervention.

*Example* – A company officer was newly promoted over someone else on the promotional list. As an affirmative action promotion, the officer was labeled by his/her crew as "made" and not qualified to do the job. The officer's crew refused to follow orders and told the officer to stay out of the way on the fireground. The officer did not complain to his/her superior and passively complied.

*Example* – A company of single ethnicity refused to drill under the direction of a chief officer not of the same race. Disciplinary action was commenced against the firefighters, but then stalled due to perceived external political pressure.

Example - A company officer was concerned about the low performance level of a female firefighter. He was in a state of paralysis over what to do because he feared that if he raised the question of performance, she would allege discrimination or harassment.

*Example* – A crew believed that a new female firefighter was not capable of doing certain physical aspects of the job. There was no clear evidence that she was incapable, but the male crewmembers were concerned she could not pull her share of the load during a tough situation. A veteran male firefighter who had been with the same crew for some time demonstrated sub-par performance but no one has raised the same concerns about him, or talked to him about these matters.

Example - A new member transferred into a station. The crew did not want the new member to stay because they felt the new member would not fit in with them. They applied subtle pressures to encourage a transfer. The company officer did little to resolve the matter.

Example - A company officer had an easygoing attitude about drills. If he was in the mood and the crew cooperated, they conducted a drill. The battalion chief is not that concerned about it unless he gets mad about something. Then he'll make the crew do drills as a form of punishment.

Example – White members of an ethnically mixed crew openly make ethnic jokes that go unchecked by the company officer.

As mentioned previously, one of the major complaints registered by some participants is that many supervisors, e.g., company officers and battalion chiefs, do not take the initiative to supervise; rather, they behave "like one of the guys" and acquiesce to peer pressure. Participants reported that instead of standing up against a behavior that is inappropriate, some supervisors will look the other way. The need to be liked by the peer group is given preference over organizational responsibilities. This is exacerbated by the fact that all supervisors from the rank of battalion chief down to lieutenant are in the same union as their subordinates. As many participants stated, this creates a conflict of interest with the same people one is reliant on for member support when negotiating compensation, work rules and health care benefits. Directly or indirectly, every major human-relations incident that was discussed by participants was linked in some form to this type of dynamic.

Some observed that this type of behavior reflects a pattern of avoidance that is evident at all levels of the organization. A few participants reported that previous administrations dodged the tougher human-relations issues, i.e., racism, gender bias, serious work group conflict, in hopes that they would go away. So, as some participants stated, to expect a company officer to take on a dicey issue is unfair when management support is not secure and they have not demonstrated the desire to aggressively address these matters.

Another complaint by some supervisors was that management will come down hard on everyone when something goes wrong. There can often be a punitive edge to management's response, and there is no constructive training on how to do things correctly or tools to intervene effectively. When a person becomes a new officer they are given only one week's training, which is not adequate by today's standards. Unless they get promoted to battalion chief or field officer, the new officers' course is the last department-sponsored supervisory level training that most officers will receive.

Some participants expressed concern that management is out of contact with department members. People are disenfranchised. They reported there is no reliable internal communications, only communications about the bad things that happen. On the positive side, there were a few appreciative comments about a memo thanking department members for their work during a snowstorm last winter.

Consistent with anecdotal data described earlier, participants reported that the racial and gender related situations are the most challenging human relations issues. This was the opinion of almost everyone, even those who believe that race and gender relation issues have improved. Participants reported that they are not prepared in terms of personal skills and organizational systems to deal with these and other more serious issues. They strongly believe that these issues are not being handled correctly. Some people cited the more public examples that have been aired in the media. They note that the dynamics of these situations can be found elsewhere in the Department, not just in

the publicized events. Many believe that the forces that favor inaction are greater than those that promote effective early intervention and management of challenging human-relations situations.

### Structure

A few participants commented on various structural aspects of the supervisory system, such as span of control, how supervisors are supported or not supported, and ways the Department encourages positive supervisory behavior. The latter is particularly significant because it substantially influences the performance of supervisory personnel.

The only area where span of control was mentioned as a problem by participants was the size of the EMS field officer's coverage territory. For EMS purposes, the City is divided into two divisions, north and south. A field officer is assigned to supervise the EMS incidents in each division. The divisions are so large geographically that the field officer is often unable to arrive within a reasonable time of the incident to view the activity. The field officer's suppression counterpart, the battalion chief, has a much smaller geographical zone and fewer personnel to supervise. (This issue received a more detailed discussion in the EMS Chapter V.)

There were varied perspectives on how supervisors were supported or not supported. A new CFD supervisor is initially provided with a training program. Like their veteran supervisor colleagues, regardless of rank, the Department also provides a support system comprised of policy and procedures and higher level supervising personnel who are available to assist with individual needs and issues. But, many participants reported that supervisors get very little support outside of the basic items mentioned above. They say they are undertrained in supervisory skills, which causes a significant handicap when confronting complex human relations issues. What many of them have learned about supervision is from their peers or on their own. They also question the amount and quality of support from superiors and management, in particular the value and consistency of advice and technical support. While some ranking supervisors were acknowledged for their skill and expertise, there is an absence of adequate numbers of mentors and role models capable of dealing with contemporary issues. Unfortunately, as a few participants describe, this results in a condition where there is a lot of blaming when something goes wrong rather than fixing the fundamental elements of the problem.

Participants commented on ways the Department encourages and rewards desired supervisory behavior, such as through the competitive promotional processes. Candidates up to the level of battalion chief must compete in a written and oral exam that requires some understanding of good supervisory practices. Since the process of testing encourages competition, there is a strong incentive to acquire and demonstrate supervisory knowledge and skills.

Post-promotional incentives fall into the hands of ranking EMS or suppression supervisors who conduct routine inspections, drills, etc., which result in some performance feedback to lower level supervisors. This feedback will vary depending on the interest and quality of supervision from the next level.

Participants reported that there is no formal performance evaluation system in the department. Supervisors, like line staff, are observed by their bosses. While some supervisors interviewed said that their observations are based on the person's job requirements, there is no formal performance evaluation structure. Some believe this approach has been effective, but a few acknowledge that there are deficiencies and potential liabilities from not having a formal system. (Department managers currently are reviewing different evaluation methods and instruments.)

As part of the interviews, participants were asked for their recommendations to improve the supervisory structure. The recommendations fell into seven categories: policies and procedures, training, leadership, management, promotions, practices, and operations. The recommendations are summarized in Appendix E. They were intended to enhance the professionalism of the Department and create a more responsive supervisory structure, with a positive impact on employee morale. Most of the recommendations were mentioned by multiple interviewees, some by only one or two. *The predominant recommendation was to provide additional supervisory and human relations training* beginning with the promotion of new officers and encompassing all supervisors and managers.

### Management and Supervisory Style

The management and supervision of personnel involves a variety of human relations tools. One of these is style, the techniques a supervisor uses in his/her interactions with subordinates. Usually, different situations call for varied techniques.

There was much consistency of opinion on what are the attributes of a good supervisor in the Department. Table 7.3 lists the attributes compiled from the interviews.

Participants were able to identify people who they regarded as role models or who had a positive impact on their own professional development. In some cases, a veteran had taken them under his wing at an early stage in their career and became a mentor. But some other participants were hard pressed to come up with any strong candidates for role models.

Knowledgeable	Manages diversity		
Well-rounded experience	Gets job done		
Possesses technical skills	Brings people together		
Leadership ability	Courageous		
Respected	Willingness to learn		
Loyal	Open to change, and helps others change		
Demonstrates concern for subordinates	Non-authoritarian		
Good communicator (written, oral)	Possess more than one management style		
Mentor	Effective intervener/problem solver		
Able to reward and reinforce	Understands human dynamics		
Motivator	Follows orders		
Stands up for principles	Maintains discipline		
Not arrogant	Lead by example		
Understands the public element of the job	Approachable		
	Fair		

## Table 7.3 Attributes of a Good Supervisor (Compiled from the Interviews)

Participants noted that there is diversity in supervisory styles, but the two dominant styles mentioned most often were "authoritarian" and "hands-off." Mentioned less frequently were participatory and team-based approaches. The authoritarian style is a parental approach to managing the work group. While there is a clear distinction between supervisor and subordinates, there is little opportunity for input from lower level workers. The supervisor is viewed as the boss.

The hands-off approach represents the supervisor who has not established role boundaries with his/her subordinates. The need to be "one of the guys" outweighs organizational responsibilities. The peer group assumes control, rather than the supervisor.

Some participants were asked to estimate the percent of good officers/supervisors in the Department. Their consensus was that perhaps half could be regarded as satisfactory.

## Skills

The process that supports the ongoing acquisition of supervisory and human relations knowledge and skills for department members is critical to addressing contemporary human relations issues. These processes, e.g., a training plan, can have a profound effect on shaping individual and organizational behaviors. Participants were asked to define the competencies they deemed essential for a supervisor role, how these skills are developed, and the gaps between existing and desired methods.

It was reported that the Department placed importance on training at the entry-level supervisor in the EMS and suppression services, and at the field command level (battalion chief and EMS field officer). At the company level, the department emphasizes the basic skill areas that a new officer would need to lead an EMS or suppression crew. The general subject matter for lower level supervisory personnel include:

- Roles and responsibilities
- Administrative duties
- Technical and tactical skills
- Sexual harassment
- Disciplinary procedures
- Employee assistance program

For instance, a 30-hour new officers promotional class held last July included subjects ranging from technical to tactical to procedural areas. Three hours of the class was dedicated to disciplinary, sexual harassment, and employee assistance program areas. The EMS promotional course was slightly longer, and included a mentoring component. It is planned to expand the new officers school by one week to add more tactical field training. Newly promoted captains are not provided a training school because their responsibilities are basically the same as a lieutenant's except for station management.

The last group of newly promoted battalion chiefs were provided a one-week training program. The school focused on basic duties and responsibilities plus subjects such as incident command, tactical simulation, and investigation protocols. The topics covered included:

- Roles and responsibilities
- Administrative duties
- Technical and tactical skills
- Incident command
- Sexual harassment investigative protocol
- Accident investigation

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The department is in the process of reviewing and revising a training curriculum for new officers and battalion chiefs. The intent is to expand the length of the course and enhance offerings in human relations subjects.

As mentioned in other areas of this Chapter, there was universal recognition by participants that supervisory and human relations skill development for managers and supervisors is seriously deficient, beginning with the promotion of front line officers. Many participants reported that the length of training time is not sufficient to develop a foundation of knowledge, much less the core skills necessary to supervise and manage people. After this introductory experience, there are no ongoing training opportunities sponsored by the department. The only opportunities that exist are those pursued by individuals outside the department.

Some participants commented on the serious ramifications of these conditions. People placed in a position of supervising others are not capable of doing their jobs. One day they are "one of the guys" and the next they are asked to lead a crew, but do not have the supervisory skills. Many supervisors are "rudderless" in defining the supervisor-subordinate relationship. This can lead to mismanagement of work group relationships, conflicts within and between work groups, inconsistent application of department policies and disciplinary procedures, and related legal and safety liabilities. There was a candid admission by many supervisors at various levels that they do not have the skills to handle the more difficult human-relations problems.

One of the obstacles to conducting an aggressive training program is the cost of overtime. Under the existing collective bargaining agreement, the department is required to back-fill and pay overtime to release a company officer during their tour of duty for a training program. As noted earlier, if officers are required to come in on their off-duty time, they would receive overtime. The other option requires that the entire crew be taken out of service, which is inefficient and cumbersome. The cost to provide even a modest training module for officers can run into the hundreds of thousands of dollars in overtime expense. For example, an 8-hour supervisory class on team building would cost \$362,000 for the 928 supervisors covered by the bargaining agreement (lieutenant through battalion chiefs). A 16-hour conflict resolution module would cost \$725,000 in overtime.

As a means to balance cost and logistic obstacles, the department authorized the design of a closed circuit system to link all stations through a cable TV system. Training tapes were to be scheduled at set hours for work crews. However, despite expectations the service would be working by now, it remains inoperative.

Some participants commented that line personnel, as well as officers are in need of basic human relations training. They felt that it is important for all members to have a training experience that supports the human-relations goals of the Department. This comment reiterates a point alluded to earlier: there is no strategic training plan to address human relations issues. The department is viewed as being reactive versus proactive. An example is the current diversity-training program. The program grew out of a crisis situation, and its impact on the more challenging human relation issues is perceived to be minimal. A few participants stated that a real fix would require a more comprehensive long-term approach.

Some of those who commented about the need for a strategic approach to human relations believe that the Department executives do not have the skill and experience to develop and implement such a plan by themselves, despite good intentions.

