

**ANALYSIS, TESTIMONY AND DOCUMENTATION REGARDING
THE IMPLEMENTATION OF A THREE-PLATOON, FIFTY-SIX (56)
HOUR WORK WEEK FOR FIREFIGHTERS**



Captain Raymond G. Furtado

President, North Kingstown Fire Fighters Association, IAFF Local 1651

Respectfully submitted on September 28, 2015

INDEX OF EXHIBITS

1. Outline of testimony
2. Excerpt from NKFFA Post Arbitration Brief (2011)
3. Transcript of Dr. Linda Glazner testimony, Interest Arbitration, 2011
4. Circadian Technologies – Shift Scheduling and Employee Involvement – The Key to Successful Schedules
5. Circadian Technologies – excerpt (pg. 14) – Evolution of Fatigue Risk Management Systems: The “Tipping Point” of employee fatigue mitigation
6. Circadian Technologies – Staffing Levels: A Key to Managing Risk in 24/7 Operations
7. RI State Labor Relations Board ULP-6088 – excerpt (pp14-16)
8. Change of Status form for Captain Raymond Furtado, effective 3/11/2012

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Testimony Outline

1. Introduction
2. Overview of 56-hour, three-platoon implementation in North Kingstown
3. Response to exhibits offered by Arthur Lambi, Jr. on August 3, 2015. Began to scrutinize data more closely when noting exhibit numbers at the top of the documents.
 - A. Police CBA fiscal note - reflects reorganization expense of \$565,932 following shift reorganization, which occurred at the full hourly rate for NKPD members. Unsure of relevance, other than comparable (pg. 21) *37 1/2 TO 42 hr BUT PAID*
 - B. Calculations in the Fire fiscal analysis do not correspond with the applicable Fiscal Year budgets. In short, despite claims of savings, the fire budget continues to increase nearly every year since reorganization (pg. 25)
 - C. Berkshire Advisors – only administered to management and fire department administration, not to rank and file. Addressed in NKFFA Post-Arbitration Brief, and through cross-examination of Maureen Costello-Shea of Berkshire Advisors (pg.52). *CHIEFS & TOWN MANAGERS IN FRONT LINE.*
 - D. Dr. Linda Glazner exhibits – Refer to 24-hour shifts in general, not in a 56-hour, three-platoon structure. Testimony of Linda Glazner clearly identifies the difference. Pleased to see acknowledgement from both Union and Town as an expert in firefighter shift-scheduling (pp 55-92).
4. Circadian Technologies – description of company
 - A. Dr. Martin Moore-Ede, CEO. Town's expert witness on fatigue
 - B. Three Circadian Technologies documents emphasizing employee involvement in shift scheduling, fatigue management and staffing levels as drivers of overtime, and the importance of properly staffed operations.
5. NKFFA Post-Arbitration Brief excerpt – full brief available – discussion of key points related to the case and the 56-hour work week
6. Excerpt from RI State Labor Relations Board ULP-6088 – Embury testimony that without reduction in base hourly rate of firefighters, implementation of three-platoon system "cost prohibitive". Full transcript and ULP-6088 decision available on request.
7. Change of status form verifying reduction of hourly rate
8. Current CBA eliminates the current 24/48 schedule, provides firefighter ability to change schedule. Increases to base salary and OPEB also exist.
9. Questions/comments

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AMERICAN ARBITRATION ASSOCIATION

NORTH KINGSTOWN FIREFIGHTERS LOCAL 1651

INTERNATIONAL ASSOCIATION OF FIRE FIGHTERS, AFL-CIO

-AND-

TOWN OF NORTH KINGSTOWN, RHODE ISLAND



BRIEF OF NORTH KINGSTOWN FIREFIGHTERS

INTERNATIONAL ASSOCIATION OF FIRE FIGHTERS, AFL-CIO

CASE NO. 11 390 1218 10

APRIL 2011

PAUL C. REED, PRESIDENT

RHODE ISLAND STATE ASSOCIATION OF FIRE FIGHTERS

356 SMITH STREET

PROVIDENCE, RHODE ISLAND 02908



important to note that this savings on overtime is the result of the Town's conscious decision to maintain an understaffed department in relation to the approved Town budget.

Reviewing Union Exhibits No. 86 and 87, no comparable communities penalize firefighters who are "laid off" as requested in this contract language. Paragraph C should not be removed because the Town would only have to pay two weeks at the most severance, and there are other very similar agreements in other units in Town (Tr. page 2450, lines 8-19, February 7, 2011).

Based on the un-rebutted testimony of Mr. Maccarone, in addition to the exhibits provided, it is the position of the Union that the Town's proposal on this issue be denied.

Article IV- Section 4.1 Hours of Work and Regular Hourly Rates

In this proposal the Town is requesting to change the work schedule for line/platoon fire fighters from the present forty-two (42) hour average work-week, which consists of two ten (10) hour days, followed by two (2) fourteen (14) hour nights followed by ninety six (96) hours off, to a fifty-six (56) hour average work-week consisting of a twenty-four (24) hour work period followed by forty-eight (48) hours off. The Town proposes this change to occur with *no compensation for all additional hours worked*. Needless to say, this proposal is strongly opposed by the Union.

According to Michael Embury, Town Manager, under the Fair Labor Standards Act (FLSA), this would provide for three (3) hours over overtime with this proposed schedule. The number of platoons would be reduced from four (4) to three (3). Staff personnel would increase from thirty-seven and one-half (37 ½) hours to forty (40) hours per work-week on a Monday through Friday basis.

According to Mr. Embury, fire fighters on this schedule would be working less "days" than the twelve (12) hour shift of the Town police resulting in one hundred eighty-two and one-half (182.5) days off. Based on Mr. Embury's testimony, the Town would not lay off any fire fighters and would reduce the size of the Fire Department to between fifty-seven (57) and sixty (60) personnel through attrition. The present number of fire officers would remain in place;

there would be no demotions; and through the attrition process, retirements, etc., the required number of positions would be set at fifty seven (57).

There are currently sixty-three (63) line/platoon positions in the Department. Based on the reduction in platoons, twenty-one (21) members would be assigned to each of those three (3) platoons. Reducing the number to either fifty-seven or sixty (60) fire fighters would result in platoon strength of nineteen (19) or twenty (20) fire fighters. Mr. Embury testified that this reduction would cancel the need for the Town proposal to delete the minimum staffing provision presently in the contract. (Tr. at page 1279, lines 8-22, December 10, 2010).

According to Mr. Embury, this change in the work schedule is necessary to maintain the adopted minimum staffing of seventeen (17) fire fighters on each day and night tour of duty in place since 2008 (Tr. at p. 1269, lines 10-12, December 12, 2010). The present number of fire fighters assigned to the four (4) platoons (15-16) could create overtime problems in terms of costs. Reduction of a platoon would allow for a decrease in overtime costs. Town Exhibit 19 depicts line/platoon fire fighters who work a fifty-six (56) hour workweek would receive a 2.68 percent salary increase under the Fair Labor Standards Act. This is not accurate, as the additional seven hundred and twenty-eight (728) hours worked would not be at the current hourly rate.

Mr. Embury noted that this change is essential because of the cost of various items that the Town cannot meet on a going-forward basis. This change would result in a structural cost savings of over one million dollars (\$1,000,000), as presented in Town Exhibit 20.

Mr. Embury testified that the change would serve the public interest in cost savings (Tr. at page 1299, lines 3-10, December 10, 2010). This change based on the Department's workload, as presented in Town Exhibit 21, Report of Matrix Consulting Group, shows a moderate call volume in time spent on responses. Town Ex. 22 shows the Department responding to fewer calls with more fire fighters. Mr. Embury calculated that the proposed twenty-four (24) hour shifts would only increase the workload by 2.3 hours (Tr. at p. 1312, lines 1-7, December 10, 2010).

Town Exhibit 23 presents a reduction in structure fires, and Town Exhibit 25 shows limited night responses. Union Exhibit 38 shows limited training hours and night training. The Town also introduced Town Exhibits 24 and 27, which shows average overtime hours worked over the present work schedule and overtime costs resulting in a potential savings of 1.2 million by reducing positions and moving on to a twenty-four (24) hour schedule.

