SWING SHIFT FOR MAINTAINING MINIMUM STAFFING

EXECUTIVE LEADERSHIP

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ABSRACT

In 1999 Sioux Falls Fire Rescue established a minimum acceptable level of risk staffing. At times staffing would drop below that level, and it was necessary for the department to use overtime to fill in. When there were long-term unscheduled absences overtime was common. The problem was that Sioux Falls Fire Rescue had to find ways to maintain sufficient staffing in the year 2000 without adding personnel or significantly increasing overtime costs. One suggestion was that a “swing shift” be formed from existing personnel. Research had two purposes. The first was to discover information about the concept of a swing shift. The second was to determine whether Sioux Falls should reassign a group of firefighters to a swing shift to help maintain staffing at or above the established acceptable level of risk.

The descriptive research method was used to identify and report the use of swing shifts in the fire service. Evaluative research was done to develop a model for a swing shift from Sioux Falls data.

The following questions were researched for this project:

1. What does current literature say about the use of swing shifts in fire departments?
2. Is the use of people who float between shifts common in career fire departments?
3. Is the use of swing shifts common in fire departments similar to Sioux Falls Fire Rescue?

4. Does anything in the bargaining agreement prevent the establishment of a swing shift?
5. How would the proposed swing shift work?

Literature was searched for examples of swing shifts. Two surveys were conducted to discover whether fire departments were using swing shifts, and how the shifts worked. Data, employee records, and local information were gathered from Sioux Falls' records to develop the concept of a swing shift.

The literature searches found no examples of swing shifts. Surveys indicated some use of personnel who floated between shifts, but a follow-up survey revealed no evidence of swing shifts.

It was recommended that Sioux Falls not implement a swing shift at this time. Other options, such as compressing vacation availability and transferring employees when necessary, would likely reduce overtime as desired.

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INTRODUCTION

For several years there has been a trend toward efficient government. Municipal fire departments consume a large portion of city budgets, and fire service professionals have been challenged to operate on smaller or limited growth budgets. There has also been an increase in demand for the fire service to expand into other fields, such as emergency medical, rescue, and hazardous materials response.

Efficiency of a fire department is hard to define and difficult to establish. Departments provide a wide variety of services, so they are difficult to compare. Generally a department's efficiency is measured by comparing its budget with previous years. Since career fire department budgets typically are about 90 percent personnel costs, effective use of employees is one of the fire chief's biggest challenges. Many departments have reduced the size of their force or fire crew s.

Sioux Falls was a city of approximately 120,000 people, and had been growing at a rate of approximately three percent annually for several years. The growth was expected to continue. Sioux Falls Fire Rescue (SFFR) had not added personnel in over ten years. Sioux Falls was committed to keeping taxes low and it was difficult to add new positions to the department. It was likely that new firefighter positions would not be added until 2002, when a new station was scheduled to be opened. In addition Sioux Falls desired to keep its overtime costs at a minimum.

In 1999 SFFR established that its minimum acceptable level of risk staffing was 36 firefighters on duty. Problem Statement: Sioux Falls Fire Rescue needed to find ways to maintain sufficient staffing in the year 2000 without adding personnel or significantly increasing overtime costs. One suggestion was that a "swing shift" be

added consisting of existing personnel. Personnel from this shift would be assigned to work or “float” between the other three shifts based on needs from employee absences.

Research had two purposes. The first was to discover information about the concept of a swing shift. The second was to determine whether Sioux Falls should reassign a group of firefighters to a swing shift to help maintain staffing at or above the established minimum level of risk.

The descriptive research method was used to discover and report the use of swing shifts in the fire service. Literature was searched and two surveys were developed, completed, and evaluated. Evaluative research was done to develop a model for a swing shift from Sioux Falls data.

The following questions were researched for this project:

1. What does current literature say about the use of swing shifts in fire departments?
2. Is the use of people who float between shifts common in career fire departments?
3. Is the use of swing shifts common in fire departments similar to Sioux Falls Fire Rescue?
4. Does anything in the bargaining agreement prevent the establishment of a swing shift?
5. How would the proposed swing shift work?

BACKGROUND AND SIGNIFICANCE

Sioux Falls Fire Rescue was the municipal fire department for the City of Sioux Falls, South Dakota. The City was a rapidly growing community of 120,000 people covering approximately 53 square miles which was expected to grow to 156,000 people and 64 square miles by 2015. (Sioux Falls, 1996, p. II-10) The city's economy was based on agriculture, light industry, technology, retail, and banking. Sioux Falls had seven fire stations, six engine companies, three quint companies, one aerial ladder company, and other specialized fire apparatus. SFFR provided fire prevention, fire protection, basic life support emergency medicine, rescue, and hazardous materials response for the City of Sioux Falls. SFFR did not provide advanced life support or transport for emergency medical calls. Emergency medical calls accounted for 50 percent of all alarms.