# C. Observations and Analysis

In Section B above, we tried to summarize as objectively and accurately as possible what we heard from the interviewees. Here we switch from reporting the comments to analysis and observations by the project team.

There are a number of external and internal forces that affect the department and the behavior of its members. These forces provide context for understanding the supervisory and related human-relations issues that the participants identified, and the recommendations that will follow.

- Over the past decade, municipalities throughout the nation have been severely challenged by a variety of fiscal and program issues coupled with increased service demands. In many cases, municipal officials were facing difficult decisions to meet expanding service needs with shrinking revenues. For the first time in many municipalities, questions were raised about the strategic and operational level of fire services needed. Once hallowed sanctums of public service, fire service operations now were being scrutinized to justify their role. For some fire services, or acquisition and development of other related operations (e.g., emergency medical services). In a few areas of the country, fire services were privatized. The sum of all this is that much of change has occurred in the fire service. To some extent, the Chicago Fire Department has been part of the change, but in some ways immune from it.
- The fire service is a complex, unique work environment. Most people in a fire service organization live as well as work together. This element of work life presents opportunities and challenges. It creates an atmosphere that socializes new members into a culture with strong traditions that guide behavior. Novice and veteran members alike describe these relationships in terms of an extended family. The bond that often grows between those in the fire service is remarkable. They are socialized to trust and rely on each other because of the hazardous nature of their work. Conversely, one of the challenges is the natural resistance to change of this organization, whether it be positive or negative. Some of this resistance can be found in any organization, but the level of opposition is often stronger in a fire service organization. Along with positive social

aspects of working and living in a fire service environment goes a breeding ground for gossip, rumors, suspicion, mistrust, and serious conflict. Management of the work environment becomes essential to addressing these dynamics and maintaining stability. This requires a healthy partnership between labor, management, and other interest groups.

- There is a broad acknowledgment that the most important asset of any organization are its employees. Despite the best equipment, facilities, and financial support, organizational performance ultimately relies on the output of employees. Accordingly, it is important that management focus on the human relations element to maintain organizational wellbeing, and strive to develop employees as a means to enhance performance. Managers should be routinely asking questions about how human relations and resources are managed within the organization. Is there a governing plan and philosophy that guides and develops the potential of employees? Are correct policies in place? Are systems that focus on positive corrective techniques in place to deal with inevitable human relations problems? Are resources committed to developing and maintaining management, supervisory, and technical skills? An under-commitment to the human resources and relations element results in a weakening of the organization's most important asset.
- Racism is a powerful, divisive force in society. The perceptions that individuals hold about the causes and remedies of racism vary widely. There is an absence of thoughtful, safe discussion about such matters between racial groups because of the sensitivity and volatility of the subject matter, which causes people to fear being misunderstood, or labeled racist for stating a non-politically correct view, or labeled as a trouble maker or divisive militant. Consequently, individuals and groups often retreat from direct communication and draw conclusions about each other with limited information.

Racial attitudes are often reinforced wittingly and unwittingly in the workplace. Individuals will interpret and filter daily events to support their beliefs. Their perceptions may be contrary to the facts, but it reflects their view of everyday life. As a result, it is easy to shut out others who do not hold the same views. Segregation can occur physically, and it can happen mentally.

To overcome these dynamics, one must guard against practices and behaviors that reinforce these thoughts and behaviors. One of the best ways to accomplish this is to reach out to members of other groups. Sincerely ask them for their views, actively listen to their comments, and share perspectives. This form of communication is essential to creating understanding and finding solutions to complex issues. This is difficult to do because many people are not willing to participate in such dialogues.

• Nationally, the demographics of our communities have changed dramatically over the past two to three decades. Once a White-dominated society, many cities are comprised of significant minority populations. This has placed considerable pressure on public institutions, sometimes as a result of legal actions, to diversify the workforce through affirmative action and to more effectively reach diverse constituencies. Concurrently, it has created a heated debate about the fairness of hiring and promotional practices that may be perceived as favoring groups who have been traditionally excluded. One side contends such practices pit one group against another and erode the quality of service and, in some cases, pose a serious threat to the well being of coworkers and service recipients. The other side in this debate says that there are many people capable of doing

the work, but they have been excluded by use of invalid standards and discriminatory measures.

The following points are based on the anecdotal data provided by Department members. They are not offered as conclusions but as summaries of the points of view expressed in the interviews. They serve as further foundation for later recommendations:

- 1. The participants in the interviews provided an extremely troubling set of perceptions about the department. There is widespread polarization along racial, gender, and work group lines. The administration appears to be divided because of internal conflicts. There is animosity between labor and management that inhibit these two leadership groups from finding common ground and working as a cohesive team. There has been public exposure of significant inappropriate behavior. Litigation and serious formal grievances alleging harassment and discrimination have been filed. A major local newspaper called for a shakeup in the Department. While the Department may still have a high level of public esteem, its reputation has been blemished and there is risk of further damage if negative events are not curtailed.
- 2. There is wide-ranging denial and lack of sensitivity for the implications of these matters that runs throughout the organization. For example, the videotape incident created a major uproar in the department, with some people being fired or suspended. The story raged in the media for weeks, yet, the focus of many department members, according to interviewees, has been the motives for exposing the tape. Little has been said about the inappropriate behavior demonstrated on the tape.

Newspaper accounts cited another incident alleging harassment of a male firefighter in a station. The description of the behaviors were deplorable. People were transferred and suspended. And, once again, as reported by some participants, the general response suggested that there were more questions raised about the motives of the complainant than the harassing behavior itself.

After each of these events, select department members organized suspension parties to raise money for members who were suspended and lost pay. Posters were tacked up in the department, and word-of-mouth advertised when, where, and who would benefit. While the events were not sponsored by the department or union, the practice appears to be condoned by both groups. Neither entity has spoken or taken action against this practice and its subversive meaning, which tacitly supports inappropriate behavior. It is a practice that helps fuel the perception that the department is a racist organization, and erodes the credibility of the department and union.

3. The racial divide is enormous. On a long list of serious human relations issues, it is the most significant. It permeates every aspect of department life – hiring, promotions, and practices. Whether they were White, Black, or Hispanic, the vast majority of participants offered some negative experience involving race relations. People have very strong views about the causes and consequences of racial strife. While there at first may appear to be little common ground for communication or constructive action, the comments of many participants suggest an inherent widespread interest in seeking a solution.

- 4. The perceptions about favoritism and nepotism are profound, and they are eroding confidence in the integrity of department career advancement processes. The belief is that one's career is influenced more by who you know than what you know or how well you perform. Examples of favoritism and nepotism were provided in many different forms. One focus of complaints was about the exempt positions. While these are management level appointed positions, they draw attention because they are not subject to the civil service testing process that governs union represented jobs. Another area is the field placement of candidates following academy training. Many participants said that candidates who have 'pull' get good placements. Another example is special assignments. Participants cited stories of people who had to aggressively threaten or confront superiors to be considered for special assignments, while relatives and friends of people in authority did not have to endure the same challenges. These examples, if true, underlie the complaint that the department has not managed the integrity of some of its processes. The failure to do this adds to the perceptions of discrimination.
- 5. Female firefighters are viewed with disdain by the majority of male firefighters, who do not recognize them as bona fide members of the team, much less equal partners. In fact, their presence on a crew is viewed as literally a reduction in manpower. The criticism focuses on physical strength. Some participants acknowledged that there are males who cannot meet the physical requirements of the job, and that female firefighters do not get the same group support that a male would receive. They are immediately labeled as a nonproductive member of the crew. They have to prove their worth, while a male peer will be given the benefit of the doubt.
- 6. Many aspects of the organizational culture must be changed. The value of culture in an organization is that it can have a profound influence on shaping the behavior of individuals. In the corporate sector, successful companies spend a great deal of time developing a culture that will produce positive results. There are many positive elements in the CFD's culture. One is the value of teamwork that is so important in emergency situations. Along with the value of teamwork comes strong personal commitments to saving lives and personal property. Another positive is the support that most members extend to each other. However, there are some negative elements as well. As a dominant practice, people are not encouraged to speak their minds, nor are their opinions solicited. It is widely perceived that it is better to hold one's thought than risk an idea that may not work. The chain-of-command structure is not responsive or solicitous of the opinions from lower ranks. This stifles creativity and the free flow of ideas.

This culture also features a form of occupational bigotry in the EMS-fire suppression relationship. EMS personnel are sometimes demeaned. EMS officers are not given the same level of respect as their suppression counterparts.

Prevention personnel can be subject to similar forms of occupational bias. They are uniformed and carry a badge, but they will be treated with as 'second class citizens' in the field because they are not engaged in firefighting.

Reviewing the above findings raises questions about what teamwork really means in the CFD. Is this a value or a privilege that is intended for only a few? How many members, in spite of their feelings about someone else, are willing to extend themselves to improve the situation or work cooperatively? This has become a culture of conflict. It is divided by factions defined by race, gender, striker, non-striker, labor, management, suppression, EMS, prevention, and so forth. It is less a team environment than a divisive one once

away from an emergency incident. If the department is going to move to move forward, it will require a true commitment to teamwork behavior and a personal commitment to becoming an architect in the construction of a new culture.

- 7. The focus of this assessment has been on the supervisory structure. While the assessment has identified a number of serious issues, it is important to underscore that *the egregious behaviors do not represent the majority of department members*. There are many well-functioning crews; there are many excellent supervisors; there are many people who want to make the situation in the department better. Like any organization, it only takes a relatively few individuals to damage its good reputation and members. However, in this case, it will take everyone to fix it. Whether it is challenging inappropriate behavior or providing group leadership, everyone must play a role.
- 8. Participants made numerous disparaging comments about supervisory failure. Many battalion chiefs and company officers are viewed as compromising their management responsibilities in favor of maintaining a "get along" relationship with their union peers. Some upper level command and management personnel are perceived as non-supportive, punitive, and lacking leadership. Supervisors are the backbone of an organization. From the line to the highest supervisory position, the qualities that one demonstrates speak louder than any policy mandate. Participants defined a long list of desirable supervisor attributes (Table 7.3). No attribute is as powerful as the need to role model desired positive behaviors that one wants their subordinates to mirror. It is the most significant factor influencing individual and organizational behavior.
- 9. Communication. Communication. It is essential to the flow of information and ideas in an organization. The absence of strong communications within the department results in widespread misinformation and misunderstanding. In an organization the size of the Chicago Fire Department, it is imperative that sound communication practices and protocols be installed and followed. These range from individual skills to organizational systems such as conflict resolution programs to address conflicts at the lowest level. These simple practices will significantly counterbalance negative influences in the department.
- 10. There will be a great deal of reaction to this report and the information contained in this chapter. Some may say that the information is exaggerated; others may say that their position has not been stated strong enough. There may also be disagreement over the proposed recommendations. Regardless, one fact is likely to remain: there is a set of problems that will require the energy and focus of virtually everyone in the Department. Management and union leaders will have to forge common ground from which to work cooperatively in addressing these issues. In turn, they will have to proactively solicit and encourage the active involvement of employees in solving organizational problems. No one can passively stand on the sidelines, or be an obstructionist. The future direction and success of the Chicago Fire Department rests substantially on the ability of these two leadership groups to put aside the past and move forward together.

# **D. Recommendations**

The following recommendations are a synthesis of participant inputs and the project team's suggestions. The overall goals of these recommendations are as follows:

- Strengthen the ability of the department's supervisory structure to manage a diverse work force
- Enhance the capability of the department to manage conflict dynamics and intervene in interpersonal disputes in an earlier more effective manner
- Reduce organizational and individual liability
- Increase the integrity of organizational processes
- Create employee buy-in and support for proposed recommendations
- Improve teamwork, productivity, and morale

While the thrust of the recommendations is to strengthen the Department's supervisory structure and practices, it is imperative that the department first enhance its ability to intervene in interpersonal conflicts, because the training and culture change needed will take years to implement, and some short-term actions must be taken. The inability to effectively address interpersonal disputes within the workplace raises liabilities for the department and individuals who may become party to any grievance or legal action. A number of significant workplace disputes emerged preceding and during the course of this study. Some of these may take a litigious road to resolution, but there are effective alternative approaches to address the type of conflicts that still lurk under the surface. The integrity of important Department systems are under fire from many flanks. Hiring, promotional practices, special assignments, and post-academy placements are areas that many participants complained about. Promotions are governed by agreements between the City and the United States Justice Department, but there is room to improve in others. Meeting the above stated goals will result in an improved state of morale, and the organization will achieve higher levels of teamwork and productivity.