The second witness in support of the Town's position was Dr. Moore-Ede, a consultant on fatigue, sleep, and circadian rhythms as it pertains to working 24/7 occupations. Dr. Moore-Ede's testimony involved factors that lead to fatigue, sleep deprivation, sleep disorders, etc. The doctor also presented some ways to solve or combat fatigue, which are outlined in his direct testimony (Tr. at pps. 1360-1362, lines 10-8, December 10, 2010). Dr. Moore-Ede testified that he reviewed Department night call volume, call volume per capita, overtime volume and demand, and total hours worked by North Kingstown fire fighters (Tr. at pps. 1363-1364, lines 24-5, December 10, 2010). The expert opinion of Dr. Moore-Ede was that based on call volume at night in this Department a fire fighter receives significant rest compared to daytime (Tr. at pps 1372-1373, December 10, 2010).

The number of fire fighters who commute increases risk and working two (2) to fourteen (14) fourteen hour nights in a row create risk to reset a person's sleep bank (Tr. at p. 1368, lines 1-8, December 10, 2010). He also states that the average overtime worked in the Department is equivalent to fifty-six (56) hours, which would be reduced with a three (3) platoon system. The twenty-four (24) hour shift would also provide two (2) nights to recapture sleep and would cut down on commuting time. The current schedule, according to Dr. Moore-Ede, creates problems in a fire fighter's circadian rhythm by allowing fire fighters to sleep at home two (2) out of three (3) nights with a twenty-four (24) hour schedule. He further stated that this schedule would also cap excessive overtime. As indicated by Dr. Moore-Ede, the above-cited reasons would be reduced by a twenty-four schedule.

The third witness in support of the Town's position was Patricia Sunderland. She presented Town Ex. No. 26 showing forty-eight (48) non-resident fire fighters in the Department and Town Ex. 7, an overtime analysis. Ms. Sunderland reviewed the record of three (3) fire fighters to

show hours worked and a number of other fire fighters working more than twenty-eight (28) hours of overtime in a biweekly period.

The last witness to support the Town's proposal was Maureen Costello-Shea, who is an employee of Berkshire Advisors, Inc. Ms. Costello-Shea was brought in to testify on her company's report on fire fighter scheduling, specifically twenty-four (24) hour scheduling. This witness testified that the majority of fire departments in the United States work twenty-four (24) hour shifts and a fifty-six (56) hour workweek with the exception of the Northeast (Tr. at p. 1665, lines 10-17, January 20, 2010). The witness listed what she believes is the Town's requested work schedule resulting in fewer transitions, moves and ability to respond to calls (Tr. at pps. 1667-1668, lines 23-13, January 20, 2011).

According to her further testimony, fire fighters prefer this schedule and it reduces sick leave. Costello-Shea's opinion on either shift schedule, twenty four (24) hours or North Kingstown's schedule is based on availability, not productivity (Tr. at pps. 1673-1621, lines 3-20, January 20, 2011). The study prepared by Berkshire involved twelve (12) departments consisting of all unionized employees represented by the International Association of Fire Fighters.

The same set of opened and closed questions were presented to each group. All departments presently work twenty-four (24) hour shifts. No department worked the North Kingstown schedule. The questions included fire fighter satisfaction with the present twenty-four (24) hour shift rather than ten (10) hour days and fourteen (14) hour nights. Family and childcare obligations were surveyed along with recruitment and retention levels.

Costello-Shea indicated that these departments are reducing fatigue by reassignment of positions on shift and delayed training. This solution is not possible in North Kingstown where fire fighters bid their positions and no rotation occurs. Delaying training doesn't help fire fighters or citizens they service, and it is a poor trade-off to reduce fatigue. The same survey revealed that the benefits for fire fighters were less commuting expenses, enhanced childcare and greater opportunity to work a second job. Ms. Costello-Shea indicated that the problem was being held over for overtime. Her opinion on staying awake is odd because there is no

prohibition to sleep when working a twenty-four (24) hour shift (Tr. at p. 1689, lines 9-18, December 10, 2010).

Mr. Embury's testimony clearly shows that his community had seventy-seven (77) budget positions at one time in the recent past (Tr. at p. 1419, lines 16-21, December 10, 2010). This factor at one time having seventy-seven (77) members of fire fighters and dropping to the present sixty five (65) creates overtime. That choice not to fund positions is solely the responsibility of the Town. The Town made the financial determination that paying overtime seems to be more prudent than hiring fire fighters. The community in approving the bond issue and staffing a vital engine company in Slocum voted to accept the increased cost of having seventeen (17) fire fighters on duty and not fifteen (15). The Town has even increased the platoon staffing to seventeen (17) fire fighters.

The Town's proposal would increase the amount of time worked by fire fighters to 728 hours with no guaranteed additional compensation. Mr. Embury could not validate the Town's assertion of a 2.68% salary increase because of the three (3) hours of overtime based on the Fair Labor Standards for fifty (50) hour workweek. The Act requires actual hours worked. No overtime would be paid on a weekly basis due to various forms of leave.

Various forms of Department leave would result in a less than 2.68% weekly salary increase. The hourly rate reduction between the present rate for forty-two (42) hours and the proposed rate for fifty-six (56) hours would be a loss of \$5.69 in the hourly wage scale, which was agreed to by Mr. Embury (Tr. at pps. 1428 and 1426, lines 23-3, December 10, 2010). The proposed workweek of an additional fourteen (14) hours would result in a 33 1/3% increase in work time. There was no evidence introduced showing that any other bargaining units in this community had a 33 1/3% increase in its workweek.

The only other union group working additional hours in the community was police officers. According to Mr. Embury, they receive additional pay for these hours (Tr. at p. 1431, lines 8-10, December 20, 2010). Fire fighters were not offered this method of payment.

Regarding implementation of this work schedule, Mr. Embury emphasized working with Department members for formulating policies, procedures, training and recognizing fatigue has not occurred (Tr. at pps. 1295-1296, lines 11-17, December 10, 2010).

Based on Dr. Moore-Ede's testimony (Tr. at pps. 1373-1374, lines 16-15, December 10, 2010), his company has not been contacted for lifestyle issues, such as napping, etc. This seems rather odd that the Town would believe this to be a safer workweek without any training, Further, Mr. Embury couldn't identify any community in New England or Rhode Island working a fifty-six (56) hour workweek.

No evidence was introduced by Mr. Embury showing that under a 24/56 hour workweek fire fighters would be more productive since the time on responses, which fluctuate, determine productivity time.

Dr. Moore-Ede's testimony clearly shows that he didn't find any health concerns (sleep deprivation, chronic fatigue, etc.) in this Department. His fatigue risk management system (Tr. at pps. 1360-1362, lines 20-8, December 10, 2010) shows no evidence entered or testified to by him concerning workload balance. His system also doesn't support that present work schedules contribute to fatigue or that any training on fatigue has occurred. He also stated he saw no data that problems exist in the current work place environment, anticipated training on how to assess fatigue, or evidence related to any injuries resulting from fatigue. Based on his testimony and evidence, there is no fatigue problem.

After reviewing the documents presented to him by the Town, Dr. Moore-Ede Dr. Moore-Ede did not introduce any evidence of heavy call volume at night interrupting sleep (Tr. at p. 1380, lines 3-5, December 10, 2010). Overtime is high in the Department, but as previously discussed, management's decision was not to hire additional fire fighters.

On cross-examination, Dr. Moore-Ede testified he has not measured fatigue on the Department in general, only as it may exist with overtime (Tr. at p. 1377, lines 13-18, December 10, 2010).

What is odd is that the doctor never spoke to the Chief of Department or any officers on the Department other than the Town administration. Dr. Moore-Ede testified that he found no increased injury or illness rate at the Department (Tr. at p. 1378, lines 10-16, December 10, 2010). Regarding his recollection of his sample communities, Toronto, Canada, and Fort Worth, Texas, regarding fatigue issues, Dr. Ede-Moore could not remember the work schedule or if the departments were unionized. He could not guarantee that fire fighters could nap when needed. He could not identify any departments in New England where fire fighters worked a fifty-six (56) hour workweek except in Vermont (Tr. at p. 1382, lines 7-16, December 10, 2010).

Under the Town's proposal, Dr. Moore-Ede agreed that the number of nights worked would increase for fire fighters from ninety one (91) to one hundred and twenty-one (121). Using his reasoning, allowing a forty-eight (48) hour period would offer sufficient recovery time for lack of sleep; the present work schedule allows for sufficient recovery (Tr. at p. 1385, lines 423, December 10, 2010). No evidence was presented by Dr. Moore-Ede showing two (2) consecutive fourteen (14) hour shifts causing any problem in this Department with limited call volume at night. There is also no guarantee that overtime would be eliminated. That being a fact, the potential for fire fighters working seventy-two (72) hours in a row under the proposed schedule greatly increases the probability for fatigue problems, which based on the testimony of the expert witnesses doesn't presently exist.