SFFR had 158 full-time paid employees. There were 135 people assigned to work on the department's three shifts. The three shifts each worked an average of 53 hours per week. Except for the reduction from 56 to 53 hours per week, Sioux Falls had used the same basic schedule since 1967. Early in 1999 the department added a 40-hour fire suppression crew from existing personnel based on a 1997 applied research project which considered call volume and staffing. The 40-hour crew generally worked 0800-1600 hours Monday through Friday, excluding holidays. The purpose of the crew was to provide additional firefighters during peak demand times.

Non-management firefighters were represented by the International Association of Firefighters Local 814. Only one firefighter who was eligible for

membership was not a union member. The city and union were in the third year of a four year agreement. The contract provided for hours of work, working conditions, sick leave and vacation selection of bargaining unit members. The contract did not have a minimum staffing requirement.

In 1998 the chief of SFFR conducted a study to determine minimum acceptable level of risk staffing. The chief evaluated historical incident data to determine the minimum number of firefighters that should be on duty to respond to the department's emergencies. The study concluded that the department should be able to handle either two routine structure fires or one second alarm fire, and two additional single company emergencies at any given time. A routine structure fire in Sioux Falls required 13 firefighters (two additional if the aerial ladder was needed). A second alarm fire that included the department's aerial ladder truck required 28 firefighters. Each single company emergency required four firefighters. The chief determined that 36 fire suppression personnel should be available to handle alarms at all times:

fire alarm #1 with aerial ladder	15 personnel
fire alarm #2	13 personnel
single company emergency #1	4 personnel
single company emergency #2	4 personnel
	36 personnel

or

second alarm with aerial ladder	28 personnel
single company emergency #1	4 personnel
single company emergency #2	4 personnel
	36 personnel.

The fire chief was then challenged to maintain a minimum of 36 firefighters on duty at all times. In 1999 he determined that he was able to provide this minimum level of staffing most of the time. There were, however, some situations that made maintaining the minimum level of staffing while staying within the department's budget authority difficult, if not impossible. One of the problems was short-term absences of four or fewer hours. Firefighters often were required by the department or allowed by contract to be away from their jobs for short periods. The chief decided not to fill in for these absences in 1999, and budget for the need in the 2000 budget.

Another problem was long-term unscheduled absences of employees who were sick or injured. The department was able to maintain staffing at the acceptable level for scheduled absences, such as Kelly Days, and vacation and holiday leave, but when several people were off on unscheduled leave staffing would drop below 36. The chief did not see calling in employees for overtime for every circumstance as an acceptable solution, since during certain times of the year staffing was far above the acceptable minimum. Each shift had 44 employees, and scheduled absences required an average of approximately 5.5 employees off per day. Due to compliance with the Fair Labor Standards Act (FLSA), provisions in the contract, and department practices, a shift's staffing could vary from two to seven, or occasionally eight, firefighters off per day. Department sick leave averaged 1.6 days per firefighter per year, or 0.6 people per day. If the department had eight people off on scheduled leave, any unscheduled absence would require overtime. The problem worsened when several people were off at the same time on long-term unscheduled

absences. On those occasions any additional unscheduled absences would likely cause overtime. Research was done to explore the possibility of creating a swing shift from existing employees that was able to meet the varying time off needs of the department.

This research project was for the National Fire Academy's Executive Leadership course. This research related directly to the National Fire Academy's Executive Leadership course. Module eleven in the course was titled Managing Change. Course material taught that in the future change will be the norm, and that fire service professionals must be willing to shift paradigms, and develop and consider new ideas. The first step in effecting change is to analyze existing conditions to determine whether a change is needed, and what type of change should be made. It had been determined that there was a need for change, and this study was meant to help the chief decide whether a swing shift would solve the problems identified.

LITERATURE REVIEW

Two literature searches were done to find information for this project. The details of the searches are described in the **PROCEDURES** section below. Neither found information on the type of swing shift being considered by Sioux Falls. Though the literature searched revealed a great interest in alternatives to the typical 24-hour fire department shift schedule, "there have been no significant changes in the schedules of firefighters in recent years except for the gradual reduction in the average work week [due to the Fair Labor Standards Act]." (Budzinski, 1995, p. 14).

Since the 1970s numerous articles and National Fire Academy applied research projects have been written favoring alternative schedules, such as the 10/14-hour schedule, but no swing shift concepts were found. Though “there has been a significant reduction in hours over the years, the 24-hour shift continues to be the dominant duty schedule.” (Rule, 1999, p.62) Most paid firefighters still worked 24-hour shifts and approximately 50-56 hours per week. Few variations of typical fire service schedules were found. “Work schedules in the fire service have evolved into a relatively limited number of variations that are commonly recognized.” (Budzinski, 1995, p. 1)

A swing shift, though it would be a 24-hour shift, would be less predictable than a typical three shift schedule. Firefighters would not be able to predict months in advance which days that they would work or be off-duty. Though not specifically related to a swing shift, some articles read provided insight into potential reaction of firefighters to a shift that would be less predictable. Firefighters “are committed to working [the traditional 24-hour] shift... with no acceptable alternatives.” (Chrzanowski, 1994, p. 5) “The ability to sleep, eat, and relax in a homelike environment at the fire station has become a comfortable lifestyle. [Consecutive] days off provide an opportunity for part time employment or leisure activities unknown to other occupations.” (Howe, 1994, p. 21) Monk, in a study of shift workers, recommended that shift schedules be kept as regular as possible because a fixed schedule would provide a foundation to build a life on. (1989) Though not specifically related to a swing shift, this study indicated that an unfixed schedule was less than desirable for employees.