<u>The principal strategy recommended for accomplishing the human relations and supervisory</u> <u>goals is the development of a five-year change plan</u>. The elements of this plan are articulated here, but this does not mean that the plan is complete. Rather, this document should be viewed as the framework for developing the plan. A five-year change strategy is proposed because the number and complexity of the issues raised will require a strong continuous commitment over a period of time to effectively address them. The culture cannot be changed overnight, and certainly cannot be changed by edict. The change plan strategy must be embraced with a sense of urgency from the Mayor and the Department's management and supervisory structure. Everyone in the Department, including union leaders and key employee group representatives, must play an active role in the implementation and maintenance of this effort. The recommendations are presented in six categories: leadership development; training; performance; policy, procedures, and practices; operations; communications; and planning.

Three important themes are threaded throughout the recommendations: collaboration, skill development, and institutionalization of change. Collaboration is necessary to counterbalance the forces of polarization that are pervasive in the department. Key individuals and groups must focus on points of common interest and become partners in the reconstruction process. Skill development is critical to enhancing organizational competency in the supervisory and human relations areas. Every member of the department must make a commitment to improve their professional abilities. Institutionalization involves embedding positive behaviors into the department's culture and practices. Lasting change can only be accomplished through the diligent efforts of modifying the principal systems that have caused the department to stagnate.

**Leadership Development** – Leadership has tangible and intangible elements. Tangible elements are the actions that one demonstrates to reflect the desired role modeling behaviors for all members of the organization. Among the intangibles is the level of confidence that department members have in its top managers. The recommendations in this subsection seek to strengthen the capability of top managers to understand and address current human-relations issues, demonstrate essential role modeling behavior, and provide skilled leadership.

**Recommendation 7.1: Designate and develop an existing management position to be responsible for organizational development planning and activities.** This position could be in the proposed new Bureau of Human Resources (currently called Administration). They could be uniform or civilian. Change is going to be a way of life for the department. The Department must develop an internal professional capability to understand and manage the change process. The department cannot be reliant on outside personnel – city or private consultants – to provide the day-to-day expertise that is necessary. This does not require the hiring of new personnel; rather, it can be accomplished with a modification of an existing position. This modification would entail increased emphasis on the organizational development skill area, and on related training and application to department operations. Logically, these responsibilities should be integrated into a top management position or positions, with the lead responsibility given to one person. This would ensure that organizational development issues are given the full attention of the fire commissioner and the management team.

**Recommendation 7.2: Develop the capabilities of the CFD management team to manage** and effectively address the human relations issues affecting the department. Management of the department's human relations dynamics requires an understanding by the management team of the issues impeding the organization and the strategies and initiatives designed to address them. Inherent in these dynamics are complex themes involving race, gender, occupational bias, and a host of other fractured relationships that challenge the department's effective management of the situation. This recommendation would involve a curriculum of training, team building, review and/or development of mission and value statements, and work plan exercises designed to enhance the management team's capabilities, sharpen its focus, and resolve any issues that inhibit the group from moving forward as an effective management force. As part of implementing this initiative, a series of facilitated meetings should be held to address the serious human-relations issues. The summits would involve all members of the management team and district staff. The focus will be on problem identification and resolution. The management team must be strong role models in the change effort.

**Recommendation 7.3: Design and implement a department-wide executive development program.** The City must develop the skill, attitude, and experience level of the department's key senior management positions (district deputy chiefs to fire commissioner) on an on-going basis. The recommendations above addressed the immediate need to develop the capability of the current management team to implement the recommendations in this report. In the longer term, an investment must be made so that future incumbents will have a high level of performance in contemporary skill areas such as management principles, strategic and operational management, and human relations and resources, as well as fire and emergency service management. It is reasonable to assume that future management team members (fire commissioner and bureau deputies) will be drawn from the ranks of DDCs and above, so their skill and experience development is critical to projected needs of the department and performance requirements. It is imperative that there be a pool of highly qualified candidates at each rank from Battalion Chief on up from which promotions can be made. Consistent with the creation of an executive development program, a training and professional assessment should be made of all current incumbents.

The City currently has a limited executive development training program that can serve as a model and potential resource. However, executive development is not a one shot experience, it is an ongoing process of personal and professional growth that occurs over the life of one's career. While the City and department must improve their investment in this area, managers and supervisors must assume some responsibility for their own personal growth.

**Skill Development** – The rapid rate of change in our society is unprecedented. In order to remain contemporary, successful organizations rely heavily on the ability to develop their personnel by providing them new information and skills. A personal and organizational commitment to education is essential to growing and maintaining a vibrant, productive organization.

**Recommendation 7.4: Establish and implement core competencies for managers and supervisors that will enable them to effectively manage and supervise a diverse work force.** Based on participant input and the consultants' experience, the following list of core competencies should be addressed:

- Team building
- Conflict resolution
- Communication
- Leadership
- Diversity
- Supervision

Appendix F outlines a set of competency and learning points for each topic area listed above. These competencies should be integrated into the department's processes and systems, such as

training, promotional testing, and performance evaluation. This will present an opportunity for uniform acquisition of knowledge and skills, and create an incentive to develop and maintain proficiency.

**Recommendation 7.5: Expand the introductory training programs for new officers and** chiefs to provide increased tactical experiences and to integrate core supervisory competencies into the curriculums. The department's past training programs have been deficient in preparing new supervisors for their roles. Department officials are reviewing ways to expand the training curriculums for new officers and chief officers. One area of need is to provide hands-on tactical training as an extension of the classroom experience. In addition, the core supervisory competencies identified above should become a meaningful part of an ongoing curriculum to enhance the professional capabilities of supervisors.

**Recommendation 7.6: Design and implement a comprehensive supervisory training program for all mid-level managers and supervisors and below.** The previous recommendations addressed training for exempt level managers, new officers and battalion chiefs. Here the concern is the existing mid-level managers and first-level supervisors.

Current department practice to provide supervisory training only to new promotions has not been sufficient to meet the needs of other supervisory personnel. Whether it is new information, or retraining on previous subjects, there must be an ongoing training plan for all management and supervisory personnel.

**Recommendation 7.7:** Modify the collective bargaining agreement to permit company and emergency medical service officers to be released to participate in training programs and other department activities. Under the current bargaining agreement, the overtime cost for accomplishing the recommended supervisory training for the 928 supervisors (see Table 7.4 below) would be on the order of \$2.5-\$4.7 million. The Department is confronted with a significant cost to establish the needed skill levels in the supervisory ranks, of which the bulk will be this overtime pay. The bargaining agreement limitation on training is contrary to practices in many other cities that allow supervisory personnel to be released for a period up to four hours a day to participate in department activities, which may include training or other assignments. During the absence of the company officer, another member of the crew acts on his or her behalf. While this practice reduces available staffing, it does not create a noticeable risk. There are not enough variances in the current bargaining agreement to allow this to happen.

Subject	Class Hours	Overtime Cost*		
Team Building	8-16	\$362,000 - 725,000		
Communication Skills	8-16	\$362,000 - 725,000		
Leadership	8-16	\$362,000 - 725,000		
Conflict Resolution	8-16	\$362,000 - 725,000		
Diversity	8-16	\$362,000 - 725,000		
Supervision	16-24	\$725,000 - 1,087,000		
Total	56 - 120	\$2,536,000 - 4,709,000		

 Table 7.4
 Length and Overtime Cost of Supervisory Classes

\* Projected overtime costs based on 1999 weighted average for lieutenants, captain, and battalion chief positions
**Recommendation 7.8:** Provide conflict resolution skills to all management and supervisory staff. While developing conflict resolution skills are subsumed in other recommendations, it is important to highlight their importance in a separate recommendation. All managers and supervisory staff should be proficient in conflict resolution, in particular at the company officer and battalion chief levels where direct supervision of employees is greatest. It is an essential skill necessary to defuse potentially complex or even minor situations that can result. At present, <u>conflict resolution is the number one skill area of need</u>. In view of the department's highly conflictual environment, the cost-benefits of implementing such training far outweigh the investment. This is a skill area that also provides significant benefits to individuals and work groups by enhancing the quality of the work environment. Like a number of the proposed initiatives in this Chapter, employee buy-in will be essential to implementation. The Fire Commissioner should appoint select company officers and battalion chiefs to be involved in the design process.

Recommendation 7.9: Create district training plans as an extension of the department's overall training program. There are variations in the amount and nature of field training from district to district. Some participants commented that company officers and battalion chiefs do not sufficiently integrate training into their operational routines. While there is a legitimate need for Districts to vary somewhat in their training because of the different risks they face and the details of the services they provide, there should not be much variation attributable to attitudes about training from chief to chief. One way to address these issues is to broaden the department training plan to include a district focus. The overall department plan would establish general training goals and activities that must be accomplished. Following a template, district staff would delineate training activities that would comply with department standards but be customized where appropriate to the needs of the personnel within the district. The District training plans would be based on an assessment by company officers with oversight by battalion chiefs and EMS field officers. An assessment instrument will be developed to enable company officers to define individual and group needs. The district staff would construct a schedule and the battalion chief and field officers would provide support and monitor results. The subject areas of the assessment would focus on operational skills but could include human relation topics. The planning phase of this initiative would correspond with the annual plan and budget cycle.

This approach potentially has a number of benefits. It leverages limited staff resources by increasing the involvement of the existing pool of district personnel in defining and delivering effective training programs. It shores up an area that is a current obligation of field command staff (DDC's and BC's) by enhancing scheduling and accountability; they would have a plan down to the company level that is guided by goals, objectives, and activities that can be evaluated. This approach directly involves line personnel in defining their own needs and the methods for achieving personal and work group development, and therefore is another step toward encouraging participatory practices and employee buy-in throughout the department.

**Recommendation 7.10: Develop a self-study curriculum as an adjunct to the department's training program.** As stated several times, there are numerous obstacles to providing adequate classroom training time for department personnel, especially company officers and field command staff. However, training does not have to be limited to the classroom. Another way of reaching these target groups is through a voluntary or mandatory self-study program similar to modules that are available through private or public schools. While the optimal method of training would tend to favor a mix of classroom sessions and workplace application, the self-study approach offers a number of benefits. Logistical complexities of training are reduced, the overall cost is decreased, and there are no major disruptions to services from self-study. The training program could identify target groups and topics for self-study along with a series of courses that could be developed specifically for self-study in part or whole. The material can be packaged into review information, exercises and questions. Participants would be given a specific time span in which to complete assignments. They might work independently or with other department members. Interactive exercises could ensure a link of accountability between line supervisors and superiors.

As an example of when a self-study curriculum might be used, Recommendation 7.8 cited the need to conduct conflict resolution training for all managers and supervisors. Unless the Department appropriates a significant amount of money to cover overtime costs, the program cannot be completed until the Department works out an agreement with Local 2 to allow represented supervisors release time to participate in training. Modification of the work agreement can take months and possibly years to negotiate. Exempt staff and battalion chiefs already have some schedule flexibility that would allow them to participate in the program, but company officers do not. A self-study course targeted at company officers could be created as a companion to the in-class training that the exempt staff and battalion chiefs would not have the same impact as an interactive classroom experience, the self study approach would benefit this group and the Department.

**Individual Performance** – Organizational and individual performance move along the same continuum. If individual performance improves, so will organizational effectiveness. The following recommendations are initiatives the department can implement to enhance performance and career development of line firefighters as well as supervisors.

**Recommendation 7.11: Design and implement an employee performance evaluation** system. Department officials already have been considering the design and implementation of a performance measurement system. Personnel evaluations present the opportunity for supervisors to periodically review a member's performance, indicating those areas that need improving and also where performance has been at an acceptable level or above. The absence of these ratings is particularly telling at the officer level. With no clear idea of whether he or she is performing up to departmental standards there is no impetus for an officer to alter his or her normal mode of operation. At one time, a performance check-off evaluation form was used, but it was discarded because of apparent abuses and poor administration of the process. Subsequently, supervisors use subjective judgments based on their interpretation of a subordinate's job performance. Some supervisors may apply this method very well but, based on participant input, others do not, and the implications are serious. While the perfect process has yet to be developed, performance evaluation instruments have greatly improved over recent years. Finding and adapting the proper approach will take time, but the benefits will be worth it. The context for the new system should not be punitive; rather it should be based on developing employees to be successful in their jobs.

**Recommendation 7.12:** Design and install a career development program for all members of the Department. Generally, there is a correlation between the quality of one's professional development and the planning that is made in setting goals and corresponding activities. The installation of a career development program provides a valuable counseling resource to department members. It insures a formal planning relationship between the department and its employees for their ongoing professional education. At a minimum, the department could incorporate a career development form or section as part of the performance evaluation experience. The form would create a positive interaction between the supervisor and employee focused on the individual's professional goals and training needs. Future evaluations would monitor and revise these goals. The employee would benefit from a sense of direction and the department would be provided with important information that can be used in the design of training initiatives.