Dr. Moore-Ede testified that a person needs five (5) hours of sleep, and the data given to him by the Town shows fire fighters getting this amount (Tr. at pps. 1393-1394, lines 24-23, December 10, 2010). The present ten (10) and fourteen (14) hour shift, according to Dr. Moore, provides an adequate amount of sleep (Tr. at pps. 1394-1395, lines 24-2, December 10, 2010).

Dr. Moore-Ede's concern about the use of overtime to staff is when it exceeds fifteen (15%) percent, but he recognized that the hiring of additional personnel would reduce it, even on ten (10) and fourteen (14) hour shifts (Tr. at p. 1398, lines 1-9, December 10, 2010).

Reviewing Union Exhibit 50, shift scheduling by Dr. Moore-Ed's company shows some recommendations for changing a shift schedule. The Town failed to perform any of the investigations suggested by the document. There was no employee participation; it was strictly management. There was no operational risk assessment. There were no changes in workforce. There was no evidence of problems in recruiting members. There was, however, an economic crisis caused by overtime based on a Town decision not to hire. There was no evidence with the present schedule showing an impact on employee health and safety versus the economic crisis because of the present schedule.

Union Exhibit 51 depicts staffing affects workload levels in this community. The Town's decision not to hire additional fire fighters has caused this imbalance regarding the present number of hours worked on overtime. No effort was made by Dr. Moore-Ede to inspect the station environment (living quarters, location of communication center, etc.) Also, no effort was made in the area of training by the Town. His testimony fails to show any safety or fatigue problems or sleep disruption currently of North Kingstown firefighters. Dr. Moore-Ede testified that the reason for this proposed change was solely economic and was not based on an investigation, evaluation of the services performed by this Department and limited review of data. His assumptions in this matter were made only by his work in Toronto and Fort Worth, hardly a significant sampling.

Patricia Sunderland's testimony clearly indicates that commuting to this community is relatively a short ride. No evidence was introduced showing any problems with fire fighters residing out of Town. No proposal was presented by the Union to cover vehicle expenses incurred by out of Town fire fighters.

Reviewing Town Exhibit 27, Patricia Sunderland could not factor how much overtime was due to fire fighters being held over to fill shifts. The above-cited document also shows that overtime hours are balanced by fire firefighters utilizing vacation, sick leave, etc. The Town's concern on commuting seems less than valid. The amount of overtime worked is based on the Town's decision concerning its failure to hire fire fighters, which clearly would lessen the need for overtime.

Maureen Costello-Shea's testimony shows no direct involvement in scheduling and deployment in North Kingstown (Tr. at pps. 1705-1706, lines 24-6, January 20, 2011). She testified that there was no rank-and-file involvement (Tr. at p. 1706, lines 12-14, January 10, 2010). Costello-Shea didn't even include the Town Administrator or Fire Chief in preparing the survey (Tr. at p. 17-7, lines 19-23, January 20, 2011). Costello-Shea also pointed out in her testimony that the scheduled and unscheduled absences could affect the supposed guaranteed three (3) hours of overtime under the Fair Labor Standards Act (Tr. at pp. 1709-1711, lines 1-15, January 20, 2011). She further testified that the communities surveyed would receive three (3) hours of overtime pay (Tr. at p. 1719, lines 3-9, January 20, 2011). Costello-Shea concurred in her testimony that fire fighters work more hours per year and nights per year under a fifty-six (56) hour workweek (Tr. at pps. 1718-1719, lines 12-1, January 20, 2011).

Further, Costello-Shea did not introduce any evidence demonstrating any operational deficiencies or bonding problems. She did not present any evidence showing fire fighters in Massachusetts, Connecticut, New Hampshire, Maine or New York, a good portion of the Northeast, working a fifty-six (56) hour workweek. The surveyed communities, Newport and Middletown, Rhode Island, and Marblehead, Massachusetts, are still working a forty-two (42) workweek (Tr. at pps. 1711-1712, lines 17-4, January 20, 2011).

According to the witness, the report itself was based on size and population (Tr. at p. 1725, lines 16-19, January 20, 2011). However, in her testimony, Costello-Shea admitted the selection was not all inclusive in Ohio (Tr. at p. 1726, lines 10-12, January 20, 2011). This raises the question as to how comparable are these twelve (12) communities. Red Wing, Minnesota, South Burlington, Vermont and Avon, Ohio, are well under the population of North Kingstown. The land mass in these communities are all in concert. The population density is diverse in these communities compared to North Kingstown. None of the fire fighters in the twelve (12) communities ever worked a forty-two (42) hour workweek schedule with two (2) ten (10) our days and two (2) fourteen (14) hour nights (Tr. at pps. 1732-1733, lines 19-7, January 20, 2011).

How relevant can opinions be formed with only single fire department policies viewed through in a microcosm? If fire fighters in West Palm Beach, Florida, went on a forty-two (42) hour schedule, they would lose pay. That is a strong reason not to change the work schedule in West Palm Beach. There was no offer in North Kingstown to pay fourteen (14) additional hours per week to fire fighters.

In the twelve (12) departments surveyed, Costello-Shea couldn't identify the total number of fire fighters or the breakdown of union and non-union positions. The survey shows the majority of fire fighters were chief of departments, nine (9) in number or seventy-five (75%) percent. Rank and file members and female fire fighters were not surveyed. The survey questions were leading. The only answers were the ones the Town wanted. Agreement of one hundred (100%) percent on all questions by respondents is virtually impossible, but it was the survey results. The survey represents a miniscule sampling. This witness never prepared the survey work; she only compiled the results (Tr. at p. 1727, lines 15-19, January 20, 2011). No effort was made by the witness regarding whether the Department rotates fire fighter assignments on a shift-by-shift basis, which is not done based on fire fighters bidding their positions on this Department with no rotation. A review of the training records was not performed.

Union Exhibit 56 conclusively shows that there is a need for employees' involvement, (Tr. at p. 1754, lines 14-17, January 20, 2011); something not done in this community even though recommended by Dr. Moore-Ede's company, Circadian Technologies. Contrary to the testimony provided, not all the country outside of the Northeast works a fifty-six (56) hour workweek (Tr. at p. 1755, lines 16-19, January 20, 2011). The above-cited exhibit shows a twelve (12) hour, twelve (12) hour shift on a ten (10) hour, twelve (12) hour shift as the most beneficial (Tr. at pps. 1757-1758, lines 17-20, January 20, 2011).

The testimony of Maureen Shea-Costello shows her virtually having no interaction with the surveyed members. The survey is severely limited to stacked questions. The questions don't allow any other answers other than no to change these departments' work schedules to anything else. The survey sampling is marginal, at best, and represents no cross-section of

those departments. The survey provides only a glimpse into work schedules totally outside the Northeast with the exception of one (1) community in Vermont. No evidence was introduced by her on the depleted complement of fire fighters causing overtime in this Town (North Kingstown).

The Union is opposed to this change in the hours worked per week. The Union presented five (5) witnesses in its opposition to this proposal by the Town.

Union Witness President Raymond Furtado stressed many of the same points raised in the cross-examination of the Town's witnesses in this contested matter. The proposed workweek would increase the hours worked at no additional compensation for fire fighters and staff personnel. The problem raised by this schedule is finding a substitution for various reasons (school, graduation, etc.) for work schedules. Michael Embury testified that overtime would be allotted on a twenty-four (24) hour basis, which would result in a continuous seventy-two (72) hour assignment. Mr. Furtado's un-rebutted testimony is that the Department is understaffed by thirteen (13) positions (Tr. at p. 2611, lines 11-17, February 8, 2011). These factors on substitution, overtime and the shortage of personnel negates the fifty-six (56) hour work schedule with two (2) twenty-four (24) hour days between shifts (Tr. at pps. 2612-2613, lines 20-8, February 8, 2011). Union Exhibit 104 depicts that a fire fighter in North Kingstown would work 244 days per year.

Mr. Furtado also introduced Union Exhibit 105 concerning shift scheduling. Reviewing this exhibit on changing shift schedules, Raymond Furtado's direct un-rebutted testimony revolving around the Circadian Ex. 105 criteria for shift change is meeting the needs of service, employee satisfaction and excessive injury rate. No evidence was entered by the Town that these three (3) criteria should alter the workweek.

