IAFF LOCAL 3499

ORMOND BEACH FIREFIGHTERS ASSOCIATION

STAFFING LITERATURE

Economic hardships are no new topic for the fire service. History has shown that in times of economic crisis it is likely that fire department staffing will become a hot button issue for potential cutbacks. One may question, if the majority of our responses are for EMS calls, why should we staff for fires? The answer is very simple. Inadequate staffing places the safety of your firefighters and citizens in peril. It is unfortunate but true that cities often cut personnel only to realize, after someone is seriously or fatally injured, that the savings are not worth the risks. Let's be proactive in our approach to safety. The level of safety and quality of service we provide our citizens should be highly valued and not jeopardized by budget cuts.

The following excerpts quote various studies and statistics accumulated over the past 30 years. Please take the time to read them as they are very enlightening. It is interesting to note that of all these studies, which date back to 1981, *none* cite the utilization of 2 man engine companies as an option. Furthermore, each of these studies states that minimum staffing of engine companies should be 4 personnel.

After reading the literature below, it becomes apparent that operating with 3 personnel, as compared to operating with 4 personnel on each engine, significantly increases the risk of:

- Firefighter and civilian injury
- Loss to property
- Worker's compensation claims
- Operating expenses incurred as a result of providing coverage for injured employees.

It should be noted that effective operations at motor vehicle accidents also stress our already limited manpower.

All of the studies and statistics cited below were done prior to the inception of NFPA 1710: *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*. NFPA 1710 is the nationally recognized firefighting standard for staffing. You will find a summary of NFPA 1710 included in this packet. Please take the time to review it as well. It addresses what has been realized throughout the history of firefighting; that adequate staffing is the most critical factor in effective and efficient fire service operations.

As mentioned within the City Manager's memo drafted by Chief Baker, dated March 27, 2008, a local study conducted in 2002 by Tri-Data (a fire services consulting company) suggested Ormond Beach increase its staffing to 4 personnel per unit at the two busiest stations while maintaining 3 personnel at the other two stations. In 2005, VCOG requested a study from the Volusia County Fire Chiefs who recommended Ormond Beach increase staffing levels to 4 personnel for all units.

With all the data published, the Ormond Beach Firefighters Association cannot in good conscience support a decrease in field personnel. According to standards and practices implemented for the last 25 years, we are already understaffed. It is our hope that after review of this information you will agree that safety and service should not be sacrificed.

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Roberts, Bill, Fire Chief, City of Austin, "The Austin Fire Department Staffing Study," March 1993.

- **Upon its conclusion, the Austin staffing study had exactly confirmed the results the Dallas study conducted some ten years earlier. The Austin Fire Department had found that inadequate staffing directly caused the following problems:**
    - **A higher risk for victims due to delays which are indirectly related to likelihood of survival;**
    - **A loss of critical functions;**
    - **An increased loss of overall effectiveness as a result of combined delays and loss of critical functions;**
    - **Higher physiological stress on fire fighters as they attempt to compensate for lower crew size;**
    - **Higher risk to fire fighter safety as aggressive procedures are conducted without the necessary support.**

- **The Austin study concluded that increased staffing levels from 3 to 4 provided substantial benefits such as:**
    - **A smaller number of multiple alarms;**
    - **Lower fire damage dollar loss and higher loss/save ratio;**
    - **Fewer injuries/deaths for civilians and fire fighters;**
    - **Fewer Worker's Compensation for fire fighters;**
    - **Retainment of tax base properties; and**
    - **Lower civil liability for the City and the Fire Department**

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Nevada Occupational Safety and Health Review Board, Administrator of the Division of Occupational Safety & Health v. Clark County Fire Department (Statement of Position and Stipulation), Docket No. 89-385, October 1990.

- ***It was this concept of ignoring "industry standards" that was the basis of a 1989 complaint filed by the Division of Occupational Safety and Health of the Nevada Department of Industrial Relations against the Clark County Fire Department. Nevada OSHA's regulations maintain that an employer shall not:***
    - ***Require, permit or suffer any employee to go or be in any employment or place of employment which is not safe and healthful***
    - ***Fail to furnish, provide and use safety devices and safeguards or fail to adopt and use methods and processes reasonable adequate to render such employment and place of employment safe and healthful***
    - ***Fail or neglect to do every other thing reasonably necessary to protect the life, safety and health of such employees***

- ***Citing that the Clark County Fire Department had prior knowledge that units staffed with 3 personnel were unsafe, N.D.O.S.H. issued a complaint that the Fire Department had willfully violated the industry standards relating to fire fighter safety. In late 1990, the N.D.O.S.H. agreed to vacate the violation when the Clark County Fire Department stipulated that it would immediately "maintain minimum staffing levels at each fire station so that no engine or ladder truck shall be dispatched from a fire station, manned with less than four persons."***
- ***In addition, the stipulation entered into by the Fire Department stated that: "Any engine or ladder truck manned with less than four persons shall be defined to be "unsafely manned."***

The body of evidence and industry practice over the last quarter century certainly indicates that the adherence to a minimum safe fireground staffing level is professional appropriate.