In July of 1999 Fire Chief published an article advocating the use of a "D Shift." The D Shift was used by the Lanett, Alabama Fire Department to limit the amount of scheduled overtime paid. The shift completely replaced the other shifts one day per week, and filled in during the daytime for their remaining hours. There were more firefighters available during peak call times than during other times. (Cobb, 1999) The concept was more similar to Sioux Falls' 40-hour crew than to the swing shift concept under consideration, since members of the additional shift did not float between other shifts based on needs. The results of the D Shift in Lanett, however, were encouraging. Overtime was reduced from 7-10% to 0.5-2.5% each 28 day cycle. (Cobb, 1999)

Another schedule that claimed advantages for overtime reduction was a 10/14-hour three-shift schedule. This schedule was different than other 10/14-hour schedules found, because it used three rather than four shifts, and did not require additional personnel. Overtime was reduced, because sick days became 10 or 14-hour rather than 24-hour absences. (Rule, 1999) Again, this schedule was not similar to the swing shift under consideration, but held promise, because it solved several problems that Sioux Falls was working on. It provided opportunity to have more people on duty for peak demand periods (similar to the 40-hour crew). It also reduced overtime and did not require additional personnel, which were driving forces in the study of a swing shift.

The literature search revealed much interest in alternatives to the traditional 24-hour shift. Articles and National Fire Academy projects have advocated the use of eight-hour, 12-hour, and 10/14-hour shifts. (Tomaszewski, 1995, Townley 1980) Several alternative schedules appeared to offer solutions to the problems for this research, but they were not considered to be within the scope of this project.

In summary, the literature review found no examples of the practice of swing shifts like Sioux Falls was considering. It found only a few examples that addressed

the problems the swing shift was meant to solve. There was much interest in alternative schedules, but the 24-hour, three-shift schedule was still the most common fire service schedule. Since much has been written about alternative schedules, the lack of information may indicate that this schedule has not been considered, or may have failed, and caution should be exercised in implementation of the concept. Starting a new schedule would likely be difficult because of firefighters' strong allegiance to traditional shifts.

PROCEDURES

Two literature searches were done to find information for this project. The first search was done at the Learning Resource Center (LRC) at the National Emergency Training Center in Emmitsburg, Maryland in April, 1999. The purpose was to find articles, papers, and books about swing shifts and alternatives to traditional 24-hour schedules. The search was conducted for literature under the key words 'staffing', 'schedules', and 'shifts'. Over one hundred articles and books were found at the LRC, but most were not relevant to this research. A similar search for relevant literature was done at Sioux Falls Fire Rescue's library in Sioux Falls, South Dakota, in September, 1999. This search was not a computer aided search, but was conducted by looking through hundreds of magazines for related subject matter. Like the search at the LRC, most staffing and shift articles were not related to a swing shift.

A survey (see **Appendix A**) was developed and conducted to discover if other paid departments, or departments similar to Sioux Falls Fire Rescue, used swing shifts to deal with unscheduled absences. The survey was a convenience

sample at the National Fire Academy completed in August, 1999, and may not be a representative sample of all fire departments. Students at the National Fire Academy were from various ranks, and represented paid, volunteer, and combination departments from across the United States and other countries. All students who were present from four classes; Interpersonal Dynamics in Fire Service Organizations, Organizational Theory in Practice, Executive Analysis of Fire Service Operations in Emergency Management, and Fire Arson Investigation; were surveyed. Ninety-three survey forms were distributed to students in the four classes, and all were returned. Information from the surveys was compiled and studied in Sioux Falls. Results were based on the assumption that those who filled out the surveys were knowledgeable in the subject area, unbiased, and honest.

A second survey (see **Appendix B**) was sent to departments similar to SFFR that indicated that they had been practicing a concept similar to a swing shift. Only two such departments were found from the first survey. This was an extremely small sample, and was likely not statistically valid. Both departments returned the second survey.

Research to determine whether the bargaining agreement would prevent the creation of a swing shift was done by studying the agreement.

Research concerning the benefits of instituting a swing shift locally was done using Sioux Falls' resources, such as the bargaining agreement and employee records. Employee records, such as vacation accruals, sick leave use, and staffing were available on the city's AS400 midrange computer. Average sick leave use was calculated from five-year records from 1994 to 1998. Vacation accruals were for the

year 1999, and would be comparable to anticipated accruals for 2000. Accrual and staffing research assumed that department records were accurate. This research covered a five-year period. Future trends in sick leave may or may not continue in a similar pattern.