Raymond Furtado contacted a number of locals contained in the Berkshire Report, as depicted in Union Exhibit 106. The communities represented in this exhibit - Avon, Ohio, Rutland, Vermont, Worcester, Ohio, Hagerstown, Royalton, Ohio, Redwing, Minnesota and West Palm Beach, Florida - all work less than the proposed fifty-six (56) hour workweek. All of the above-cited locals receive overtime in its pension. Further, all of the above-cited locals receive pay on

an hour-for-hour basis. These are two (2) benefits that would not be received by North Kingstown fire fighters. Mr. Furtado also pointed out by his research that these twelve (12) unions total 473 members. Based on the twelve (12) respondents in the Berkshire report, which at best shows approximately 2.79% survey sample; however, this number must be negated by the number of chiefs surveyed and the lack of a cross-section in ranks and gender bias.

Justin Puckett also testified in opposition to the Town's proposal. Mr. Puckett introduced Union Exhibits 103A through 103G. These above-cited exhibits are all in the field of fire fighter health and safety. Reviewing these articles, six (6) out of the seven (7) dealt with the "fight or flight" response and the effect stress has on the body. The effect on fire fighters with the current number of responses on a twenty-four (24) hour period is presently 13.6 per day. If a twenty-four (24) hour workday and a fifty-six hour workweek were implemented, that schedule would double responses based on the present two (2) ten (10) hour days and two (2) fourteen (14) hour nights on an average forty-two (42) hour workweek. Based on the above-cited schedule, this would double the "fight or flight" response. In the un-rebutted testimony of Justin Puckett, this would increase respiration, heard rate, blood pressure, etc. (Tr. at p. 2604, lines 18-21, February 8, 2011). Mr. Puckett testified that this would increase the number of exposures under the fifty-six (56) hour workweek (Tr. at page 2605, lines 1-8, February 8, 2011).

The Union called an expert witness, Dr. Linda Glazner, in response to the Town's work schedule proposal. The witness has worked in three (3) fire departments - the State of New Jersey, a California department and a Toronto, Canada fire department. Her un-rebutted testimony shows her interacting with fifty (50%) percent of New Jersey fire fighters (Tr. at p. 2136, lines 14-17, January 26, 2011), and in Toronto with three-quarters (3/4) of fire fighters (Tr. at p. 2137, lines 15-17, January 26, 2011).

Based on her un-rebutted testimony, Dr. Glazner interviewed fire fighters, including females in these departments (Tr. at p. 2137-2138, lines 18-4, January 26, 2011). She further, testified that she actively saw the functions performed by the departments (Tr. at p. 2136, lines

5-14, January 26, 2011). Dr. Glazner believes that there should be a discussion between the parties when a shift change is contemplated (Tr. at p. 2139, lines 6-16, January 26, 2011).

Dr. Glazner also testified that fatigue is not simply hours worked but responses and equipment (Tr. at p. 2148, lines 5-7, January 26, 2011). Her expert opinion on shift schedule is that a twenty-four (24) hour workday with an average forty-two (42) hour work is the best. The present two (2) ten (10) hour days and two (2) fourteen (14) hour nights is also superior to the Town's proposed fifty-six (56) hour workweek (Tr. at pps. 2154-2155, lines 15-4, January 26, 2011).

Under cross-examination, Dr. Glazner was questioned on the most prevalent work schedule for fire fighters in the Northeast (10's and 14's) causing a higher injury rate of 3.4 times the national average. Dr. Glazner testified that the compelling reason for this is much more a result of other factors than the work schedule (Tr. at pps. 2249-2250, lines 10-5, February 26, 2011). As shown in Union 51, Dr. Glazner totally agreed with an article written by Town witness Dr. Moore-Ede (Tr. at p. 2253, lines 7-8, and p. 2254, line 12, February 26, 2011). She further testified at the conclusion of time spent as a witness that based on concern for health and safety, she would not advocate a fifty-six (56) hour workweek based on shift schedules.

It should be noted that the Town produced a document pertaining to Dr. Glazner's credential listing. In Town Exhibits 63 A-D, the Town presents a "cover page" of a journal referenced in Dr. Glazner's CV. There was no complete document admitted by the Town, simply the Table of Contents and an email related to the Journal. Also, the citation in question referred not to an article or study performed, but rather to an abstract. Had the Town's counsel taken the time to fully research the issue, or even at least produce the full document to as an exhibit, it would have found the reference to Dr. Glazner's *abstract* on page 24 of the Journal. In its zeal to cast doubt upon one of the world's foremost experts in issues related to firefighting shift scheduling, the Town relied on shoddy email transmissions and photocopies of article covers without fully researching the matter. This was done after Dr. Glazner had

testified and returned to Wisconsin, despite the Town having received her credentials the week before her testimony. They had the opportunity to ask her during testimony and did not do so.

In fairness, it needs to be stated that the Union was not afforded the luxury of being provided credentials on **any** Town witnesses prior to their appearance in this proceeding.

The final Union witness in defense of the present work schedule was Rebecca Fisher, a fire fighter employed by the Middletown, Rhode Island Fire Department. Ms. Fisher previously worked in a unionized fire department in Rapid City, South Dakota. The job functions of her present department and Rapid City were similar except Rapid City did not transfer E.M.S. patients when employed but presently do so. The workweek in Rapid City consisted of twenty-four hour (24) tours of duty based on a fifty-six (56) hour workweek with Kelly Days. Rapid City paid for all hours worked and also all overtime hours worked.

Based on her job experience of five and one-half (5½) years, she testified that the fifty-six (56) hour work schedule was more tiring and overtime holdover created additional fatigue problems. This shift schedule was recently arbitrated in Middletown. Based on her Union position as a Union representative, she conducted a survey. No fire fighters in that comparable community wanted a fifty-six (56) hour workweek (Tr. at p. 2271, lines 16-20, January 26, 2011). She noted that her experience in Rapid City and as a female fire fighter and as a single parent with a son, the fifty-six (56) hour schedule would create child care problems in terms of coverage and expense.

The un-rebutted testimony of the last Union witness, Robert Neill, was that fire fighters in two (2) of the comparable communities, Central Falls and North Smithfield, work twenty-four hour tours of duty within an average forty-two (42) hour workweek.

The Town's request for a change in work schedule should be denied. The driving factor behind the change was cost. That factor was created solely by the Town by not hiring fire fighters. Based on the approval of a bond issue opening the Slocum station with Engine Company No. 5, the citizens of the Town accepted an increased cost in this Department. Dr. Moore-Ede's expertise is fatigue and associated problems. None of these problems were found

in this Department. Dr. Moore-Ede's citing of cost (overtime) as a reason for change never took into consideration that the effect would be on an understaffed Department.

The Berkshire report was a farce. There were clearly an insufficient number of people sampled when preparing the survey for these twelve (12) departments. There was no cross-section of the Department. The facts as presented by Maureen Costello-Shea were inaccurate. The one hundred (100%) percent response on all questions is a near impossibility. Costello-Shea didn't perform the survey.

There are a multitude of valid reasons why this proposal should be denied. Work hours would be increased by over seven hundred (700) with no additional guaranteed pay. The quality of life testified to by Raymond Furtado and Rebecca Fisher would be compromised by a fifty-six (56) hour workweek. Unanticipated problems, as provided for by Justin Puckett in his exhibits, would cause health problems. No comparable community in Rhode Island works a fifty-six (56) hour workweek. Finally, the testimony of Dr. Glazner, the Union expert, that a fifty-six (56) hour workweek is a risk to fire fighters.

Based on all of the above cited reasons, the Town's proposal should be denied.

Article IV- Section 4.2 Substitutions

The Town is proposing to add the following paragraph to the existing contract language "Provided, however, in no event shall any substitutions or repayment of substitutions shall result in premium pay to any employee" Justin Puckett offered un-rebutted testimony that in his experience as a member of the North Kingstown Fire Department no substitution has resulted in premium pay (T. page 2565) Mr. Puckett testified that currently such substitutions are a contract between the individual members working the substitution. (T. page 2564)

In further un-rebutted testimony Mr. Puckett stated that he believed in light of the Town's FLSA proposal and the failure of the Town to offer any testimony or language clarifying the above proposal, implementation of the new language would lead to great confusion. (T. page 2565) He stated it was his belief that with no language explaining the Town's position on FLSA members would not be clear who would be credited with substitution hours for FLSA

E-3

AMERICAN ARBITRATION ASSOCIATION
IN THE MATTER OF ARBITRATION BETWEEN

7/1/2010 to 6/30/2011 INTEREST ARBITRATION
NORTH KINGSTOWN FIREFIGHTERS LOCAL 1651
- And - VOLUME XI
TOWN OF NORTH KINGSTOWN

AAA NO. 11 390 01218 10

DATE: January 26, 2011

TIME: 9:00 A.M.