**Recommendation 7.13: Develop a mentoring program.** One of the best means to learn a new job is through a working relationship with a veteran member. Mentoring often happens informally when a veteran will take someone under their wing. Currently, it is a "hit and miss" practice that leaves some junior members without access to valuable veteran talent. This can add to perceptions of exclusion and discrimination. A formal program comprised of an ethnically diverse group of volunteer mentors would be an important resource for all members of the department. The program could be developed incrementally to accommodate resource restrictions. At minimum, the department, union, and employee associations could work cooperatively to encourage and identify members who would be willing to participate. These members could be screened and then identified in a department-wide communication. The department would have to draw up guidelines to address any possible conflict of interest situations. The program should operate as an adjunct to the Division of Training, which would augment its department-wide effort to improve training opportunities.

There is much research to draw on about how to be a good mentor and conduct on-the-job training; 57 skills for doing on-the-job training have been identified.<sup>44</sup> The Los Angeles County Fire Department, U.S. Army, and Marines have pioneered in this area.

**Recommendation 7.14: Implement a lottery or random placement method for assignment** of post-academy graduates. Unless there is a compelling reason for exempting certain types of positions, all members of an academy graduating class, be it for firefighter or lieutenant, should receive an equal chance to good assignments. Using a blind selection process such as a lottery or random choice will restore integrity and a sense of fairness in the assignment system. Many perceive the present system of placement to be influenced by favoritism and nepotism.

Recommendation 7.15: Modify the collective bargaining agreement to allow rotation of *line personnel.* In Chapter II it was recommended that supervisors be rotated every three years. There is a case for periodic rotation of all line employees as well. Even with a lottery system, many graduates from the fire academy are likely to have a less than desirable assignment in a location that does not offer the best opportunity to develop their professional skills. Following their initial year, firefighters will become eligible to bid for another assignment. However, the perception is that they will probably remain in the current assignment or move to an equally less than desirable destination because they do not have enough seniority. While the privilege of seniority honors the status of veterans, it substantially inhibits the professional development of new and mid-veteran members. One reason there is so much competition for good assignments is that motivation and careers are substantially affected by work placements. The current assignment practice also enables erection of the artificial barriers lead to uni-ethnic group stations. Management is severely restricted from rotating personnel to address the critical needs of professional development and work group composition, and needs to have greater latitude for deploying of personnel. Some large cities (e.g. New York) also find that rotation of firefighters and officers through busy units is important to improve their skills and increase safety.

**Recommendation** 7.16: Modify future promotional exams and/or interviews to test for critical supervisory skills and human relations such as conflict resolution, team building, and work

<sup>&</sup>lt;sup>44</sup> "OJT: A Cognitive Model and Prototype Training Program for OJT Providers," U.S. Army Research Institute for the Behavioral and Social Sciences, Alexandria, VA, by Klein Associates, Inc., under Contract MDA903-93-C-0092, August 9, 1995."

*group assessment.* One of the best means of institutionalizing positive practices is to construct incentives. The inclusion of a subject on exams is a good incentive to learn it, and an indication that the department values that topic area. Promotional candidates could be provided exercise and resource material that will enhance their extensive study activities on supervisory skills and human relations, which itself would contribute to the overall plan for change.

**Policies, Procedures, and Practices** – Policies, procedures, and practices can have a significant influence on human relations and supervision. Many participants provided data that suggests the need for action to improve the clarity or integrity of departmental processes, provide operational guidance, and improve participative practices. A related recommendation on the need to update SOPs was already made in Chapter II. In addition:

**Recommendation 7.17: Revise and update the Rules of Conduct and General Orders.** The department has been intending to rewrite these documents for the past year. It is a tedious project, but the time is now. Many participants provided examples of inconsistent policies, largely because outdated rules had not been properly replaced.

**Recommendation 7.18: The Office of Internal Investigations should handle all EEO** *investigations.* Alleged EEO violations are often complex complaints that require a skilled, objective investigation. Participants had numerous complaints about inconsistent application of disciplinary actions. Minorities perceive that field and command staff is dominated by white males who tend to have multiple relationships (family, friendships, social) that can compromise the objectivity of an investigation. Some White males commented that minorities and women receive preferential treatment at the expense of White males when claims are filed, and that there is a double standard that benefits these groups.

The current EEO investigation process relies on the appointment of chief officers most of who do not have the skill level to conduct investigations of this nature. EEO violations require a prompt, highly skilled response. By their nature, the claims may be ambiguous or highly charged. The skill of a highly trained investigator is crucial to the examination of the facts and potential outcome. Moreover, the EEO process must be perceived as having the highest level of integrity. The Office of Internal Investigations itself has had criticism in the past, but is an important arms length away in the process, thereby reducing the risk of conflict of interest. In the long run, a cadre of chief officers should be trained in EEO-related investigative techniques as a means of distributing expertise and responsibility of such inquiries throughout the organization.

Note that this recommendation does not affect the handling of sexual harassment complaints, which is the sole authority of the Sexual Harassment Office in the City's Department of Personnel.

**Recommendation 7.19: Review department disciplinary practices and develop appropriate** guidelines to ensure consistency across department work units. As mentioned above, there is a strong perception of a lack of consistency and fairness in applying discipline. The majority of these comments were focused at the field or work group level. Whether perception or fact, these comments indicate a high degree of discomfort throughout the department in handling complex discipline situations. Union representatives also commented about a lack of consistency between the labor agreement and administrative enforcement of it.

#### Chapter VII. Supervisory and Human Relations Issues

The Department must carefully examine its practices in these areas to ensure appropriate uniformity, and that the disciplinary system achieves the highest level of integrity. The management team must examine relevant dynamics and patterns, and identify ways to counter this condition through training, communications and clarification of policies and procedures.

The company officer and battalion chief positions are essential to the proper monitoring and intervention of inappropriate employee conduct. The complaint is that too many of them behave like "one of the guys" and shirk their organizational duties. As part of the review of current practices, representatives from these positions must be drawn on to provide insight and leadership to correct this condition.

**Recommendation 7.20: Enhance participative practices between supervisory and line personnel.** Numerous participants cited situations in which a command officer or manager did not respond to their suggestion or solicit their input on an operating issue that affected them. Many participants commented that adequate input was not sought by department planners on equipment design. Consequently, some specifications are perceived not to meet service needs.

Bureaucracies are a necessary structure for organizing work. They allow people to specialize and achieve efficiencies. On the other hand, they can become nonresponsive to the needs of organization members and citizen customers. Senior, command, and line supervisors should encourage more participation in decision-making by their subordinates. Employee input should be sincerely solicited on matters that affect them. In turn, employees must be constructive in making suggestions to address concerns. Encouraging these simple practices will go a long way toward fostering rapport and communication between all levels of the department. As a means to institutionalize participatory practices, they can be integrated into job descriptions, performance evaluation measures, and promotional testing areas. As alluded to throughout the Recommendations Section, our recommended initiatives offer numerous opportunities to actively involve CFD members in the planning and training roles.

**Communications** – Internal communication practices can profoundly affect organizational and individual behavior. Communication is an essential two-way process for building relationships, understanding citizen and employee needs, advocating the department vision, and supporting a positive work culture. To be proactive, communication, like operational services, requires focus and planning.

**Recommendation 7.21: Design and implement a communications plan that supports the goals and objectives of the change plan.** Almost every participant in the interviews stated that the department is plagued by poor communication. Many noted that contemporary human relations issues were exacerbated because of these practices.

While the development of a communication plan would greatly benefit external communication activities, the focus of this recommendation is to support the initiatives offered in this report. The plan should be developed as part of the annual planning and budgetary process. It should be comprised of goals, strategies and tactics that provide direction, but are flexible to changing conditions of everyday life. The Fire Commissioner should appoint someone, under the direction of a management team member, to be responsible for developing the plan. The employee advisory committee, which is recommended as part of the forthcoming plan development process, could review and make recommendations. The committee's membership should reflect some of the major

audiences the plan is intended to reach. Chapter II identifies improvements in internal communication methods (e.g., newsletter, informational memos, and cable TV) for reaching target audiences in the department.

The distribution of this report is an example of how this recommendation can be applied immediately. This report will eventually be read by most if not all department members. Management will receive an enormous amount of feedback from department members. There will be negative reactions, positive reactions, and misunderstandings. While it is impossible to talk in-person to each member, it is possible to deal interactively with member perceptions, keeping them appraised of department intentions, and program activities and successes through a communications plan.

**Recommendation 7.22: Top department managers and command staff should regularly conduct open forums with front line supervisors and personnel, and hold discussions with employee groups.** Direct, personal communication in a organization the size of the CFD is an ongoing challenge. Many participants stated that there is a strong perception that top department managers are out of touch with the members. They also believed that top managers and other department members would benefit from direct interactions. Organizational needs, ideas, and a sense of direction could be exchanged. While it is inconceivable that top managers, from district chiefs to commissioner, could personally interact with all department members, there are reasonable methods that could be implemented to ensure increased interaction between top managers and line work groups.

In addition, department officials should incorporate methods of collecting employee input in a meaningful way throughout the year and during the annual planning and budget exercise. One approach is for top managers to proactively and systematically meet with employees in a sample of stations and with employee groups (union and associations). The focus of such discussions would be to:

- Constructively define issues;
- Establish short and long range objectives;
- Evaluate progress; and
- Communicate results.

An activity of this recommendation should be facilitated discussions with various employee groups to define contemporary issues. This activity will parallel the development of the change plan.

The interview process in this study itself is evidence of the potential benefits of an improved communication approach with employees. The process tapped participants' ability to focus on organizational problems, be part of the solution, and make constructive recommendations.

**Day-to-Day Operations** – The following recommendations are designed to improve the department's operational ability to identify and deal promptly with challenging interpersonal situations. These recommendations will provide supervisors and line personnel valuable resources while maintaining the integrity of the chain-of-command.

**Recommendation 7.23: Enhance the department's conflict management capabilities by designing and installing a peer mediation program (PMEP).** This program is a voluntary approach to resolving workplace conflicts. It does not disrupt the chain-of-command and is adaptable to the Department's unique working environment. It enhances the early intervention resources that managers and supervisors have to address complex and ambiguous human relation issues. The suggested program is based on a model developed by the City of Sacramento Fire Department. Appendix G describes the details of the program. The following examples illustrate how the program would operate in the Department.

*Example* – There is a growing conflict between a firefighter and his/her company officer. The firefighter believes the officer has singled them out for petty violations that other members of the crew have committed. The company officer does not believe he/she is treating anyone differently. While the firefighter has raised his/her objections directly with the company officer, there does not appear to be any resolution other than to transfer to another company. The battalion chief, who is aware of the situation, suggests mediation.

*Example* – A female firefighter believes she has run into a hostile attitude from her crew. She does not feel that she gets any support from the company officer or battalion chief. In fact, she is reluctant to bring these matters up because the situation might get worse and she'll be labeled a whiner. Because of Department communications about the peer mediation program, she locates the name of someone on the approved mediator list pinned to the bulletin board at the station. She contacts the person to discuss her situation in confidence. The mediator asks her if she has discussed this directly with the company officer and, if not, why she is reluctant to do so. After hearing her concerns, the mediator may advise her on ways to address the matter directly, or the mediator may facilitate an intervention between all concerned parties.

*Example* – There is a strain in the relationship between EMS and suppression personnel housed at the same station. The company officer and battalion chief have tried to resolve the situation, but EMS perceives them as members of the firefighter fraternity. Likewise, the EMS field officer is not viewed as a neutral party, or of equal professional status, by the suppression personnel. The crews reluctantly agree to mediate their differences after they select co-mediators from the Department list. While the mediators function as neutral facilitators, one is from the EMS ranks and the other is from suppression.

**Recommendation 7.24: Develop and implement district consulting teams.** It is critical that the Department rapidly upgrade the ability to manage human relations issues in the near term. Many of the recommendations in this document will take time to implement because of the need to negotiate modification of bargaining agreements and obtain financial resources. Immediately developing management skills in a few select personnel across the organization and forming them into a "district consulting team" would provide a quick reaction capability in the near term. As the title of this initiative suggests, team members will serve as subject and situation experts similar to any fire or EMS technical skill. Members at all ranks in the Department will be able to draw on their expertise.

The teams could be drawn from a pool of exempt and non-exempt field command and company officer personnel within each district. Some exempt staff (management and civilian) can be selected to augment the district consulting team pools. These positions are targeted because they are the top command positions and have the greatest schedule flexibility, which would substantially reduce or eliminate the need for overtime compensation. Recruitment should also consider factors that promote employee buy-in by ensuring representation of a cross-section of personnel.