Several terms in this research required definition. A regular fire shift was a standard 24-hour, three-shift schedule commonly used in the fire service. Kelly Days were days unpaid leave that are granted employees to help the department meet the requirements of the FLSA. In Sioux Falls each fire shift employee received one Kelly Day every 54 calendar days. A swing shift was a group of firefighters who were not part of a regular fire shift, but were assigned to other shifts based on the needs of a department. They were used to fill in for scheduled or unscheduled absences of other firefighters. The terms float and floaters were used to describe people who moved from one shift to another shift to fill in for absences of other firefighters. Floaters were equivalent to members of a swing shift. Rovers were people who were assigned to a regular fire shift, but not a specific fire station. Their purpose was to fill in for absences on their shift. Alternative schedules were fire service schedules that did not use 24-hour shifts. One example of an alternative schedule was a 10/14-hour schedule. A 10/14-hour schedule was a work schedule under which firefighters worked a series of 10-hour days followed by 14-hour nights. Departments similar to Sioux Falls Fire Rescue were defined as municipal fire departments with all paid firefighters in jurisdictions with 50,000-250,000 people that did not provide emergency medical transport.

RESULTS

The Use of Swing Shifts in Fire Departments

The first research question was, “What does current literature say about the use of swing shifts in fire departments?” A swing shift was defined as a group of firefighters who were not part of a regular fire shift, but were assigned to other shifts based on the needs of the department. Members of a swing shift were to be used to fill in for scheduled or unscheduled absences of other firefighters. The literature review found no examples of the practice of swing shifts like Sioux Falls was considering (see **LITERATURE REVIEW** above). Since much has been written about alternative schedules, the lack of information may indicate that this schedule has not been considered, or may have failed.

The Use of Swing Shifts in Career Fire Departments

The second research question was, “Is the use of people who float between shifts common in career fire departments?” Survey #1 (**Appendix A**) was used to research this question. The results of the survey are detailed in **Appendix C**. Ten of the 93 respondents said that their departments used people who floated between shifts. Of those, four were from municipal fire departments with a population of 50,000 or less. One of those was from a paid department, and the other three were from combination departments.

One department that indicated the use of floaters was from a city with 50,000-100,000 people. That department had all paid firefighters, did not transport emergency medical patients, and was classified as similar to SFFR (see **The Use of Swing Shifts in Fire Departments Similar to Sioux Falls** below). After the second

survey, it was determined that this department did not have personnel who floated between shifts as defined in the surveys.

The first survey found one department from a city of 100,000-250,000 people that indicated the use of floaters. The department had all paid firefighters, did not transport emergency medical patients, and was classified as similar to SFFR (see **The Use of Swing Shifts in Fire Departments Similar to Sioux Falls** below). After the second survey, it was determined that this department did not have personnel who floated between shifts as defined in the surveys.

The remaining four departments that indicated the use of floaters were from jurisdictions of 250,000 or more people. Two were from cities, one was from a county, and one was from another jurisdiction (Israel).

Though the first survey showed that 10 departments had firefighters who floated between regular fire shifts, the only two departments that were surveyed further were not found to practice the use of floaters as defined. This may indicate that the concept was foreign to some respondents to survey #1, that the term was unclearly defined, or that those surveyed misunderstood the question. Therefore, it is unclear from the first survey whether there are departments that actually have personnel who move between regular fire shifts due to absences of employees.

The Use of Swing Shifts in Fire Departments Similar to Sioux Falls

The third research question was, “Is the use of swing shifts common in fire departments similar to Sioux Falls Fire Rescue?” To find the answer to this question the two surveys in **Appendix A** and **Appendix B** were used. Departments similar to Sioux Falls Fire Rescue were defined as municipal fire departments with all paid

firefighters in jurisdictions with 50,000-250,000 people that did not provide emergency medical transport.

There were 22 departments surveyed that served jurisdictions with 50,000-100,000 people. Of those 22, 17 had all paid firefighters. Of those 17 departments, all were municipal fire departments. Of the 17 municipal fire departments with all paid firefighters, 10 did not transport emergency medical patients. Therefore, 10 of the 93 surveys were from cities of 50,000-100,000 with departments similar to Sioux Falls Fire Rescue.

There were 17 departments surveyed that served jurisdictions with 100,000-250,000 people. Of those 17, all but one (16) had all paid firefighters. Of the 16, 13 were municipal fire departments. Of the 13 municipal fire departments in this population group with all paid firefighters, seven did not transport emergency medical patients. Therefore, seven of the 93 surveys were from cities of 100,000-250,000 with departments similar to Sioux Falls Fire Rescue.

The total number of surveyed departments classified as similar to Sioux Falls Fire Rescue was 17, 10 with populations of 50,000-100,000, and seven with populations of 100,000-250,000. Of those 17 departments, two indicated that they used floaters to fill in for people who were absent from their regular fire shift. Those two departments were then surveyed to find more information about their system (see **Appendix D**). It was found that neither department used a swing shift. One department actually used rovers to fill in for absences, similar to the system that was already in place in Sioux Falls. When unscheduled absences had a long term impact, the department would transfer one of their rovers to another shift. The other

department did not have a swing shift, but a person who filled in for Kelly Days, who they referred to as a “swing man”, which could explain the positive response they had to a swing shift. There were, then, no examples of swing shifts found in departments similar to Sioux Falls Fire Rescue. From the limited data studied, the use of swing shifts did not appear to be common among cities similar to Sioux Falls.