LOCATION: North Kingstown Senior Center
44 Beach Street
North Kingstown, Rhode Island

BEFORE: JOHN J. HARRINGTON, ESQUIRE (Neutral)
JOSEPH A. ANDRIOLE
(Union Arbitrator)

DANIEL K. KINDER, ESQUIRE
(Town Arbitrator)

APPEARANCES:

FOR THE UNION STAFF REPRESENTATIVE
BY: PAUL C. REED

FOR THE TOWN LITTLE MEDEIROS KINDER
BULMAN & WHITNEY P.C.
BY: TIMOTHY C. CAVASSA, ESQUIRE

RHODE ISLAND COURT REPORTING
747 North Main Street - Providence, R.I. 02904

RHODE ISLAND COURT REPORTING (401) 437-3366

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<p>1 (ARBITRATION COMMENCED AT 9:30 A.M.)</p> <p>2 VOLUME XI</p> <p>3 MR. HARRINGTON: All set.</p> <p>4 MR. REED: Doctor, would you say your</p> <p>5 first name, say and spell your last name for the</p> <p>6 record, please.</p> <p>7 DR. GLAZNER: Linda Glazner, G-l-a-z-n-e-r.</p> <p>8 MR. CAVASSA: Mr. Arbitrator, may I just</p> <p>9 add something just before we begin. We'd request</p> <p>10 that the Union both identify its witnesses that are</p> <p>11 going to be testifying today and we'd ask for a</p> <p>12 sequestration order or instruction, because I</p> <p>13 believe the Union's witnesses are going to be</p> <p>14 testifying on the same general topics. So we move</p> <p>15 for either a sequestration order or instruction.</p> <p>16 MR. HARRINGTON: What other witnesses do</p> <p>17 you have besides Miss Glazner?</p> <p>18 MR. REED: Today?</p> <p>19 MR. HARRINGTON: Yes.</p> <p>20 MR. REED: We have Rebecca Fisher. We</p> <p>21 have Robert Neill today and we have -- we're going</p> <p>22 to have at least one or two others coming in.</p> <p>23 MR. HARRINGTON: Okay. They have been</p> <p>24 part of the team that's been here before or --</p>	<p>1 necessary. I just want to put that on the record</p> <p>2 that that wasn't done when your expert testified on</p> <p>3 56-hour work week. And, granted, again, we could</p> <p>4 have done it but we didn't. So I would be opposed</p> <p>5 to the request.</p> <p>6 MR. KINDER: Well, the Town is not asking</p> <p>7 that any of the party witnesses or any of even the</p> <p>8 professional staff witnesses be sequestered.</p> <p>9 They're simply asking that outside witnesses who</p> <p>10 are testifying on the same subject be sequestered.</p> <p>11 It seems -- I've actually never seen a</p> <p>12 sequestration request denied. So if there's a</p> <p>13 basis for it, I'd be very interested to know</p> <p>14 because I've always wondered.</p> <p>15 MR. HARRINGTON: No, the parties are</p> <p>16 entitled to have whatever assistance in presenting</p> <p>17 their case; but the outside witnesses who are here</p> <p>18 to testify as experts, I'm going to grant the</p> <p>19 Town's request that the outside witness be</p> <p>20 sequestered, the one who's not testifying. And the</p> <p>21 instruction is that if there's breaks, or whatever,</p> <p>22 that you not discuss your testimony with the</p> <p>23 witness, Miss Glazner, who is about to testify or</p> <p>24 with the other people that are part of the team on</p>

2 (Pages 2124 to 2127)

1 the Union side.

2 And I make the same request of you. That your
3 testimony is here on the record and that there not
4 be discussions outside the room.

5 Does that satisfy the Town?

6 MR. CAVASSA: It does. Thank you.

7 MR. HARRINGTON: Let's go off the record
8 for a moment.

9 (OFF THE RECORD)

10 MR. HARRINGTON: Would you please swear
11 the witness.

12 LINDA GLAZNER

13 (HAVING BEEN DULY SWORN)

14 MR. REED: We'd like for identification
15 Union 72 marked as a full exhibit.

16 MR. HARRINGTON: 72 is the curriculum
17 vitae of Linda Glazner.

18 MR. REED: -- which was provided prior to
19 the hearing.

20 MR. CAVASSA: It was provided and we have
21 no objection.

22 MR. HARRINGTON: Okay.

23 (UNION EXHIBIT NO. 72 MARKED)

24

1 A. Well, probably half of my professional life
2 I've been academia and the other half I've done
3 staff kinds of work.

4 Q. What do you mean by "staff kinds of work"?

5 A. Practicing occupational health nurse, a
6 consultant, a community health educator, public
7 health nurse.

8 Q. I see. Now, as far as Papers and Preparations, is
9 this a list of all of these?

10 A. For every -- yes, all of them.

11 Q. Okay. Now, if you look at what's outlined in your
12 resume as Papers and Presentations, do any of them
13 have to do with shift work?

14 A. Yes, many of them do.

15 Q. And do any of them have to do with shift work
16 regarding firefighters?

17 A. Yes, they do.

18 Q. Is there anything else you'd like to point out to
19 the panel as far as the research end of your
20 resume?

21 A. Yes. I'm a member of the World Health
22 Organization Committee on Shift Work and Health.
23 This is made up of about a hundred researchers
24 internationally that look at shift work, and I am

1 Rebuttal testimony IN RE: 56-Hour Work Week

2 DIRECT EXAMINATION BY MR. REED

3 Q. Doctor, who are you working for today?

4 A. I have my own private consulting firm called
5 Linda K. Glazner & Associates.

6 Q. And were you contracted by the North Kingstown
7 Firefighters to be here today?

8 A. Yes, I was.

9 Q. -- in regards to their opposition to a 56-hour work
10 week?

11 A. Correct.

12 Q. Could you briefly go through your vast resume and
13 outline your education for me, please.

14 A. Well, I started as -- I have a Bachelor's
15 Degree in nursing from Columbia University; a
16 Master's in Public Health, specialty in
17 epidemiology from Columbia University; and
18 Doctorate in Public Health and Occupational and
19 Environmental Health from Columbia University; and
20 I'm also a family nurse practitioner from UCLA.

21 Q. I see. Basically, experience, if we look at the
22 first page, is that your work experience, Doctor?

23 A. Correct.

24 Q. Okay. And could you briefly outline what it is.

1 the recognized expert on firefighters and shift
2 work. I've presented several times at those
3 conferences. And I've also had an opportunity to
4 talk with shift work researchers to find out what
5 they're doing and what's, what's up and coming.

6 MR. REED: I see. At this time we'd like
7 to have the Doctor recognized as an expert witness
8 on shift work for firefighters.

9 MR. KINDER: May I just ask a question
10 quickly.

11 Ma'am, how do you define "shift work"?

12 THE WITNESS: "Shift work" is working any
13 time outside the nine-to-five workday. So it could
14 be evening work, it could be night work, or it
15 could be 24-hour work. "Shift work" is defined as
16 working outside the normal workday. So if you work
17 8 to 3, you would actually be doing a shift work
18 schedule.

19 MR. KINDER: Thank you.

20 MR. HARRINGTON: Any objection? — MODERATOR

21 MR. CAVASSA: Not to that designation.

22 MR. HARRINGTON: What was the request?
23 Can you just -- it was shift work? Just shift
24 work? I thought there was something else.

1 (STATEMENT BY MR. REED ON PAGE 2131 LINE 6
2 READ BY STENOGRAPHER)

3 MR. HARRINGTON: Okay. That motion is
4 granted and she'll be recognized as an expert in
5 that area. You can proceed.

6 MR. REED: Thank you.

7 Q. All right. Doctor, now, as far as --

8 STENOGRAPHER: As far as what, please?

9 MR. REED: I'll talk louder.

10 Q. Have you ever -- what fire departments or fire
11 organizations have you done any type of work in
12 regarding shift work?

13 A. I worked with three fire departments in the
14 State of New Jersey; I worked with one fire
15 department in California; and I worked with the
16 Toronto Fire Department.

17 Q. How did you get involved with fire department work
18 as far as health and safety issues?

19 A. When I worked for the State Department of
20 Health as a consultant in occupational and
21 environmental health and there was a big fire in
22 New Jersey, in Newark, actually, one of the
23 Superfund places blew up, and we responded because
24 firefighters at that time were not covered by OSHA.

1 And so we, as the State Department of Health, went
2 to help provide occupational health and safety
3 issues helping them to be safe.

4 And I got very interested in working with
5 firefighters. Found out that in New Jersey there
6 are 250 organizations concerned about firefighters'
7 health and safety. But no one -- the right hand
8 didn't know what the left hand was doing, plus
9 there was a lot of information on firefighter
10 health and safety in the literature. But
11 firefighters don't read Lancet and other
12 professional journals; so I wrote a book called
13 Firefighting in New Jersey: Hazards and Methods of
14 Control, to help the firefighters know what their
15 hazards were and how to control them.