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Varone, J. Curtis, "Providence Fire Department Staffing Study: Executive Development," Providence, RI Fire Department, November 1994.

- "The significant effect that increasing staffing from 3 to 4 can have on the rate of fire fighter injuries is apparent from a recent trial experience in Providence, Rhode Island. In order to test the hypothesis that 4 person staffing was safer than units staffed with only 3 fire fighters, the City agreed to provide 4 person minimum staffing on 6 of its 15 units and examine the results.

  As the following table shows, the resulting 55.4% drop in fire fighter injuries was so dramatic that the Mayor entered into an agreement with the local union to extend the 4 fire fighter minimum staffing level to all 15 of the Providence Fire Department's fire suppression units."

COMPARISON OF INJURY RATES IN PROVIDENCE, RI
FOR 3 PERSON VERSUS 4 PERSON STAFFING

Year	Suppression Incidences	Fire Fighters On-Duty	Number of Fire Fighters	Emergency Scene	Injuries Per 100 F/F	Scene Injuries Per 100 FF
1989	3,869	83	479	431	90.0	
1990	3,871	89	479	339	70.8	21.3%
1991	4,143	98	479	192	40.1	43.4%

TOTAL DECLINE 55.4%

"In 1989, minimum staffing per piece was 3 personnel. Beginning in September of 1990, 6 units were staffed with 4 personnel through overtime; beginning in October of 1991, all 15 units were staffed with 4 personnel through overtime."

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National Fire Academy, Executive Development Program III, "Fire Engines are Becoming Expensive Taxi Cabs: Inadequate Manning," February 1981; pp. 2 & 4.

- "The National Fire Academy also noted in a research project developed for its Executive Development III Program that:

  In 1977 a test was conducted by the Dallas Fire Department, which consisted of a simulated fire involving several rooms at the rear of the third floor of an old school. This simulated fire was being done to determine how long it took a three, four, or five man team to advance its line to this area, get water on the fire, and to check each individual's physical condition afterwards. Timing began as each engine company entered the school yard.

The average time of the engine companies is revealing. The first consisted of a three-man team and their average was 18.8 minutes. All personnel were exhausted, rubber legged, had difficulty standing up and all three were unfit for further fire fighting.

The four-man team conducting the very same test, averaged 10.29 minutes and upon completing they were nearing exhaustion.

Next came the five-man team which averaged 6.15 minutes, and afterwards all showed little evidence of fatigue."

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Morrison, Richard C., "Manning Levels for Engine and Ladder Companies in Small Fire Departments," 1990.

- ***The conclusions reached in the Dallas study have recently been confirmed for small fire departments by the Westerville, Ohio Fire Department. Using standard firefighting tactics, the results of the Westerville Fire Department showed that 4 fire fighters could perform rescue of potential victims 80% faster than a 3 fire fighter crew.***

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McManis Associates and John T. O'Hagan and Associates, "Dallas Fire Department Staffing Level Study," June 1984; pp. I-2 & II-1 through II-7.

- **The Dallas Fire Department, in 1969 and again in 1984, also conducted textbook drills and live fire tests to compare effectiveness among various levels of staffing. The study concluded that deficient levels of staffing will result in an inability to cover critical tasks. As the numbers of fire fighters decrease without eliminating any of the tasks to be accomplished the Department must delay some of the required tasks or attempt to perform all the tasks unsafely with inadequate staff.**
- **The Dallas Fire Department concluded that in a residential fire, 5-person crews demonstrated a more coordinated and effective attack on the fire and search and rescue operation while the 4-person crew was capable of performing satisfactorily in controlling the fire and in effecting the rescue operation.**
- **The study's conclusion regarding the 3-person crew was that not all the required critical tasks could be accomplished within a given time span. Regarding the 3-person crew, the report stated "At this level there was little**

margin for error and any appreciable delay in arrival might place the control of the fire beyond their capability."

- **This is an extremely important statement given that the Dallas Fire Department took great care to insure that improvements in the time it took to complete each critical task was not made at the expense of sound operating practices or safety. However, this would not be the situation in actual fireground operations. Fire fighters operating in understaffed environments are too often expected to perform beyond their capabilities.**
- **The Dallas study, in addressing this issue, indicated that inadequate staffing resulted in: a cumulative effect created by combined delays and lost functions on the part of each crew resulting in an even greater loss of overall effectiveness; increased physiological stress on firefighters as they try to compensate for the lower staffing level; and increased risk to the firefighters when aggressive procedures are undertaken without the support necessary to complete them safely.**

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International City Management Association, <u>Managing Fire Services</u>, 2nd Edition (Washington, DC:ICMA) 1988; pp. 119-120.