Shift Schedules in Career Fire Departments

The first survey confirmed the literature review’s findings about shift schedules of career departments. Of the 93 surveys that were completed, 62 respondents identified their departments as all paid. Eleven were from jurisdictions with 0-50,000 people, 18 from those with 50,00-100,000, 16 from those with 100,000-250,000, and 17 from jurisdictions of over 250,000.

Of the 62 career departments in the survey, 57 (92%) had their firefighters working 24 hour shifts. Four (6.4%) worked 10/14-hour shifts, and one (1.6%) worked a varied shift.

Fifty-three of the 57 career departments using 24-hour shifts (93%) had a three-shift schedule. Four (7%) said that their fire departments had four shifts. These findings confirmed that the 24-hour three-shift schedule was by far the most common schedule of paid firefighters.

The Bargaining Agreement and a Swing Shift

The fourth research question was, “Does anything in the bargaining agreement prevent the establishment of a swing shift?” To discover the answer to this question, the contract between the City of Sioux Falls and Sioux Falls Firefighters Association Local 814 was studied. Article 6 of the contract provided for

hours of work. It said, “the city agrees to maintain a 27-day, 204-hour work schedule for employees assigned to a shift schedule…” (Sioux Falls, Local 814, 1997, p. 4) It did not specify how may shifts the department would have. Section 2 of the article said that “daily shift schedules for employees assigned to a 27-day shift cycle, having regular starting or quitting times, may be permanently or temporarily changed by the City in order to meet the varying conditions and needs of the department.” (Sioux Falls, Local 814, 1997, p. 4) The contract did not require that employees assigned to fire shifts would work 24-hour shifts, but in Article 42, Definitions, a shift employee was defined as a person working a rotating 24-hour shift. “Shift employee” was a common term in the agreement. Twenty-four-hour shifts were referred to in Articles 9, 11, and 21. Nothing in the contract was found to prevent the addition of a swing shift. The contract did not address shifts shorter than 24 hours. This would not prevent a swing shift, but may prevent alternative schedules, such as the 10/14-hour schedule, from being implemented in 2000.

As stated above, the city agreed to maintain a 27-day, 204-hour work schedule. The way the department accomplished this required 2.5 people off per day on Kelly Day. The vacation article required that each of the four ranks represented select vacation within their rank. (Sioux Falls, Local 814, 1997) To deal with this provision the department had allowed one person off per day from each rank. If vacation selections for a particular rank were complete, and no one from the rank was off, other ranks could use the day. This meant that there were 6.5 potential absences per day (seven one-half of the time, and six the other). In addition management employees were allowed one off per day. Occasionally, when

seven union members were off and one management employee was off, one sick person would cause overtime.

The contract offered possible solutions other than a swing shift to the problems. The agreement said that vacation would be taken when the fire chief designated. In order to level out staffing, the chief could designate certain times when less vacation was available. The contract also provided for transfer between shifts, which could be used as a way to minimize the affect of several simultaneous long-term absences.

The Swing Shift

The fifth research question was, “How would a swing shift work?” Since there were no examples of a swing shift found, a swing shift model was developed using Sioux Falls’ resources. The example cited below was one possible way to run the shift. There would certainly be other possibilities.

The department had three shifts. They were each scheduled to work an average of 122 days in 2000. Each shift had 44 members: two commanders (management), eight captains, three or four lieutenants (who were being phased out), 13 fire apparatus operators, and 17-18 firefighters. Each person had an average of 6.75 Kelly Days per year. The average number of vacation days was 8.5 per person.

The swing shift would be comprised of 18 employees, six from each shift. Each shift would have 38 people remaining, two above the minimum staffing. The swing shift members would include all of the department’s lieutenants (11) and seven fire apparatus operators or firefighters. They would be assigned to fill in for

Kelly Days, vacations, holidays and long-term unscheduled leave of employees from the three regular fire shifts.

The swing shift would reduce scheduled absences on the regular shifts for two reasons. First, the number of Kelly Days could be reduced so that only two people, rather than 2.5 were off per day (management's Kelly Days were not required to remain part of the fixed Kelly Day schedule). Second, since there would be no lieutenants on the three regular fire shifts, the department could continue to allow one person per rank off each day, and yet reduce the number of union people off per shift to five, rather than 6.5. This appeared to improve staffing by 1.5 persons per day, but did not include vacations for those on the swing shift. If the same type of vacation scheduling were allowed for the swing shift, one person per rank could be off at a time. If this were divided between the three shifts, it would average 0.67 people off per day. With Kelly Days, there would be another 0.33 off per day. This would bring the number of people off per day down to six, rather than 6.5. There would still likely be times when seven were off, but they would be reduced. Since the swing shift would not be on a fixed schedule, designing a vacation schedule to meet the needs of the department, and provide a fair vacation to swing shift members may be difficult.

It would be more difficult to meet the FLSA provisions on a schedule that was not fixed. The contract required a 27-day, 204-hour schedule. Each shift worked nine 24-hour shifts per cycle, but 204 hours was only 8.5 shifts. The department was able to deal with the remaining 0.5 shifts easily on a fixed schedule. Without

one, the 27-day cycle would be harder to administer. The person who would make the schedule would have to constantly take into consideration the cycles.