16 Q. And from there you got involved in the shift
17 analysis?

18 A. Actually, I went to a conference on shift work
19 and I was looking for -- I was a doctoral student
20 looking for my topic for dissertation and I got
21 very interested in shift work, went to the
22 literature and found there was nothing on
23 firefighter shift work at that time. And so I
24 said, "Huh, good topic for my dissertation."

1 And that's how I got started.

2 Q. Since my academic background doesn't reach much
3 past high school, what's a dissertation.

4 A. Dissertation is when I look at research and do
5 my own research and then present this new research
6 to peer review, to --

7 Q. Well, was it accepted?

8 A. Absolutely.

9 Q. And this was, in your opinion, one of the first to
10 have any analysis of firefighter shift work?

11 A. Absolutely. Except that when I went to the
12 shift work conference, the international one, and
13 said that out loud, one of the gentleman from
14 Germany raises his hand and said, "We looked at
15 firefighter shift work." And I said, "Oh, but I
16 didn't find it." He said, "Yes, because it was in
17 German." And so I realized I needed to look beyond
18 just English speaking. Even though, I was the
19 first English speaking.

20 Q. Okay. Now, when you did your analysis -- and if
21 I'm right, you were in five departments, am I
22 correct?

23 A. Correct.

24 Q. Now, when you did your analysis, did you -- how did

1 you perform that? Did you actually go to the
2 community?

3 A. Absolutely. First with a dissertation you have
4 to get a whole lot of everything that has to be
5 approved; and the tools that I used to do my study
6 had to be valid and reliable, which means that I
7 can do it, you can do it, you could do it. And so
8 I used tools that were valid and reliable, and I
9 developed some of my own that were valid and
10 reliable. I worked with both -- in New Jersey
11 there are two firefighters unions: The IAFF and
12 FMBA, and they've got about six chiefs
13 associations.

14 STENOGRAPHER: Repeat the unions again,
15 please.

16 MR. REED: You need to speak slower.

17 THE WITNESS: I've got to speak slower,
18 yes.

19 A. IAFF, FMBA, and then about six chiefs
20 associations. I worked with all of them to find
21 out what kinds of work fire -- what was the shift
22 work schedules, because I was particularly looking
23 at, looking at the same schedule in several fire
24 departments.

1 The other thing is in New Jersey about
2 72 percent of firefighters volunteer, and I wanted
3 paid firefighters. So I spent a fair amount of
4 time finding the places that I wanted to use and
5 ended up using three firefighter departments that
6 worked the 10/14. At that time in New Jersey, no
7 Fire Department worked 24 hours, they just worked
8 10/14.

9 So I got permission -- went to each of the
10 fire departments, went to each of the unions, got
11 permission to go into and study the firefighters;
12 and then had to convince firefighters that they
13 wanted to participate in this study, which they
14 did. Basically, I had very high percentages. Most
15 of the time when you do studies of people, about 10
16 percent participate and, in fact, I got about 50
17 percent; so I had a good power of persuasion.

18 And what they had to do was take their
19 temperature every two hours while they were awake
20 before the shift, during the shift, and after the
21 shift. They had to complete a very lengthy
22 questionnaire that interviewed them. They had to
23 do a sleep diary, and they did it. They very
24 nicely did it. So I had a lot of time working with

1 to do it. I didn't know what the results were
2 going to be because that's what research is all
3 about, is to find out some new information. But I
4 spent a lot of time with these people.

5 Q. Okay. And when you -- now, I just have to ask this
6 question. When you were in these fire departments,
7 did you actually see them perform the functions of
8 a fire department? Did you ever, you know, go on a
9 run with them and things like that?

10 A. In New Jersey, I ate with them, I slid down the
11 pole. In California I went out on one run, which
12 was a brush fire; and in Toronto I worked a 24-hour
13 shift and suited up and went out to all 19 alarms
14 that they responded to.

15 Q. Okay. Now, you worked -- you came down to North
16 Kingstown, am I correct?

17 A. Correct.

18 Q. Now, what type of exposure did you have to the
19 North Kingstown Fire Department?

20 A. I visited all but one of the fire stations and
21 talked with both firefighters and officers.

22 Q. I see. Okay. So did you ask them questions
23 pertaining to shift work at all?

24 A. I did.

1 firefighters.

2 In one place I actually brought some of my
3 students. I was teaching at Hunter College at the
4 time and brought some of my students to help
5 because there were too many firefighters and I
6 couldn't do them all and they wanted me to get it
7 done within a short period of time.

8 So I brought some students, and we went to
9 Atlantic City and used some gaming time and also
10 was with the fire department. So, yes, I was there
11 in New Jersey and in California, similar process,
12 not exactly the same.

13 Toronto was a totally different thing. They
14 came to me and asked for help. But, again, I went
15 into the fire departments. Basically, probably met
16 three-quarters of all the firefighters that were in
17 any department.

18 Q. Okay. Now, when you talked to firefighters, did
19 you also talk to line officers and chiefs?

20 A. Yes, and municipal people. So I -- people knew
21 that I was there. First of all, a female in a fire
22 department sort of stands out, not too many of
23 them. And so I did meet with everybody explaining
24 what I was doing, why I wanted to -- why I wanted

1 Q. And what was their, basically from your survey of
2 the firefighters on duty, their preference issue?

3 A. They like what they're doing now.

4 Q. Two 10 --

5 A. Two 10s two 14s.

6 Q. Okay. Now, based on your expert opinion, do you
7 believe if there's going to be a change in the
8 shift, there should be some type of discussion
9 between the affected parties?

10 A. Absolutely, absolutely. In Toronto, that was a
11 very large process, and it was a collaborative
12 process between administration, the leadership of
13 the fire department, as well as line officers, on
14 what was going to happen. They submitted a lot of
15 shift schedules to me, asked for my reaction on
16 which one would be the best.

17 By the way, the one that I chose as the best
18 is not the one that they chose because they had
19 some other parameters that they were concerned
20 about, and so I said, "Well, second best, it's not
21 the best."

22 And yes, I think everybody -- when making a
23 change, period, you should involve all the key
24 stakeholders; but something as important as shift

work, definitely needs to have everybody involved.

Q. So would I be correct you're against unilateral change?

A. Absolutely.

Q. Okay. Now, if you've got the contract in front of you, Joint 1, Section 4.1, did you review this language, Doctor?

A. I did.

Q. Okay. Now, in your opinion, based on your research and your analysis of various forms of shift work regarding firefighters, what's your opinion is the best shift for the firefighters to work?

A. Well, the best shift work for any shift worker is the one that they want to do. So firefighters who are working the 10/14 in New Jersey liked it at the time but, as a matter of record, they've now switched to 24. In California they love the 24.

And in Toronto, when I studied them, I studied them both doing the 10/14 and then going to 24 and had a parallel group, identical to the group that went to 24, who stayed on 10/14. So I could compare and contrast. This was over a year project, it was about an 18-month project. And the ones who went to 24 liked it. The ones who stayed

long hour is considered over 56 hours in the work week. And documented are a lot of negative health effects, cardiovascular, respiratory, social interactions, and -- significant, significant with over 56 hours in a work week.

So that would be my reason, 50 -- over 50 is not good. 42 to 56 is also not good. And I know that there's recommendations that 55 would be optimum for firefighters, and I don't even think that's good.

Q. Okay. If the 56-hour work week is implemented here, do you feel that there would be certain other problems other than health and safety for firefighters?

A. Well, the fact that people are being expected to go from 42 to 56 without an increase in salary, that's going to have a very negative effect and it's not necessarily regarding health and safety. But I think the health and safety issue is a very important one to be concerned about.

Q. Okay. Now, based on your professional opinion as an expert, do you think that working these additional 14 hours a week on average increases a firefighters' exposure to injury?

at 10/14 were comfortable but they all still had a lot of complaints, which the people on 24 did not have.

So in my estimation, 24 is better, but none of these 24 schedules were 56 hours in a week.

Q. Well, do you feel that there's any detriment to firefighters' health and safety going from 42 hour average -- well, let me ask this question.

In Toronto, when they went to the 24-hour shift, I guess it was on a trial basis?

A. Correct.

Q. When they went to the 24-hour shifts, did their work week increase from 42 hours to 56 hours?

A. No, their work hours stayed at 42.

Q. So would I be correct, I can work a 24-hour shift and average a 42-hour work week per year?

A. Absolutely.

Q. So why do you feel, and I know the City's -- Town's proposal, excuse me, wants 56 hours, why do you feel that that would be detrimental to firefighters' health and safety?