- ***Fire suppression operations have three basic functions: (1) rescue; (2) work involving the ladder, forcible entry, and ventilation; and (3) the application of water through hose lines. Rescue and ladder companies handle the first two, and engine companies the third. To raise ladders, ventilate, search, and rescue simultaneously takes quick action by at least four and often eight or more firefighters, each team under the supervision of an officer. The number of firefighters required to search and rescue should never be fewer than two and typically at least four. The number of firefighters needed to advance and operate one hose line varies from two on smaller lines to four on large hand lines.***
- ***The standard formula for determining the volume of water needed and the number of hose lines to be advanced at a working structural fire is based on a minimum of two engine companies with at least eight firefighters. This formula calls for the discharge of three gallons of water per minute for every 100 cubic feet of involved fire area with typical fire loading. An area of 40 feet by 40 feet with 8-foot ceilings requires 384 gallons per minute. Two hose lines are needed to produce that flow, and a third line to cover the floor above. Exposure coverage and search and rescue are not yet taken into consideration, but already eight or nine hosemen are needed, plus the pump operators, plus the supervisor.***
- ***Various controlled and statistically based experiments by some cities and universities reveal that if about sixteen trained firefighters are not operating at***

the scene of a working fire within the critical time period, then dollar loss and injuries are significantly increased, as are the square feet of fire spread.

- ***As firefighting tactics were conducted for comparative purposes, five-person fire suppression companies were judged to be 100 percent effective in their task performance, four-person companies 65 percent effective, and three-person companies 38 percent effective; six person companies are judged 20 percent faster than four person companies.***

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Cushman, Jon, Seattle, WA Fire Department's "Abstract: Report to Executive Board, Minimum Manning as Health & Safety Issue," 1981.

- ***In 1982, the NFPA's Fire Service Today published the results of a study conducted by the Seattle Fire Department. Based on a series of textbook training drills and live fire drills, the Seattle Fire Department calculated model effectiveness indices of various levels of staffing as follows:***

	3 Person	4 Person	5 Person	6 Person
Engine	*45%*	*59%*	*79%*	*100%*
Ladder	*N/A*	*57%*	*78%*	*100%*

These effectiveness indices relate to the time taken to accomplish an objective. A large index means a shorter time. Specifically, if a six-man engine takes 5 minutes to accomplish an objective, a three-man engine will require 5/.45= 11.1 minutes to accomplish the same objective; a four-man engine will take 5/.59=8.5 minutes, and a five-man engine will take 6.33 minutes. (Seattle did not examine levels of manpower greater than six men.) The same process was used to compare ladder company evolution times. The conclusion is that doubling the manpower from three to six men more than doubles the team's effectiveness. There is a synergetic effect at work…

- ***While the Seattle Fire Department's main objective was to produce an appropriateness of service model, unpublished data on fire fighter injuries relating to various levels of staffing were also examined. At the time of the Seattle study, the fire department consistently operated engine and truck companies with varying levels of staffing. To test the relationship between staffing effectiveness and fire fighter injuries, Jon Cushman of the Seattle Fire Department, undertook three separate analyses over a 5-year period.***
- ***The results of each analysis yielded the same results: Average time per disability increased as company strength decreased for both types of companies.***
- ***One analysis performed by Cushman examined the Seattle Fire Department's disability report statistics. The results of this analysis indicated that the rate of fire fighter injuries expressed as total hours of disability per hours of***

fireground exposure were 54% greater for engine companies staffed with 3 personnel when compared to those staffed with 4 fire fighters, while companies staffed with 5 personnel had an injury rate that was only one-third that associated with 4-person companies.

Unit	*Average Man-Hours Per Disability*	*Total Disability Hours*	*Total Number Disabilities*	*Total Man-Hours At Fire*	*Frequency (Column #4 Into #3)*	*Severity (Column #4 Into #2)*
3-Man Engine	*90.607*	*2,537*	*28*	*12,660*	*0.00221*	*0.20*
4-Man Engine	*58.375*	*1,401*	*24*	*10,460*	*0.00229*	*0.13*
5-Man Engine	*49.500*	*99*	*2*	*2,125*	*0.00094*	*0.05*
6-Man Engine	*59.517*	*1,726*	*29*	*12,924*	*0.00224*	*0.13*
4-Man Ladder	*58.000*	*986*	*17*	*3,964*	*0.00429*	*0.25*
5-Man Ladder	*20.455*	*450*	*22*	*4,895*	*0.00449*	*0.09*
6-Man Ladder	*45.857*	*642*	*14*	*6,366*	*0.00220*	*0.10*

Source: Seattle Fire Department

- ***An even more telling statistic relates to severity rates in Cushman's subsequent analysis that also concluded that average hours per disability associated with 3-person company staffing was nearly 50% greater than those occurring when units were staffed with 4 and 5 personnel.***