A swing shift would require a person to administer the schedule. A regular fire shift required limited administration, because the schedule was fixed for 44 employees, except for scheduling absences. A swing shift would not be fixed, and would require a person to schedule work days and absences for eighteen individuals. The training commander or a shift commander would be assigned to make the schedule. Logically, the members of the swing shift would report to the person who made the schedule, but they would not often work with him.

DISCUSSION

Results of the survey at the National Fire Academy confirmed what literature had said about the use of 24-hour shifts in the fire service. Research found that 92 percent of surveyed career departments were using 24-hour shifts. Literature showed no examples of a swing shift or floaters, but eleven career departments indicated the use of floaters. Two of those departments were classified as similar to SFFR, and surveyed again for further information. On the follow-up survey, the departments indicated they did not used floaters. This called into question the validity of responses of the other respondents who said their departments used floaters. The concept of floaters may have been foreign to the respondents of the first survey.

Since no information about a swing shift was readily available from the research, Sioux Falls would either have to design the shift on its own, or do further research to gather additional information.

It is unclear whether creating a swing shift would allow the department to better meet its minimum acceptable level of risk staffing, especially if Sioux Falls continued the current vacation scheduling practices. There would still be times when staffing would vary considerably from the average. The flexibility of a swing shift may offer some relief to the overtime budget due to long-term unscheduled absences, but at times when the department has its peak number of employees off, the shift may not be successful in eliminating overtime.

The swing shift appeared to provide a way to reduce some overtime costs, but additional problems arose when considering the swing shift. Since the swing shift would not have a fixed schedule like the other shifts, it would be difficult to establish a fair vacation package for the firefighters on this shift. There would be difficulties in scheduling time off required by FLSA. A management and scheduling structure would have to be designed and implemented for the swing shift. A clear chain of command would be difficult to establish, since the swing shift would work on all other shifts.

This research did not address the potential reaction and job satisfaction of employees who might be assigned to a swing shift. It was clear from the literature review that firefighters prefer the 24-hour schedule, which a swing shift would have, but all articles appeared to be referring to a fixed regular fire shift schedule. On a fixed schedule, firefighters could look months in advance to see when they would work. Since a swing shift would be designed to fill in for other firefighters, including those on unscheduled leave, employees would not be able to plan their schedules far in advance.

Other options discovered during research appeared to hold promise to solve the problems that Sioux Falls Fire Rescue was attempting to deal with. Both the “D Shift”, and three-shift, 10/14-hour schedule claimed to help with overtime costs. They would also provide opportunity to continue and to refine the department’s peak load staffing that the 40-hour crew was designed to meet. These solutions, however, were not practical for 2000, since the contract provided only for 24-hour schedules for shift personnel. They could be explored further, and if necessary, addressed in the next contract negotiations. The practice of transferring employees between shifts to deal with long-term unscheduled absences, as identified in the second survey, would be permissible under Sioux Falls’ contract and is worthy of consideration.

RECOMMENDATIONS

The problem was that Sioux Falls Fire Rescue had to find ways to maintain sufficient staffing in the year 2000 without adding personnel or significantly increasing in overtime costs. The department was able to maintain minimum staffing without unscheduled absences, but there were times when unscheduled absences required the use of overtime. The problem was magnified when the department had the maximum allowed personnel off duty because of benefits combined with long-term unscheduled absences. One suggestion was that a “swing shift” be added consisting of existing personnel. The swing shift would fill in for absences on any of the regular fire shifts. The two purposes of the research were to discover information about the concept of a swing shift, and to determine whether Sioux Falls

should reassign a group of firefighters to a swing shift to help maintain staffing at or above the established acceptable level of risk.

To accomplish the first purpose, literature was searched and departments were surveyed. Literature searched was silent about the practice. Though some respondents to the first survey indicated the use of floaters, a follow-up survey was not helpful in establishing the practice or providing details about the use of swing shifts.

It is recommended that Sioux Falls not implement the swing shift schedule at this time. There is not sufficient information available to expect success with the concept. There are several other factors, such as vacation scheduling and reassignment of management responsibilities that make the results of a swing shift questionable. It is also unclear what affect a schedule without fixed days worked would have on the department and its firefighters.

With the above recommendation, the overtime problem still remains. The swing shift was under consideration to help alleviate calling in overtime to maintain staffing at the acceptable level of risk. To deal with this, it is recommended that vacation selection be refined to allow a maximum of six people off per day on Kelly Day and vacation. The department has allowed seven union members off, but the contract does not prohibit reducing the number to six. Reducing the available days would likely reduce overtime, since it would limit the number of times that sick leave would cause overtime. It is recommended that multiple long term unscheduled absences be handled by transferring people from one shift to another when there is

a shortage. The contract allows for transfer between shifts, and this option should be exercised.

Shift schedules should always be studied, and efficiencies that meet the needs of the city should be considered. With contract negotiations less than one year away, a D Shift, or the three shift 10/14-hour schedule should be studied further.