A. Well, the reason is maybe seven, ten years ago the literature has come out on what they call extreme -- extremely long hours, and an extremely

A. Absolutely. I mean, my studies have shown -- I did not look at injuries in the fire service in Toronto, but I did look at them in New Jersey and in California. And contrary to popular information in the literature that more workers who work at night have injuries, I did not find that to be the case in either case.

What I did find was there were more injuries related to alarms. So when there were alarms, you had potential to have an injury, and they did. In New Jersey, the injuries were very interesting. They happened -- related to fire work. So it was on the way to the fire, at the fire, on the way from the fire. In California, it was more in training and physical fitness.

But both of those groups had more injuries when they were interrupted from doing what they were doing to go to the alarm or to going to do their physical fitness or going to do their training.

So that was really kind of interesting that there were more alarm -- there were not more injuries at night but there were more injuries related to alarms. So if people are working more

1 And he made a big point that the more likely
2 you were to be working, the more you would be
3 fatigued and more likely to have injuries; and
4 that's not what I found.

5 Q. Would the injuries be reflective of the type of
6 responses that firefighters went to?

7 A. Yes, and also the equipment that they used.

8 Q. Okay. So it's just not hours, it's type of
9 responses and equipment?

10 A. And how many other people were there. There's
11 a lot of -- and the kind of fire that it was. New
12 Jersey had, during the time of my study and what I
13 call, epidemics, they were very long fires, they
14 were multiple alarm fires. And in those fires,
15 they were more likely to have an injury, and they
16 did.

17 The other part is not only injury but illness.
18 At the time of my study, firefighters did not use
19 any self-contained breathing apparatus, and so many
20 of the injuries and illnesses were respiratory
21 related because one in three firefighters had the
22 Scott Air-Pak and the other two got exposed, and so
23 they got sick.

24 Q. Now, did he make -- did you find any claim in that

1 period is really very good. What happened in
2 Toronto with the trial period was it was able to
3 look at and tweak the shift schedule, the hours of
4 work, the -- well, not so much the hours of work
5 but what happened during the hours of work.

6 The firefighters in Toronto actually laid out
7 the day and what they would be doing during that
8 day. And so they could tweak some of that when --
9 you know, how much time did they spend in training,
10 how much time did they spend in repairing
11 equipment, and that kind of stuff.

12 Q. I see. Now, anything else you'd like to point out
13 from that document, Union 50?

14 A. Basically, what these two authors had said,
15 Davis and Acacia, had said is that basically any
16 kind of decision can be unilateral and they repeat
17 that again in their conclusion, and so I would
18 disagree with that.

19 Q. Okay. Now, did you have a chance to review the
20 Berkshire Report?

21 A. Yes, I did.

22 Q. Are you familiar with this company?

23 A. No, not at all.

24 Q. I see. Are they in any of the organizations you

1 document that shows any direct correlation to the
2 benefits of 24-hour shifts --

3 A. No.

4 Q. -- from a scientific --

5 A. I did not find that in here.

6 Q. Okay. Did you review Exhibit 50?

7 A. Correct.

8 Q. This exhibit, it has to do with Circadian -- that's
9 Circadian Company. Is there anything you'd like to
10 point out to the panel after your review of this?

11 A. I do know that he says -- as I had said before,
12 that working together, firefighters, people who are
13 making shift changes need, both the line workers
14 and management, need to work together. He says
15 that in here. Nobody, nobody disagrees that that's
16 not the truth and that should be had.

17 Q. Do you know if there's been any discussion -- and I
18 know you've talked to the Union President Raymond
19 Furtado and you've talked to firefighter staff at
20 three stations yesterday. Has there been any
21 discussion between this Town Administration and the
22 firefighters over the implementation of shift work
23 for a trial period?

24 A. No, there has not been. And I think a trial

1 belong to having to do with shift work or
2 firefighter shift safety?

3 A. No, they are not.

4 Q. Okay. What is your expert opinion of this report?

5 A. Well, they, they make assumptions based on
6 limited information. For instance, when they talk
7 about the firefighter -- the interviews that they
8 did on Page 4 of looking at comparable company --
9 comparable fire services, I'm not so sure if it's
10 comparable. For instance, residents per square
11 mile is probably not as important, or not only as
12 important, as households, and they don't talk about
13 households, because firefighters don't fight
14 residents, they fight buildings, residents in terms
15 of people, they fight buildings.

16 And the assumption that the square miles in
17 North Kingstown is 43, doesn't take into
18 consideration, I am told, about -- well the land,
19 but all the water that they have to deal with. So
20 some of this information is not -- is based on
21 false assumptions. They also interviewed chiefs,
22 officers, not line people; that's very definitely
23 biased.

24 And then the other part is that when they

1 hours, the potential of being exposed to more
2 alarms would then expose them to more, potential
3 for more injuries.

4 MR. REED: I see. Now, gentlemen, we're
5 going to ask the Doctor to comment on Union
6 Exhibits 50 and 51 and the Berkshire Report, if
7 you would get that if you so desire.

8 MR. HARRINGTON: Yes, what numbers?

9 MR. REED: Union Exhibit 50, Union
10 Exhibit 51, and the Berkshire Report. Let me find
11 it.

12 (DOCUMENTS BEING PERUSED)

13 MR. HARRINGTON: Do you know the number of
14 the Berkshire Report?

15 MR. REED: We're getting it.

16 (DOCUMENTS BEING PERUSED)

17 MR. CAVASSA: Town 38. You're talking
18 about this one (indicating)? You introduced
19 another one but you're talking about --

20 MR. REED: Yes, North Kingstown.

21 MR. CAVASSA: Yes, it's Town 38.

22 MR. HARRINGTON: All set.

23 MR. REED: Yes, sir.

24 Q. Doctor, you have Union 50 and 51 in front of you?

1 to do is he takes complicated things and simplifies
2 them and makes them easy to understand which is, I
3 think, a compliment, but also in simplifying, you
4 lose a lot of the details.

5 Q. Could you point something out to that effect.

6 A. Well, I mean, I was just looking at the Swiss
7 cheese approach, Page 12 of No. 51.

8 Q. Union 51, Page 12.

9 A. Nobody else talked about the Swiss cheese
10 approach in looking at hazards. They go through
11 holes and sort of it's a happenstance, if the
12 cheeses all line up, then it will go through. It's
13 a nice way to visually represent, but that's
14 over-simplified and probably not exactly how
15 hazards and losses relate to each other.

16 Q. I see. Anything else in 50?

17 A. 50 or 51?

18 Q. 51, I'm sorry.

19 A. As I said, he coins words that are new. And
20 when I was a doctoral student, I used him because
21 he talked about the "maladaption syndrome" and I
22 thought that was pretty clever. What I've found
23 out, now as I've matured and learned and been able
24 to contribute my own, is that, again, it's a

1 A. I do.

2 Q. Are you familiar with these documents?

3 A. I am.

4 Q. And are you familiar with the company that produced
5 them?

6 A. I am.

7 Q. And have you any exposure to Dr. Moore-Ede? Have
8 you had any exposure --

9 A. Actually, no -- I've had exposure. I've read
10 his articles and used them, but he is not a member
11 of the World Heath Organization Group that I talked
12 about, the shift work committee, so I've never seen
13 him there.

14 Q. Okay. Now, is there anything you'd like to
15 comment, based on your expert opinion, on what was
16 produced in Union 50 and 51?

17 A. Well, I think there's good selling points. I
18 think they make -- if I were looking at wanting
19 somebody who could write -- tell me what I could be
20 doing, I think they do a really good job. They're
21 white papers, so they're opinions of the person who
22 wrote it and presumably the company.

23 I think they say not anything particularly
24 new. One of the things that Dr. Moore-Ede is able

1 over-simplification. It's not in here but it's
2 similar to that --

3 MR. REED: Okay.

4 A. -- and by using the words "tipping point,"
5 that's current right now. Five years ago there
6 wasn't a "tipping point." If you haven't read
7 Gledwell's book, read it, it's a good book.

8 Q. Okay. And is there anything else in 51 you'd like
9 to point out?

10 A. Actually, no, there isn't, unless you want to
11 call my attention to something.

12 MR. REED: No.

13 THE WITNESS: Wait, I shouldn't say that.

14 (WITNESS PERUSING DOCUMENTS)

15 A. His issue on fatigue is -- certainly right now
16 the community of shift work researchers recognizes
17 that fatigue is a big issue. I, again, in my
18 research found, both in New Jersey and in
19 California, that it didn't follow that. I looked
20 at injuries in the fire service, and those who had
21 the most injuries were people who worked the fewest
22 hours. Those who worked the most hours, either in
23 overtime or in moonlighting, had the least amount
24 of injuries.