Team members would be trained in the core skill areas identified earlier. In addition, the training will focus on contemporary supervisory issues such as interpersonal conflicts, inconsistent discipline practices, perceptions of discrimination, and gender issues. A department-wide training bulletin would communicate the various aspects of the program to all members; this would build an understanding of the approach, and enhance the relationship between the supervisory personnel and the trainer/consultants. The District Consulting Team would be given specific assignments, woven into their regular duties that will enable the department to integrate critical skills into daily interactions with peers and subordinates. The following three examples highlight ways team members might function.

*Example* – A potential disciplinary matter is brought to the attention of a district chief. The chief contacts a DCT trained deputy district chief (DDC) in his district for his analysis of the situation. After conducting a preliminary investigation of the matter, the DDC identifies a more complex set of issues. As a result, he recommends a series of actions drawing on the skills of other DCT trained personnel and two of the department's trained mediators. Together they craft conflict resolution and team building interventions designed to remedy long standing issues that have existed within a crew.

*Example* – DCT trained battalion chief and EMS field officers are involved in training peers on assessing human relation dynamics in station crew, and preventive tactics for managing personnel.

Example - A DCT trained company officer is contacted by one of his/her peers to discuss a work group conflict between two members. The DCT member suggests techniques that the company officer might use.

**Recommendation 7.25:** Add a human relations component to the inspection protocol of battalion chiefs and EMS field officers. The department currently requires battalion chiefs to conduct a daily inspection of each station under their command. A check-off inspection sheet is completed and filed with district management. A similar sheet or section focusing on monitoring human relations dynamics can be integrated into this inspection routine. This exercise also would establish direct conversation about the current state of the work group and, hopefully, identify any potential problems that might arise. The battalion chief would ask a series of brief questions to determine the existence of any issues that need attention. Appropriate boxes on the form would be checked off and/or comments noted. If the battalion chief identified emerging issues, constructive action could be taken. This approach would not be a solution to supervisor inaction and/or lack of awareness of emerging problems; rather, it would be part of a series of actions the department will undertake to speed up identification of problems, enhance accountability and support supervisors in the management of their personnel.

This recommendation requires the development of an assessment form that can be integrated into the battalion chiefs inspection protocol and training of field command staff and company officers on its use. As part of the developing this protocol, input should be solicited from a sample of suppression and EMS personnel. The training of company officers could be done by members of the proposed district consulting teams and supervising battalion chiefs. The training of battalion chiefs could be done by members of the proposed district consulting teams. The approach should be piloted in one district before integration into department protocols. Concurrent with the development and implementation of this procedure, there should be communications throughout the department about the intent and benefits of the exercise.

**Planning** – A number of participants viewed the production of a human relations and supervisory practices change plan as an exercise in futility, an effort involving considerable time to

develop a product that will only collect dust on a shelf. This must happen with the change plan. The implications are too serious. The following planning exercises and related activities are intended to focus and energize department leaders and members.

**Recommendation 7.26:** Design a five-year change plan to develop a team-based human relations model that institutionalizes positive practices through the promotion of individual and organizational excellence. The department has multiple fractures in its human-relations component, which severely challenge the supervisory structure and threaten the stability of the organization. Participants provided countless examples of situations related to race, gender, and work group conflicts. As some participants acknowledged, while awareness of the issues is helpful to department members and management, it will not resolve the problems. It is imperative that City, department, and union officials take strong, decisive actions to counterbalance the negative forces that currently exist.

The cornerstone for action is the design of a five-year change plan to establish positive practices that will benefit all members by achieving individual and organizational excellence. The plan will provide a road map for change in the department by identifying major initiatives to be undertaken. It will also provide a means of monitoring and evaluating the effectiveness of overall strategy as well as the individual initiatives contained in the plan.

The process for creating the plan is as important as the plan document itself. First, the Fire Commissioner and the management team must review this (TriData) management study, especially the findings and recommendations relative to human relations. Then the process should be widened to include field command staff. A department-wide communication should be distributed to all members to appraise them of the document's findings and recommendations. The purpose of these immediate activities is to ensure an understanding of the study and the subsequent actions the department will undertake to address its recommendations. As noted in a later recommendation, union and other key groups should become involved as partners in the planning process.

Appendix H provides an example of a planning exercise to design the model plan. The remaining recommendations build the foundation of the plan and provide the reader with an understanding of the scope of work that needs to be accomplished.

**Recommendation 7.27: Conduct an evaluation of the plan at regular intervals.** While evaluation is a component of the planning process, it is important to highlight it in a separate recommendation. The success of this effort is going to be contingent on a number of variables, some anticipated and others not. A sound evaluation component will provide the means to allow City and department officials the opportunity to confirm the direction of these initiatives and others that might be added to the plan or modify them to achieve improved results. It will also impose discipline on the planning and implementation processes. The focus of the evaluation should be on the process elements of the project, plus those areas that can be defined by measurable behavioral objectives. It is important to carefully construct an evaluation report should be completed including an annual summary. After the second year, reports can be conducted on a semi-annual basis with a yearly summary.

Recommendation 7.28: Designate a project manager to oversee the development and implementation of the change plan. The planning project requires someone to manage the process

and ongoing implementation of the plan. This is an important project management role to ensure accountability and the coordination of all aspects of the planning and implementation phases. The person or persons could be selected from the ranks of deputy commissioners or other top management staff; the proposed Deputy Commissioner for Human Resources or the head of the proposed Office of Special Projects are good candidates. It could be the same individual as identified in Recommendation 7.1.

**Recommendation 7.29:** Appoint an employee advisory committee (EAC) to consult with the fire commissioner on the development and monitoring of the five- year plan. The planning process will be an opportunity to bring together key individuals and groups from throughout the department to provide their expertise and input to the development of the plan. Appointed by the Fire Commissioner, these individuals can advise on the creation of a blueprint for action that represents the varied interests of the department. The representatives on the committee will be responsible for communicating group activities and soliciting input from their constituents. Adoption of this initiative sends a clear message from management that change is important and employee input is essential to the process. This fosters buy-in and ownership by all employees to insure success of the plan. This does not mean that these individuals will agree on everything that is proposed or their priority, but it is a forum for creating a consensus for understanding and constructive action.

**Recommendation 7.30:** Modify the existing annual plan and budget, and the monthly reporting processes from each of the Bureaus to enhance accountability, performance and participation of various levels of management and supervision. A cursory review of the monthly bureau reports submitted to the Fire Commissioner by the deputy commissioners illustrated a tendency to avoid hard human relations issues. The Fire Commissioner cannot act without a frank presentation of information on the issues that affect the department. Likewise, subordinate managers and supervisors must receive positive encouragement to provide candid appraisals of challenging situations.

The dominant practice at present is to not convey bad news. The annual plan and budget process should identify the issues that need to be addressed and fix a point of accountability with the appropriate person and/or bureau, whenever possible. Individual statements of goals and objectives should articulate the activities that will be accomplished. The monthly report should provide a periodic update on the level of progress or challenges that have been encountered. A human relations issues section should be incorporated into the monthly report as an invitation and means of monitoring matters within each of the divisions. In turn, these practices need to trickle down to the company level in the form of an assessment of work group dynamics. This will be another way to institutionalize sound accountability and participation practices, which will result in improved performance.

**Recommendation 7.31:** Construct a work plan that will identify the tasks, resources, timetable, and position requirements for implementation of the recommendations in the change plan. The work plan would be a detailed document that provides adequate information necessary on the tasks that must be taken to implement the initiatives in this document. It defines all essential elements so City and department managers can effectively monitor the process aspects of the project. **Recommendation 7.32: The City should designate a mayoral liaison committee to enhance** support and coordination of City resources for the plan. A plan of this scale is going to involve a significant commitment by the City. It will require broad input from select departments to facilitate its implementation and the procurement of the necessary resources. In addition to the Fire Commissioner, membership on the committee should include the law and budget departments, and the mayor's office.

# E. Implementation

The implementation of the recommendations above requires a careful analysis of resources and feasible time lines. While this must ultimately be done with the consensus of city and department officials, a suggested time schedule is offered here to illustrate the potential timing for development and implementation of the recommendations. The work that must be conducted to complete these recommendations is dependent on a number of variables including resources, expertise, and the ability to focus on these tasks unencumbered by distractions, which will also affect the time schedule.

The implementation of many of the recommendations initially will require the assistance of external consultants to augment city and department staff resources and to accelerate development of the skills. The consultants can function in multiple roles ranging from coaching department staff to hands-on production of work product. Their role would be reduced as city and department personnel increase their capabilities and assume responsibility for maintenance functions. City and department personnel need to be involved heavily in the design and implementation tasks throughout the project period.

The following timelines are calculated from the point in time at which management agrees on the set of TriData recommendations to implement. A final calculation of the timeline would follow completion of the work plan and discussions with department and city officials.

Category/Recommendation <sup>45</sup>	Projected Date		
Category: Leadership Development			
<ol> <li>Designate and develop an existing management position to be responsible for organizational development planning and activities</li> </ol>	30 days		
2. Develop the capabilities of the management team to manage and effectively address the human relations issues affecting the department	Start immediately; 60 days to complete	Specific activities will be conducted by consultants, fire commissioner, and management team	

Table 7.5 Suggested Implementation Timeline

<sup>&</sup>lt;sup>45</sup> The numbers here correspond to the recommendation numbers in this chapter. In a few cases, recommendations from other chapters are included in the table, with a footnote citing their chapter and number.

	Category/Recommendation <sup>45</sup>	Projected Date	Comments
3.	Design and implement a department executive development program	6 months	
Ca	tegory: Skill Development	·	
4.	Establish and implement core competencies for managers and supervisors that will enable them to effectively manage and supervise a diverse work force	6 months	
5.	Expand the introductory officers and chiefs training programs in order to integrate core competencies into the curriculums	90 days	
6.	Design and implement a comprehensive supervisory training program for all managers and supervisors in the department	6 months (to design)	This initiative will require many months to complete; however, the design can be completed within the stated period and the target groups scheduled, beginning with exempt staff
7.	Modify the collective bargaining agreement to permit company and EMS officers to participate in training programs	When agreement is renegotiated	This initiative is essential to allowing these groups to participate in critical skill building programs at a reasonable cost to the department
8.	Provide conflict resolution skills to all management and supervisory staff	Commence within 90 days	To be completed over the term of the plan
9.	Create district training plans as a component of overall training	12 months	
10.	Develop a self-study curriculum as an adjunct to the department's training program	12 months	While a comprehensive program will take longer to complete, some modules can be piloted as part of the peer mediation and district consulting team recommendations

Category/Recommendation <sup>45</sup>	Projected Date	Comments
Category: Performance		
11. Design and implement an employee performance evaluation system	6 months	Complete pilot phase (management team) within 90 days; contingent on completion of job descriptions, and modification of bargaining agreement
12. Design and install a career development program	6 months	
13. Develop a mentoring program	12 months	
14. Implement a lottery or random placement method for assignment of post-academy graduates	6 months	
15. Modify the bargaining agreement to allow rotation of line and supervisory personnel	When bargaining agreement is renegotiated	
16. Modify future promotional exams to test for critical supervisory and human relations skills such as conflict resolution, team building, and work group climate assessment	12 – 18 months	Completion of this initiative depends on finalizing the competency areas, skill development and policy and procedure elements
Category: Policies, Procedures, and Practices		
17. Revise and update the <i>rules of conduct</i> and <i>general orders</i>	Commence within 90 days with a target completion of 12 months	
** Develop standard operating procedures	Commence within 90 days with a target completion of 12 months	
18. All EEO investigations should be handled by the Office of Internal Investigations	30 days	
19. Review department disciplinary practices and develop appropriate guidelines to ensure consistency across department work units	90 days	
20. Enhance participative practices between supervisory and line personnel	Commence immediately; ongoing	Entails incorporating participative practices into department systems, e.g., job descriptions, performance evaluation, promotional testing

Category/Recommendation <sup>45</sup>	Projected Date	Comments
Category: Communications		
21. Design and implement a communications plan that supports the goals and objectives of the change plan	90 days	Parallels development of change plan
22. Top department managers and command staff should regularly conduct open forums with front line supervisors and personnel, and discussions with employee groups	Commence within 90 days; ongoing	Includes initial facilitated discussions and ongoing sessions
Category: Operations		
23. Enhance the department's conflict management capabilities by designing and installing a Peer Mediation Program	120 days	
24. Develop and implement district consulting teams	120 days	
25. Add a human relations component to the inspection protocol of battalion chiefs and EMS field officers	90 days	
Category: Planning	r	
26. Design a five-year change plan to develop a team-based human relations model that institutionalizes positive practices	Commence immediately; 90 days to complete	
27. Conduct an evaluation of the change plan at regular intervals	First evaluation commences 90 days following completion of plan	Evaluation will be quarterly for first two years, semi-annual thereafter
28. Designate a project manager to oversee the development and implementation of the plan	2 weeks	
29. Appoint an employee advisory committee (EAC) to consult with the fire commissioner on the development and monitoring of the five year plan	2 weeks	
30. Modify the existing annual plan and budget, and monthly reporting processes from each of the bureaus to enhance accountability, performance and participation of various levels of management and supervision in the department	30 days	
31. Construct a work plan that will identify the tasks, resources, timetable, and position requirements for implementation of the recommendations in this document	30 days	The work plan should updated periodically
32. Designate a mayoral liaison committee to enhance support and coordination of city resources for the plan	14 days	

\* Recommendation 2.3, Chapter II

\*\* Recommendation 2.7, Chapter II

## A Final Word

This study has addressed a large number of issues and made over 150 recommendations to improve the Chicago Fire Department, a complex organization with enormous responsibilities to citizens of Chicago. The intent of the study was to improve the CFD so that the quality of services to the citizens may be maintained or improved, while remaining a viable and cost-effective organization, and a decent, safer workplace. Having worked with Chicago Fire Department personnel at all levels, the project team is confident that the desire is there to take the tough steps needed to improve the organization and the workplace environment. The challenge will fall on all members of the Department to help improve the organization, and continue to provide its critical services to the citizens of Chicago into the new millennium.