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APPENDIX A

NATIONAL FIRE ACADEMY APPLIED RESEARCH PROJECT SURVEY
Donn W. Hill, Fire Chief
Sioux Falls, South Dakota

1. What is the population of your fire department's jurisdiction?
   a. under 50,000 b. 50,000-100,000 c. 100,001-250,000 d. over 250,000

2. Which best describes your fire department?
   a. all paid b. all volunteer c. combination paid and volunteer d. other

3. Which best describes the jurisdiction your fire department serves?
   a. municipal b. county c. state d. other

4. Does your department do EMS transport?
   a. yes b. no

5. How many people work for your fire department? _____

6. What is the normal shift length of your fire suppression personnel?
   a. 24 hours
   b. 12 hours
   c. 10/14 hours
   d. 8 hours
   e. varies (describe)
   _____
   f. other (describe)
   _____

7. Do all of your fire suppression personnel work the same length shifts? (for example do they all 24 hour shifts?)
   a. yes b. no

8. How many shifts (platoons) do you have on your department?
   a. four b. three c. two d. other (how many?)_____

9. Are all of your fire suppression personnel assigned to a specific shift (platoon)?
   a. yes b. no

10. A person who "floats" between shifts (platoons) is a person who may work on one shift on a given day, and then another shift on another day. He/she is not assigned to a specific shift.
    Are any of your fire suppression personnel assigned to "float" between shifts (platoons)?
    a. yes b. no

11. Name and address of your fire department:

    _____

    _____

    _____

APPENDIX B

My name is Fire Chief Donn Hill, and I am doing an applied research project for the National Fire Academy, and considering a new way to fill in for firefighter absences on our department. I would appreciate a few minutes of your time, or time from one of your staff, to answer the questions below and return the survey to me in the enclosed envelope.

In this survey, I use two terms that may or may not be familiar to you. Please accept the following terms and definitions for purpose of this survey:

Rover: a fire suppression employee who is assigned to a specific shift, but not a specific station. He/she may fill in at a number of different stations due to absences of other employees.

Floater: a fire suppression employee who is not assigned to a specific shift. He/she may fill in on any of your shifts due to absences of other employees.

In July, I had a survey done at the academy, and the results indicated that your department is a career fire department that has three twenty-four hour shifts. The survey also indicated that you have fire suppression personnel who are not assigned to a specific shift, but "float" between shifts. This is a follow up survey to find out more about your schedule.

The following questions refer only to the schedules of **fire suppression personnel.**

1. Do you have 3 shifts? a. Yes b. No
2. Do your shifts work 24 hours? a. Yes b. No
3. Do you have "floaters" (as defined above)? a. Yes b. No

4. How many people are typically assigned to each of your three shifts? _____

5. Do you have a minimum staffing clause in your contract? a. Yes b. No c. N/A

6. Do you have a minimum staffing clause in your SOPs? a. Yes b. No c. N/A

7. When an employee is absent from work on a **scheduled benefit** (e.g. vacation, holiday), how do you fill in for the person? (circle all that apply)
   a. We do not
   b. With overtime
   c. With other people assigned to the same station
   d. With "rovers"
   e. With "floaters"
   f. Other_____

8. When an employee is absent from work on an **unscheduled benefit** (e.g. sick leave), how do you fill in for the person? (circle all that apply)
   a. We do not
   b. With overtime
   c. With other people assigned to the same station
   d. With people who "rove" between stations
   e. With people who "float between our three shift
   f. Other_____

9. How may people "float" between shifts?_____

10. How many "rovers" do you have per shift?_____

11. On the back side of this page, please explain how your "floater" system works, or enclose any information that your department has that would be helpful in establishing a "floater" system.

Thanks for your time, and if I can ever be of assistance to you, please contact me at,

Donn W. Hill, Fire Chief
2820 South Minnesota Avenue
Sioux Falls, SD 57105

Email dwhill@cityhall.ci.sioux-falls.sd.us
Phone (605) 367-7173
Fax (605) 367-7861

APPENDIX C

RESULTS OF SURVEY #1

Question	1	2	3	4	5	6	7	8	9	10
	b	a	a	b	45	a	a	b	a	b
	a	c	a	a	36	a	a	b	a	b
	b	a	a	a	111	a	a	b	a	b
	d	a	a	a	733	a	a	b	a	b
	b	a	a	b	62	c	a	a	a	a
	b	a	a	a	140	a	a	b	b	b
	a	c	a	b	84	e	na	na	na	na
	a	c	a	a	35	a	a	b	a	b
	a	a	d	b	18	a	a	b	a	b
	d	a	a	b	500	c	a	c	a	
	d	a	a	a	3000	c	a	d6	a	b
	d	a	d	a	79	a	a	c	a	b
	b	a	a	a	140	a	a	b	a	b
	b	a	a	a	140	a	a	b	a	b
	a	a	c	b	35	a	a	b	a	b
	c	a	a	a	440	a	a	b	a	b
	a	c	a	a	70	a	b	b	b	a
	c	a	a	b	170	a	a	b	a	b
	a	a	a	a	62	a	a	b	a	a
	d	a	a	b	296	a	a	b	a	b
	c	a	a	b	400	a	a	b	a	a
	b	a	a	b	30	a	a	b	a	b
	c	a	a	a	550	a	a	b	a	b
	c	a	a	b	90	a	a	b	a	b
	a	c	a	a	45	a	b	b	b	b
	d	a	a	a	1200	a	a	b	a	b
	c	a	a	a	500	a	a	b	a	b
	a	a	d	b	41	a	a	c	a	b
	a	c	a	b	30	a	a	b	b	b
	a	c	a	a	64	a	a	b	a	b
	a	c	b	b	33	a	a	b	a	b
	b	a	d	b	140	a	a	b	a	b
	a	c	a	b	50	ad	b	b	b	b
	a	a	a	a	96	c	a	a	a	b
	b	c	ab	ab	21	ab	ab	b	b	b
	a	c	d	a	60	b	a	b	a	b

Question	1	2	3	4	5	6	7	8	9	10
	c	a	a	b	122	a	a	b	a	b
	c	a	c	a	300	a	a	c	a	b
	c	a	a	a	102	a	a	b	b	b
	b	a	a	b	64	a	a	b	a	b
	a	a	d	a	76	a	a	b	a	b
	d	a	b	a	220	a	a	b	a	b
	d	a	a	a	11,283	e	a	c	b	a
	a	c	a	b	20	d	a	d	a	b
	b	a	a	a	50	a	a	b	a	b
	c	a	a	a	440	a	b	b	b	b
	b	a	a	b	135	a	a	b	a	b
	a	c	a	b	11	a	a	b	a	b
	a	a	a	a	60	a	a	b	a	b
	d	a	a	b	490	a	a	c	a	a
	a	c	a	b	44	c	a	a	a	b
	b	a	a	b	140	a	a	b	a	b
	a	c	a	a	40	a	b	a	b	b
	d	a	d	a	1600	a	a	b	a	a
	d	c	b	b	560	a	a	b	b	b
	b	a	a	b	151	a	a	b	a	b
	c	a	b	a	175	a	a	b	a	b
	d	a	a	b	650	a	a	b	a	b
	a	c	a	b	24	a	a	b	a	b
	a	a	a	a	40	a	a	b	a	b
	b	a	a	b	151	a	a	b	a	b
	b	c	a		b	a	d	a	b	b
	a	c	a	a	42	c	a	a	a	b
	d	a	a	a	1465	a	a	b	a	b
	a	a	a	b	75	a	a	b	a	b
	d	c	b	a	375	a	a	b	a	b
	d	c	b	a	1947	d	b	a	c	a
	a	c	a	a	31	e	a	?	b	b
	b	a	a	b	120	a	a	b	a	b
	c	a	b	a	4	a	a	b	a	b
	d	a	a	a	650	a	a	b	a	b
	a	c	a	b		f	a	d	b	a
	c	a	a	b	350	a	a	b	a	b
	c	b	a	b	186	e	na	na	na	na
	a	a	a	a	50	a	a	b	a	b
	b	a	a	a	125	a	a	b	a	b
	c	a	a	a	140	a	a	b	a	b

Question	1	2	3	4	5	6	7	8	9	10
	a	b	b	b	20	a	a		b	b
	a	c	b	a	33	a	a	b	a	b
	b	a	a	b	225	a	a	b	a	b
	a	a	a	a	36	a	a	b	a	b
	d	a	a	b	800	a	a	b	a	b
	d	a	a	b	800	a	a	b	a	b
	a	c	a	b	36	a	a	b	b	a
	c	a	a	b	112	a	a	b	a	b
	d	a	c	b	7500	a	a	b	b	b
	d	c	b	a	450	a	a	b	a	b
	b	c	d	b	5	a	b	b	a	b
	b	b	a	b	45	e	b	d	b	b
	c	a	a	b	300	a	a	b	a	b
	a	c	a	b	18	a	a	b	a	b
	d	a	a	b	750	a	a	b	a	b
	b	a	a	a	65	a	a	b	a	b

APPENDIX D

RESULTS OF SURVEY #2

Respondent #1

1. a
2. a
3. a
4. no answer
5. c
6. a
7. c
8. f (move someone from another station that is above minimum staff
9. –
10. –
11. Our minimum staffing is 3 personnel per apparatus. We have 4 personnel assigned to each unit; therefore 1 person can be on leave per apparatus. If we go below 3 on an apparatus we will move someone from another station that has 4 personnel on-duty. If no one has 4 on-duty, then we pay overtime to cover the shortage. We have Kelly Days every six weeks and an assigned "swing man" to cover these pieces of apparatus.

Respondent #2

1. a
2. a
3. b
4. 115
5. a
6. a
7. d (and we do hire backs)
8. d (hire backs if needed
9. –
10. 4
11. If our department has a shortage of personnel on one shift that is going to impact that shift long term, we will transfer one of our rovers over to that shift to help even out our manning levels. You could call what we do to man our equipment at the proper level "floaters" if you wish. We refer to them as rovers.