## **APPENDIX A: COST COMPARISON OF ALTERNATIVE SHIFTS**

The TriData team estimated that a minimum of \$27.1 million or 9 a percent increase would be necessary to convert from the present 24/48 shift schedule to an 8-hour shift schedule, and 356 additional firefighters would be needed. The computation is shown in Table A.1. Different estimates might be obtained depending on the assumptions about leave, and hence the staffing factors. Our assumption here is that leave for a fire department 8-hour schedule would be 24 8-hour days, because it has been tied by the bargaining agreement to the police (FOP) contract.

Table A.2 shows the computation of the staffing factor used in Table A.1 for the 8-hour shift.

Scheduling Factors	Current 24/48 Platoon	8-Hour Shift
Staffed Fire Apparatus	158	158
Firefighters per Apparatus	5	5
Firefighters per Shift	790	790
Staffing Factor*	4.5002	4.95
Total Firefighters Needed	3,555	3,911
Average CFD Salary	\$55,448	\$55,448
Total Base CFD Salary Cost	\$197,117,640	\$216,829,404
Salary Costs	\$197,117,640	\$216,829,404
(+) Duty Availability @ \$2,200	\$7,821,000	\$8,604,200
(+) City Pension Contribution (20.6%)	\$40,606,234	\$44,666,857
(+) Medical Benefits (Average: \$5,000 per Employee)	\$17,775,000	\$19,552,500
(+) Estimated Overtime	\$4,500,000	
(+) Uniform Allowance**	\$1,955,250	\$2,835,113
Estimated Annual Net Cost	\$269,775,124	
Increase for Shift Change		\$27,212,950

Table A.1 Cost Comparison of Alternative Shifts

\* The 24-hour shift platoon manning factor number is the present. The 8-hour manning factor number is from Table A.2.

\*\* Platoon uniform allowance = \$550 per year; 40 hr. allowance = \$725 per year.

5 Days a Week x 52 Weeks =	260
Possible Days of Work	
# of Vacation/Sick Days (Average)*	
	221
x Hours Worked per Day	
= Expected Hours Worked	1768
Total Hours per Year (24x365)	
Manning Factor <u>Hours per year</u>	4.95
Hours worked per firefighter	

Table A.2 Staffing Factor Calculations – 8-Hour Shift

\* Based on FOP 24 8-hours days and Current Average Lay-up Days = 14

## APPENDIX B: BATTALION CHIEFS MEETING MINUTES [Ad Hoc Communications Committee]

The following summarizes meeting minutes from December 30, 1998.

## Introduction to Minutes

Following is a review of the **Outstanding Dispatching and Information Systems Related Issues** that were previously documented in the minutes of the August 26, 1998 Battalion Chiefs Meeting. Information updated from the December 30, 1998 meeting is presented within a box, as is this introduction, for ease of comparison with the August status.

The OEC staff and the Battalion Chiefs do not always have the same understanding of the current item status, indicating that there may be either a miscommunication of the incident status or a misunderstanding as to the nature of the issue and its appropriate resolution.

1. Lack of Engine/Truck Identification by Automated Dispatch

The computerized voice providing the dispatch information does not include identification of first and second engine and first and second truck. This information is currently only available on the printed output (printer or MDT screen). The need for speed in arriving at the incident site and the occasional unavailability of the printed/screen output mean that this information is not provided as required.

**SPECIFIC SYSTEM CHANGE REQUEST:** Add first and second engine and truck to the verbal computerized dispatch information.

Status per OEC: Programming done, implementation in progress

*sequence* in which the vehicle is named provides the identification of first and second engine and first and second truck. However, the computerized voice is only available where the *new* Automated Dispatch Terminals have been installed. To date 57 Fire House sites are completed. OEC anticipates that the remaining Automated Dispatch Terminals will be installed by the end of January 1999.

#### Appendix B

#### 2. Voice Quality and Sophistication of Automated Dispatch

The computerized voice providing the dispatch information is difficult to understand and has difficulty pronouncing Chicago street names, common abbreviations, and nonstandard addresses.

SPECIFIC SYSTEM CHANGE REQUEST: Change/upgrade the dispatch voice to:

- 1) correspond with standard US English pronunciation;
- 2) recognize most common abbreviations (examples: "hse" for house and "bsmt" for basement); and
- 3) enunciate fractional numbers.

Status per OEC: Programming done, implementation in progress

and 3) not done.

The computerized voice has been upgraded to correspond to standard US English pronunciation. However, the computerized voice is only available where the *new* Automated Dispatch Terminals have been installed. To date 57 Fire House sites are completed. OEC anticipates that the remaining Automated Dispatch Terminals will be installed by the end of January 1999.

In addition, the Battalion Chiefs believe that item 2.) has not been addressed; as common abbreviations can still not be recognized. Item 3.) has not been addressed, but it is now understood that this is, in fact, a Geofile problem more than a computerized voice problem. If a dispatcher attempts to enter an address with a "1/2" attached to the house number, the Geofile does not recognize this as a valid address.

#### 3. Nonstandard Cross Street Information

The printed output (printer and MDT screen) for each incident provides confusing and (to the Fire Dept.) nonstandard Cross Street information. The excessive data provided can too easily be confused with the incident location itself.

**SPECIFIC SYSTEM CHANGE REQUEST:** Change the printed (printer ad MDT screen) output for Cross Street to include <u>only</u> the (a.) hundred block designation and (b.) direction.

Example #1: For an incident at **5501 S. Pulaski**, provide Cross Street data of **4000 W**. Example #2: For an incident at **1700 W. Fry**, provide Cross Street data of **840 N**.

Status per OEC: Done Status per Battalion Chiefs: Not done

The 9-1-1 system continues to provide excessively detailed Cross Street data (actual addressing, rather than the simplified information illustrated above). The difference in opinion with regard to this item status may pertain to item #5 below (Printed Incident Format), which is related. It is not known whether OEC plans to alter the **content** of the Cross Street data as requested above.

## 4. Nonstandard Expressway Terminology

The terminology for expressway incidents does not correspond to Fire Dept. standards and, in fact, does not reflect local reality: expressways which generally run east and west in most of the country run due north and south within City of Chicago limits. In addition, the terms "In-bound" and "Out-bound" are too easily confused when applied inappropriately to named stretched of the (same) expressway, such as Ryan and Kennedy.

**SPECIFIC SYSTEM CHANGE REQUEST:** Change the computerized voice and printed (printer and MDT) terminology to correspond with standard local terminology.

Example #1: Southbound Ryan at Roosevelt

Example #2: Northbound Kennedy at Irving

## Status per OEC: Done Status per Battalion Chiefs: Not done

There was no data available at the meeting on December 30 to resolve whether or not this item had been addressed. There was anecdotal information indicating that no change had been made to the way the 9-1-1 system provides expressway terminology. The Battalion Chiefs were asked to provide specific examples, if possible.

## 5. Poor Format for Printed Incident Information

Neither the font size nor typeface on the printouts distinguishes between the incident location and additional Cross Street information. This can lead to some confusion as to the address of the incident.

**SPECIFIC SYSTEM CHANGE REQUEST:** Change the printout font of the incident addresses so that it is highlighted in some fashion, either through **bolding**, <u>underscore</u>, and/or larger size.

#### Appendix B

If none of these are possible due to excessive cost of the required hardware and/or software modifications required, then provide stopgap relief for the problem by reformatting the printed output such that Cross Street information is

- 1) simplified (see issue #3) and
- 2) located further down on the printed page, separated by no less than 1.5 inches of blank space.

#### Status per OEC: DoneStatus per Battalion Chiefs: Done

An example of the new formatting was provided (attached). The incident Location has been highlighted through the use of spacing and "\*\*" indicators. A higher level of highlighting will also be provided with the new Automated Data Terminals, currently being installed throughout the Department.

#### 6. Difficulty in Reclassification of Incidents

Incidents initially classified in one way, when the call is first taken, sometimes turn out to be a different incident class. For example, a call initially classified as "RUBBISH" may well turn out to be "STRUCTURE FIRE". Key entry by dispatch data entry operators is required for the incident to be reclassified from RUBBISH to STRUCTURE FIRE. It appears that the reclassifications may not be taking place on all required occasions. While this problem has been addressed procedurally, to some degree, it is the understanding of the meeting participants that the on-line system requires from five to seven screens to be accessed and updated in order to reclassify a single incident. This may discourage the operators from taking the steps necessary to reclassify incidents every time the situation comes up.

**SPECIFIC SYSTEM CHANGE REQUEST:** Change the on-line system to allow (authorized) operators to reclassify incidents simply and quickly. At minimum, this means being able to call up the specific incident and be able to update a single field of data (corresponding to INCIDENT CLASS) that will reclassify the entire incident (for any and all companies involved in the incident).

#### Status per OEC: Done Status per Battalion Chiefs: Not done

A 9-1-1 system user at the meeting indicated that, to his knowledge, no changes in this regard had been made to the 9-1-1 system. (It is possible that because the 9-1-1 system *allows* incidents to be reclassified, OEC considers this to be a training and/or procedural issue, not a system issue.) It is not known how many incidents end up being reclassified, or how many should be reclassified, but are not.

The following issues were also discussed at the August meeting, but were deemed to have lower priorities than the items described above.

#### Simultaneous" Dispatch

Companies ostensibly receiving a simultaneous dispatch for the same incident do not always appear to have received a timely dispatch. Evidence for this is when companies arrive on scene at different times not accounted for by differences in distance or preparedness. Measurement of this problem may be difficult because of the following issue.

Status per OEC: DoneStatus per Battalion Chiefs: DoneSee next item for additional information.

## ☑ Incident Start Time Assignments

All companies dispatched to an incident, no matter how long after the *first* company may have been dispatched, end up being assigned the <u>same</u> incident start time. That is, a fire called in at 0600 may have one company assigned to it. If the fire grows, requiring additional companies be assigned at 0645, all additional companies will also be assigned the 0600 start time, even though they were called the scene 45 minutes later. This causes at least two problems:

1.) Fire suppression activity statistics become inaccurate.

2.) It may make it more difficult to determine whether there are simultaneous dispatch problems.

#### Status per OEC: DoneStatus per Battalion Chiefs: Done

It was determined that the Incident Start Time Assignments (and related arrival times) are being recorded accurately within the 9-1-1 System for each vehicle responding. This means that subsequent reporting on the incident does not include inaccurate response time data. The confusion had arisen because the dispatch *displays* continue to show the original dispatch time of the incident.

#### **EXAMPLE 3** Removal of Company Icon from Screen When Out of Quarters

It is not currently possible to non-display (or desensitize) the specific related icon when a company is not in quarters. This is being handled procedurally by requiring the responding user to specifically touch just those icons for companies that **are** in quarters, if one or more companies are not in quarters. (This, of course, takes more time.) Often, instead, the user inadvertently touches the "ALL UNITS RESPONDING KEY", passing along erroneous ENROUTE information to dispatch.

**SPECIFIC SYSTEM CHANGE REQUEST:** Change the ADT screen software to allow for non-display (or display appearance change and desensitizing) of the specific icon corresponding to a company not in quarters. When the user subsequently touches the ALL UNITS RESPONDING KEY, only the *remaining* company numbers will respond to dispatch as ENROUTE.

Status per OEC: Not done, but closed.Status per Battalion Chiefs: Not done,but closed.

OEC has determined that this is not a practical and/or cost/effective change to make to the system. Therefor, no system changes are planned. The item will continue to be handled as a training/procedural issue.

#### ☑ Problems with New NFIR On-Line Form

The National Fire Incident Reporting (NFIR) System online system, introduced about one month ago, suffers from some response time and application issues. It may not be possible to address the response time issues until such time as hardware and/or telecommunications are upgraded. (The NFIR system is accessing a centralized computer system; it is not local to each PC.)

The application issues are as follows:

- 1) The user must know what code to use to indicate a specific type of incident. While this is not difficult for common incidents, there are far too many codes to memorize. The user must refer to cumbersome printed documentation to find the correct code for less common situations.
- 2) While the application requires that ALL gray areas be filled in (trying to emulate the paper form), it is NOT the case that all gray areas of the paper form are required to be completed. Some data items are not required, based on what type of incident is being reported. This forces the user to enter "garbage" data, simply to satisfy the application requirements, even when this makes no sense. For example, the form requires a code for "Ignition Factor", even when the incident being reported is not a fire.

The result of these problems is that users can complete the paper forms in far less time than it takes to complete the on-line forms, discouraging the use of on-line NFIR and generally lowering productivity of CFD staff.

#### SPECIFIC SYSTEM CHANGE REQUEST: Change the NFIR application so that

- Each PC using NFIR has a local hard drive (to minimize response time) data base loaded with the allowed codes AND logic that would permit the entry of text describing the incident. The logic would try to "guess" the correct incident type based on the text being entered, until the correct incident type is displayed. Also, display a WINDOW of possible incident types and codes, which would allow for selection off the WINDOW list, with automatic update into the Code boxes. (The PC application model for this is Quicken software's ability to guess and window display which expense category is being selected.)
- 2) Entry of specific gray area boxes would inhibit the requirement that certain other boxes be required.

Status per OEC: Not done, but closed pending funding from Fire Department. Status per Battalion Chiefs: Not done, but closed pending funding from Fire Department.

Due to time considerations, NFIRS items were not discussed on an item by item basis. However, the following information was provided to the Battalion Chiefs by the TriData team members:

It is the understanding of the TriData team members that significant system changes are planned under the **Phase II S 9-1-1 Emergency Communications System Facility Design, Implementation and Construction Agreement** (also known as "*Category 7 Enhancements*"). These are custom changes to the original CAD system, which, when implemented will enhance end-user and system wide operations. There are over 125 changes to the CAD system, affecting OEC, CPD, Fire, and EMS involving operating systems, screens, reporting functions and other enhancements. *It is not known in what ways these enhancements may affect the NFIR on-line form. OEC has stated that additional changes (enhancements?) to the NFIRS on-line form are contingent on the Fire Department supplying the required funding.* 

## ☑ Summary Statistics and Analysis Capabilities

Those present feel that the department should be able to provide better information for purposes of reporting (to external agencies, the media(?), other City departments) and especially for future planning for the CFD itself. This includes both operational and budgetary information. For

example, the department should be able to easily report not just on the number of incidents handled, but the number of incidents by type, duration, and number of companies responding.

#### Status per OEC: Done Status per Battalion Chiefs: In progress

The TriData team explained some of the difficulties being experienced by the Fire Department with regard to reporting. Depending on the specific information requirement, the reporting can be extremely comprehensive, timely, specific, or it might be difficult to organize, several months old, and potentially misleading in meaning. In addition, the extent to which any system provides "better information" and "easy reporting" is to a large degree subjective, and is highly dependent on a.) communication to users on the various system capabilities, b.) training provided to users, c.) understanding by users of the sources and timeliness of the data used in the available reporting tools, and d.) easy access by users to the available reporting tools.

A key issue for Fire is the fact that the Department is still in the process of converting from an entirely "after the fact" data entry system over to an incident reporting system which will be based on the "front end" data created from the 9-1-1 CAD system.

#### Issue being Resolved as of August Meeting Date

The dispatch algorithm implemented currently uses "Quickest to respond" versus "Closest to incident". This has not been satisfactory. Therefor, this is scheduled to be changed as of January 1, 1999. A holdup has been the inability to contractually engage the contractor required (ESRI, Inc.). However, as of the meeting date, the contractual issues appear to have been resolved, and it is anticipated that the required programming will begin shortly. It is **not** known at this time whether the contractor believes that the work can be completed, implemented, and tested prior to Jan. 1, 1999.

#### Change to "Closest to incident" is still planned for 1999; not yet implemented.

## APPENDIX C: POSITIONS AND GROUPS SAMPLED FOR HUMAN RELATIONS INTERVIEWS

The table below identifies the CFD positions and work groups from which the sample of personnel interviewed regarding supervisory and human relations issues was drawn. They represented a cross-section of the department's hierarchical and employee groups. The actual selections were accomplished in consultation with department officials to ensure representation from suppression, fire prevention, emergency medical, administrative, and civilian work groups. Some participants also recommended other individuals to interview. Larger samples were drawn from some groups than others; these were not random samples. Interviews were conducted with non-department staff for the purpose of collecting information from City units and the Mayor's Office who have a relationship with the Department.

Management and Administration	Emergency Medical Services
Commissioner of Department	Chief Paramedic
Deputy Commissioners	Deputy Chief Paramedic
Assistant Deputy Commissioner, Affirmative	Assistant Chief Paramedic
Action	Paramedic Field Officers
Director of Personnel Services	Ambulance Commanders
Director of Employee Relations	Paramedics in Charge
Director of Training	Paramedics
Suppression and Prevention	Employee Groups
District Chiefs	Union Representatives (Suppression,
Deputy District Chiefs	Paramedic, Civilian)
Battalion Chiefs	African American Firefighter Representatives
Captains	Hispanic Firefighter Representatives
Lieutenants	Female Firefighter Representatives
Firefighters	
Civilian Personnel	City Officials
Supervisors	Key City Personnel
Line Personnel	Representatives from Mayor's Office

#### Table C.1 Sample Interview List Defined by Position and Group

## APPENDIX D: SUPERVISORY AND HUMAN RELATIONS INTERVIEW QUESTIONS

The following questions are designed to span the five elements of a supervisory structure: policies and procedures, practices, structure, style, and skills. Participant response to the questions depended on their role in the organization. All participants did not need to address each question. Initially, some participants responded to three questions that were designed to establish a strategic context for their responses. The three questions were:

- Are there any major changes that have occurred in the Department over the last 3 to 5 years that have affected the supervisory structure and function of supervisors?
- What are the major current issues affecting the department that supervisors must address?
- Within the next three to five years, what are the major issues that will challenge the department's supervisory personnel?

## **Policies and Procedures**

- What policies and procedures establish the supervisory structure and define the role, authority, and behavior of supervisory personnel?
- Do policies and procedures clearly define the role, authority, and behavior of supervisors?
- Do management and supervisory personnel support these policies and procedures? Line personnel?
- What is the organizational development philosophy of the Department? Does the supervisory structure complement it?

## **Practices**

- What are the gaps between desired and actual supervisory behavior?
- What human relations issues challenge supervisory personnel? Are these issues handled appropriately?
- How do line personnel perceive supervisory staff?

## Structure

- Is the supervisory span of control correct for each service area?
- What areas, e.g., operational, human relations, pose challenges for supervisors?

- How are supervisors supported? How are they not supported?
- How does the Department encourage and reward desired supervisory behaviors?
- What are your recommendations for improving the supervisory structure? Supervisory performance? What benefits will the Department and its employees realize?
- How are supervisors evaluated? What criteria are used to evaluate their performance? Is the performance evaluation effective?

## Style

- Within the Department, what are the attributes of a good supervisor? Within your work group? Who are the people in the Department who are respected for their supervisory ability?
- What is the dominant style of supervision? What is the desired style of supervision?

## Skills

- What are the curriculum subjects in which supervisors must demonstrate competency?
- Are new supervisors prepared for their role?
- Are veteran supervisors provided continuous training?
- What are the training requirements for supervisors?
- What are the differences between desired training requirements and actual programs?

# **APPENDIX E: PARTICIPANT RECOMMENDATIONS**

The following is a summary of recommendations offered by participants during the interviews on supervisory and human relations issues. They are divided into seven categories: training, policies and procedures, promotions, leadership, practices, communications, and operations.

# Training

- Develop a more comprehensive training program for officers (real training on sexual harassment, discrimination, racial, and supervisory skills)
- Conflict resolution training for internal and public applications
- Create a career development program
- Install a mentoring program
- Prepare everyone to work in this unique environment
- Broaden experiences as individuals and as an organization
- Provide tuition reimbursement for training obtained outside the Department
- Provide investigative training for chief officers
- Reinstate fire academy notes (a training bulletin)
- Make more use of the National Fire Academy programs
- Enhance tactical-based structural training (e.g., provide a building construction course)

## **Policies and Procedures**

- Improve accountability
- Negotiate back management rights from the union
- Create incentives for improvement
- Work towards greater racial diversity
- Develop standard operating procedures
- Update general orders and code of conduct

# Promotions

- Eliminate out-of-rank promotions (i.e., the practice of skipping over people with high test scores to include more minorities)
- Promote more minority chiefs into upper positions
- Open the doors at the top by creating special assignments for women (that will help women obtain advanced experiences)

## Leadership

- Do the right thing
- Bring people together
- Demonstrate executive leadership
- Change the guard
- Develop a leadership succession plan
- Create and/or promote positive role models
- Leadership needs to clean our own house

## **Practices**

- Rotate officers to break up cliques
- Rotate crews
- Require a mandatory probationary period for new officers
- Longer field service requirement to be eligible as an EMS promotional candidate
- Deal with inequities between EMS and suppression ranks
- Make EMS management a part of team
- Eliminate double standards
- Abandon race-based practices

# Communications

- Develop an organizational plan including internal communications
- Solicit input from line personnel
- Bosses need to stay in touch with field
- Do positive media on EMS

## Operations

- Do more with less money (reduce manpower, increase cross training)
- Recruit to get good candidates
- Improve standards (e.g., a requirement to read at Jr. college level)
- Bring EMS/suppression together; work aggressively on the gap; don't ignore it

## APPENDIX F: CORE COMPETENCIES FOR SUPERVISORY AND HUMAN RELATIONS TRAINING

The following lists some of the competency points (learning objectives) for each of the human relations and supervisory skill areas identified in Chapter VII, Recommendation 7.4. These core competencies can be integrated into training, promotional review or exams (civil service and exempt), and performance evaluation processes.

# Team Building

Teamwork is the hallmark of the fire service. Research is overwhelming on the positive benefits that team-based organizations experience, such as improved productivity and morale. Moreover, a team-based approach provides a context for all employees, managers, officers and line staff to enhance their interactions with fellow workers.

- Define effective teams and teamwork relationships in the department
- Understand the key ingredients of effective and high performance teams
- Identify specific benefits to improving teamwork
- Define the symptoms of ineffective teams
- Understand the obstacles to teamwork in the department and the specific circumstances when team relationships are most likely to break down
- Define measures that enhance performance and accountability
- Examine the significance of culture when cultural differences matter
- Address problems involving cultural issues from a team based perspective
- Clarify the values that promote high levels of cooperation and interdependency
- Increase the levels of cooperation and effectiveness among department members
- Use planning methods to anticipate and address actual or potential obstacles facing the department
- Use a collaborative problem solving model to handle specific team issues

# Effective Communication Skills and Strategies for Supervisors and Managers

The following are basic competency points for managers, officers and executives. The emphasis will be on understanding and addressing personal attributes and addressing areas that deter effective communication.

## Competency Points/Learning Objectives:

- Analyze how one's own communication style and values affect interactions in the workplace
- Use communication skills for critical analysis of situations and problem solving
- Increase the understanding of personal issues and needs in order to minimize the potential for misunderstandings
- Build positive relationships between supervisory staff and employees
- Deal with the causes of problems rather than focusing on symptoms
- Establish clear work expectations regarding roles, functions and the chain of command
- Deal effectively and consistently with discipline issues
- Use communication skills in performance evaluations for "people building" and minimize perceptions of bias
- Handle the 'difficult people' challenge
- Increase motivation and morale

## Leadership

Supervisory and management personnel are natural role models. On a day-to-day basis, they have significant influence throughout the department. Their leadership is crucial to successful performance of subordinate personnel.

- Define the characteristics, skills, and qualities of effective leaders in the role of officer and manager
- Examine and address specific challenges facing leaders in fire service organizations

- Based on organizational vision and goals, develop leadership skills and strategies to move the department to a higher level of effectiveness and build employee morale and commitment
- Manage the shifting paradigm the chain of command and the desire for employee participation
- Deal with one's responsibility, accountability and the need for follow-through
- Understand and manage ambiguity
- Enable managers to effectively work with, and be a leader to, all groups in the department
- Develop and commit to a personal leadership development plan
- Practice applying policies and standards fairly and consistently
- Discipline progressively and effectively
- Use evaluation as people builders
- Define the department's clients

## **Conflict Resolution**

The ability to effectively resolve conflict is an essential management skill. Throughout their careers, managers and supervisors are confronted with minor and complex human relation situations that can escalate into serious grievances or litigation. It is imperative that supervisors and managers have the skills to effectively manage and resolve conflicts.

- Learn about the dynamics of interpersonal, intergroup, and organizational conflict
- Identify common causes of conflict escalation
- Understand the significance of the four conflict management styles
- Assess one's own conflict management style and understand the implications for supervisors and managers
- Understand the typology of dispute resolution from negotiation to litigation
- Examine the nature and history of conflict in fire departments
- De-escalate conflict and make difficult situations more manageable

- Use the one-to-one conflict management model to address issues
- Use the peer mediation model to handle conflicts quickly as they arise
- Know how managers can function effectively in role as mediators
- Address cultural and gender based issues through conciliation or mediation management
- Effectively address complex discipline issues

## **Diversity**

Individual cultural elements such as values, preferences, and assumptions are manifested in the everyday work environment. These elements can profoundly shape individual and organizational behavior. It is essential that supervisors and managers understand their own personal elements as well as those of their subordinates.

- Understand how culture influences workplace relationships, assumptions, expectations, and choices
- Cultural genealogy: the history of ethnic and gender evolution and the issues that challenge each group (past and contemporary)
- Grasp the significance of one's cultural programming
- Understanding the department's culture
- Define how organizational culture affects who fits in or who does not
- Learn how diversity relates to individual and organizational performance
- Define aspects of the department's organizational culture that require change
- The subtle forms of bias how minorities experience it from the majority, how the majority experiences it from minorities
- Understand and deal with intra-group issues
- Define differences between a clique and a support group. Who are in them? How are group dynamics and race relations affected?
- Identify expectations that are placed on managers and supervisors
- Clarify the values that promote high levels of cooperation and build on commonalties

• The importance of cultural ambassadorship

# Supervision

Supervisors have a profound influence on creating a positive work environment. In addition to the competencies identified above, they must be proficient in a number of day-to-day skill and knowledge areas.

## Competency Points/Learning Objectives:

- Understand the basic elements of supervision
- Create a positive work environment by fostering team based behaviors
- Learn to prevent and intervene in harassment and discrimination behavior
- Use performance evaluation systems as Apeople builders@
- Move from punitive to motivational models of supervision
- Understand progressive discipline as a tool for success
- The importance of documentation
- Understand when hard decisions must be made and the process for making them
- Deal with the issues of people shifting from peers to supervisors

# Schedule

The above information can be used in developing training courses. The following table lists a schedule of hours for each subject area. A minimum and preferred number of hours that are based on the consultants' experience.

Course Subject	Minimum Hours	Preferred Hours
Team Building	8	16
Communication Skills	8	16
Leadership	8	16
Conflict Resolution	8	16
Diversity	8	16
Supervision	16	24
Total	56	120
## APPENDIX G: CONFLICT MANAGEMENT PEER MEDIATION PROGRAM

This appendix provides an overview of a conflict management approach that would enhance the department's ability to manage conflict issues and behavior. The approach is called a "peer mediation program" (PMP).

A peer mediation program is an innovative but proven work place program designed to encourage rational, early resolution of conflicts through the primary assistance of trained members of the department. The principal strategy is to develop a core group of peer mediators who represent the diverse character of the department's work force. They would serve as an objective party to facilitate the resolution of interpersonal work place disputes. The process is informal and confidential.

There are a number of major benefits that can be realized, including the establishment of positive standards of behavior for the resolution of conflicts; the promotion of positive communication between employee groups; the enhancement of resolution alternatives for all members of the department; the development of ownership for the solution of conflicts through the active involvement of representatives from all levels of the department; and the resolution of serious matters that could otherwise have resulted in formal grievances or litigation.

Below is a brief overview of the steps that would be taken to design and implement a peer mediation program and fit it into the Department's operations, followed by a description of the various components of the program.

## Steps

- Design and implement a peer mediation program to target informal and formal disputes
- Provide an orientation of the proposed training and peer mediation program for all members of the department
- Develop the department's capability to maintain and refine the conflict resolution skills of its members (optional trainer course)
- Incorporate conflict resolution elements into recruit training, promotional exams, and officer and manager training
- Communicate the importance of the program to department members

## Components

There are five components to the peer mediation program: basic training, policy and case management, maintenance, promotion, and evaluation. An optional train-the-trainers component should also be considered.

#### **Basic Course**

The objective is to develop the skills of the trainees so that they understand the theory and elements of conflict dynamics, and can function as a peer mediator within the department. Skill development will focus on three essential areas. The material will be adapted to reflect the work environment factors specific to the department:

*Communication Skills* – Provide a basic understanding of essential communication elements, including perception, language, non-verbal communication, listening and communication climates. The instructional format includes lecture and small group exercises.

*Social and Organizational Issues* – Explore societal and human relation dynamics that cause conflict in the community and work place. Instructional methods will utilize small and large group exercises, lectures, and discussions.

*Mediation Skills and Techniques* – Demonstrate how mediation is an extension of the problem solving process, and develop the ability of trainees to objectively facilitate the negotiation of disputes between members of the Department. Various human relations themes are blended into the mediation segment. The instructional format will include lecture and discussion, and involve trainees in a number of role-play conflict scenarios.

Depending on the existing skill and knowledge level of the trainees, specific human relations material such as gender issues and diversity may require additional emphasis. Demonstrated knowledge in these subject areas is essential to the function of peer mediation.

Trainees will be drawn from throughout the Department to represent its diverse structural and demographic character. This approach will enable all members of the department to identify with the mediators.

### Trainers Course (optional)

The trainer course develops the ability of selected individuals to train other members of the Department in conflict resolution, following the initial training by outside trainers. This will enable

the department to maximize the impact of the program by providing ongoing in-service sessions on a cost-effective basis to other members.

The train-the-trainer component will involve two three-day modules. The first module will focus on mediation instructional techniques, role-play practice and presentation experiences. The second is an advanced program focused on complex interpersonal, workplace disputes.

The participants will learn to:

- Present and teach others about conflict theory
- Direct and observe role-plays
- Conduct training interventions
- Evaluate trainees
- Promote a success oriented learning environment

#### Policy and Case Management

Department policies and procedures will have to be created and modified to include the peer mediation program. In addition, a case management system will have to be instituted to coordinate the resolution of formal complaints. This component should be completed before commencing the basic training.

#### Maintenance

Changing behavior and reinforcing positive attitudes and skills will require an ongoing maintenance program. In the beginning, this will be accomplished with assistance from the consultants. The maintenance program will sponsor periodic in-service sessions to enable the peer mediators to share and consult with trainers on their "real life" experiences.

#### Communications

A targeted promotional campaign will assist the department in positioning the peer mediation program as an effective means to resolving conflict. Program promotion will be accomplished by word-of-mouth, traditional department communications, and special announcements that will be distributed to each department member.

#### Evaluation

An evaluation methodology will measure the effectiveness of the program. Different methods can be utilized including pre- and post-test measures that can assess the skills of participants during and after the training experience. Another is to measure the performance of participants during the role play component to determine their proficiency in the application of mediation techniques. A third method is to conduct a follow-up survey to measure the actual application of mediation skills to particular situations, such as department and non-work environments.

## APPENDIX H: PLANNING EXERCISE FOR DEVELOPMENT OF A TEAM-BASED HUMAN RELATIONS MODEL

This appendix describes a planning exercise that would serve as a bridge between the assessment and implementation phases. It will involve representatives from key employee and status groups who will collaborate on the design of a detailed, long-term implementation plan. The plan will produce a human relations model and associated activities. The plan will integrate management study recommendations with current human relations activities in order to achieve maximum impact of program and financial resources.

## **Planning Exercise**

The primary purpose of this exercise would be to produce an action plan for implementing the recommendations contained in the management study regarding supervisory and human relations issues. This exercise itself will contribute toward building a team-based approach as discussed in Chapter VII and the design of a long-term human relations model for the CFD.

The change plan will complement the department's mission and operational objectives, and be integrated with other city and department initiatives. The foundation of this initiative are a series of collaborative planning sessions facilitated by consultants. The planning sessions would involve an employee advisory committee (EAC) comprised of management team members and employee representatives who will advise the fire commissioner on the content and scope of the plan.

Sessions with the EAC will be conducted over a period of 45 - 60 days. The general agenda for the sessions is divided into three tasks; each corresponding to one session.

#### Task I: Overview of Issues and Recommendations

The initial session will communicate the importance of designing a plan to focus strategies that will revitalize the department, build morale, improve the quality of services and strengthen working relationships. Committee members will discuss issues and needs contained in the assessment report. They will provide their respective observations about the validity of issues and recommendations. The session will create a common base of understanding from which specific actions can be undertaken and supported by a cross-section of department members.

# Task II: Translating Recommendations into Action – Develop an Implementation Plan

Committee members will provide specific input on the application of the assessment recommendations to department issues. It is anticipated that this process will alter and enhance some

of the initial recommendations made in this TriData report. A draft change plan will be developed to provide the department with a long-term human relations model. Some of the key planning activities to be undertaken by the committee members in this Task 2 are as follows:

- Develop team-based vision and values
- Define goals with specific measurable criteria for success
- Define the type of leadership, policies and practices needed to promote and maintain desired goals
- Review essential core skills team building, communication, diversity and cultural awareness, leadership, conflict management and problem solving
- Review and the sequence of training events and curriculum content
- Develop a project theme, ie. Developing Individual and Organizational Excellence
- Advise on the development of an initial communications plan to promote program benefits and support key messages
- Determine cost effective methods of delivery
- Identify resource needs

#### Task III: Finalize Plan

Committee members will review the change plan and present it to the fire commissioner. Based on the Fire Commissioner's review, the plan will be modified and staged for implementation.

The chart below conceptualizes the planning process into three phases: assessment, implementation, and maintenance. While development of the change plan itself is part of the assessment phase, it bridges to the implementation phase. The chart illustrates some of the program options discussed in this study and some more generalized outcomes, e.g., enhanced working relationships and improved skills. While the phases have distinct characteristics, such as time boundaries, they may overlap.

1. Assessment/Planning	2. Implementation	3. Maintenance
<ul> <li>conduct assessment</li> <li>develop long-term plan and work plan</li> <li>develop communications plan</li> <li>set evaluation and behavioral objectives</li> </ul>	<ul> <li>skill development         <ul> <li>team building</li> <li>diversity</li> <li>conflict resolution</li> <li>leadership</li> </ul> </li> <li>communication strategies</li> <li>develop/refine policies and practices</li> <li>incorporate planning model into annual budget cvcle</li> </ul>	<ul> <li>communication tactics to reinforce key messages</li> <li>ongoing employee in-service training</li> <li>conduct evaluation</li> </ul>
Outcomes	Outcomes	Outcomes
<ul> <li>define and rank issues</li> <li>begin to enhance working relationships</li> <li>promote employee buy-in</li> <li>develop comprehensive action plan</li> </ul>	<ul> <li>improved employee satisfaction</li> <li>improved communication and conflict resolution skills</li> <li>improved collaboration between employee groups</li> </ul>	<ul> <li>continued growth in collaboration and team work</li> <li>changes in attitude and behavior; increased trust</li> </ul>

#### Program Phases Sample Activities and Outcomes

The first phase includes assessment and collaborative planning activities. During this phase, which has been completed, select department members participated in interviews that were the basis for defining organizational needs. The committee will review this report's recommendations and advise on the development of a long-term blueprint and detailed work plan that will be anchored by behavioral objectives. This is done because all too often significant organizational development initiatives are undertaken without a clear view of the related activities and desired behaviors that are necessary to achieve effective and sustained results. This is particularly true where desired changes in department culture will require long-term, positive reinforcement.

The next phase involves the implementation of various program interventions. It is anticipated that this would be the longest of the three phases because of the size and scale of the activities. Experience indicates that there tends to be a sequence to program interventions beginning with general awareness/education and progressing to specific skill building activities. Concurrently, communication activities will promote key messages that support program concepts.

The maintenance phase involves sustaining program interventions in order to achieve desired changes in individual and organizational behaviors. Some activities include ongoing in-service training for staff, refinement of management policies and procedures, and routine evaluation of data to determine progress.