1 MR. HARRINGTON: All set.
 2 MR. CAVASSA: Good afternoon, Mrs. Glazer.
 3 THE WITNESS: Not yet.
 4 MR. CAVASSA: I think it's close.
 5 CROSS-EXAMINATION BY MR. CAVASSA
 6 Q. You testified that you wrote a book before your
 7 dissertation about firefighter safety in New
 8 Jersey, is that correct?
 9 A. (WITNESS NODDING).
 10 STENOGRAPHER: I'm sorry?
 11 A. Yes, it is.
 12 THE WITNESS: Sorry, that's right, you
 13 can't write a bobbing head.
 14 A. Yes, it is correct.
 15 Q. And where is that in your resume that's been
 16 introduced?
 17 A. Somewhere.
 18 (WITNESS PERUSING DOCUMENT)
 19 A. Good point, it's not in there.
 20 Q. Is there a reason why it's not in there?
 21 A. No, I just -- no. Nobody has ever noticed it,
 22 and I've never noticed it. Thank you for pointing
 23 it out.
 24 Q. Was it a peer review -- was it published anywhere?

1 A. It was presented at a conference, peer review
 2 conference in Las Vegas, and that is -- I can look
 3 to see that that's in there.
 4 (WITNESS PERUSING DOCUMENT)
 5 A. It's the last. . .
 6 (WITNESS PERUSING DOCUMENT)
 7 A. On Page 7, Shift Work and Security and
 8 Alterations of Firefighters at the Second
 9 International Human Factors Conference in Las Vegas
 10 in 2008.
 11 MR. HARRINGTON: Where is that on page
 12 Page 7?
 13 THE WITNESS: Page 7, fourth one down from
 14 the top.
 15 MR. HARRINGTON: Okay. Thank you.
 16 Q. And you said you --
 17 THE WITNESS: Page 7. Sorry.
 18 Q. And you said you conducted interviews here in
 19 North Kingstown of the firefighters?
 20 A. Correct.
 21 Q. And how many, exactly?
 22 A. Probably around 15.
 23 Q. And you based your conclusions on those discussions
 24 or based on those discussions that's the basis for

1 A. It was published by the State Department of
 2 Health in New Jersey and resides there.
 3 Q. So you put it together while you were a state
 4 employee?
 5 A. Correct.
 6 Q. Was it ever published in the peer review or any
 7 other --
 8 A. Parts of it, but no.
 9 Q. Parts of it. Do you know what publication it's
 10 published in?
 11 A. The Shift Work and Health in the 91 AAOHN
 12 Journal. Parts of it would have been put into
 13 the article.
 14 Q. Okay. And your dissertation was done in 1988 or
 15 1989?
 16 A. Correct.
 17 Q. What original research have you done on firefighter
 18 safety in the last ten years?
 19 A. Work with the Toronto Fire Department.
 20 Q. That was original research that was done?
 21 A. Yes.
 22 Q. And was it published?
 23 A. Yes.
 24 Q. Was it published in a peer review journal?

1 your testimony here today?
 2 A. No, no that's just added to my testimony. My
 3 conclusions were based on the information that was
 4 given to me a long time ago that I've been looking
 5 at in terms of what are, you know -- what's
 6 preference and that kind of thing. But they just
 7 substantiated and actually gave me some more things
 8 to think about.
 9 Q. And when did you conduct those interviews?
 10 A. Yesterday.
 11 Q. Yesterday. Do you have a list of the questions
 12 that you used or that you asked?
 13 A. No, because it was fairly impromptu. My
 14 purpose of going to the fire stations yesterday was
 15 to just get a sense of what the fire stations look
 16 like, what the sleeping conditions are, you know,
 17 what the living conditions are, and to meet the
 18 firefighters, not specifically to ask questions.
 19 Q. Okay. When you asked them the questions, were they
 20 alone or were they in the presence of their Union
 21 representative or a representative of the Union?
 22 A. They were, they were usually in the lounge
 23 area, so there were like three or four people at
 24 the same time.

1 looked at results, there was like a hundred percent
2 response in one category and zero in another; and
3 that's not usually accurate because, biologically,
4 we should have a little bit of variation.

5 Q. Now, as far as -- there's 12 departments that were
6 surveyed and there were 12 people asked for their
7 opinion, one per department, would you agree with
8 that?

9 A. No.

10 Q. Would you think it's a rather small survey?

11 A. It's very small. As I said, it's biased. It's
12 biased because if you asked me about something and
13 asked you about something, we both have -- probably
14 don't necessarily have the same opinion and we both
15 need to be asked. So if they asked only the
16 officers and didn't ask any of the firefighters,
17 that's a very -- and who knows what the schedule of
18 the officers were and is it like the schedule of
19 the firefighters.

20 Q. Okay. As far as questions, when you do your --
21 when you did your research, I should say, did you
22 have to prepare questions to ask the cross sections
23 of the Toronto and New Jersey firefighters, et
24 cetera?

1 A. Absolutely, and I asked the same question of
2 everybody. In fact, when I had one -- I asked a
3 lot of personal questions. I asked about sex life.
4 I asked about drug use. I asked a lot of personal
5 questions. And, as a nurse, most people will trust
6 me and give me the responses, so I do believe that
7 the answers were accurate.

8 But one of the chiefs said, "Nobody is going
9 to tell you about the alcohol use," "Nobody is
10 going to tell you about drug use." Well, if nobody
11 was going to tell me, then why did I get the
12 percentage of responses in one fire department.
13 Illicit drug use was about 10 percent, which I
14 considered to be pretty significant, and so I
15 reported that, not the people, but just the fact
16 that this was happening. So, yes, I've asked.

17 Q. How would you rate the questions in this survey?

18 A. Well, they are poorly designed. The Likert
19 Scale, which is when you ask, "always degree,"
20 "sometimes agree," "never." Two things wrong, one,
21 if you have a narrow --

22 MR. CAVASSA: I'm going to object and move
23 to strike this line of testimony. She's an expert
24 in shift scheduling and not in providing surveys,

1 critiquing surveys.

2 MR. HARRINGTON: I am going to overrule
3 the objection and allow the testimony based on the
4 previous testimony that's how she's conducted the
5 research. I understand she's not an expert on
6 conducting surveys, but as part of her work she's
7 testified that she's done surveys.

8 So I am going to overrule the objection but,
9 you know, I really don't want to dwell on the issue
10 either, because this case isn't going to turn on
11 how 12 survey questions were conducted.

12 Q. Okay. So would I be correct your answer is you
13 don't think much of the questions?

14 A. Correct.

15 Q. All right. Now, if you had to choose, based on
16 firefighters' health and safety, the Town's
17 proposal of 24-hour shift with a 56-hour work week
18 or the present two 10-hour days, two 14-hour nights
19 and 96 hours off, which shift would you advise,
20 based on your expert opinion, that would provide
21 the safest environment for firefighters?

22 A. From all the research that I've done and the
23 literature that I've looked at and my discussion
24 with other shift work research workers in general,

1 I think the 24-hour shift is the better shift but
2 not at 56 hours a week. At 42, yes; at 56, no. So
3 if that were the trade off, then the 10/14 that's
4 currently worked is a better shift.

5 MR. REED: I see. And I'd just like for a
6 minute outside to caucus, Mr. Harrington, if that's
7 possible.

8 MR. HARRINGTON: Yes, we will take a
9 break. You have to stay. You have to join the
10 rest of us.

11 THE WITNESS: Okay.

12 (BRIEF RECESS)

13 MR. REED: Thank you. No other questions
14 subject to redirect.

15 MR. HARRINGTON: Tim.

16 MR. CAVASSA: I'd need a few minutes.

17 MR. HARRINGTON: Okay.

18 MR. CAVASSA: The Union provided us with
19 information beforehand so it's not going to take
20 too long. This is not the first time we're hearing
21 some of this.

22 MR. HARRINGTON: Okay.

23 MR. CAVASSA: And I appreciate that, Paul.

24 (BRIEF RECESS)

1 Q. Do you know if it was in the presence of a Union
2 representative?

3 A. Yes, it was.

4 Q. Are you aware that the Union leadership has taken a
5 strong position against the 24-hour shift here in
6 North Kingstown?

7 A. I am very aware of that.

8 Q. Did it ever occur to you that interviewing members
9 of the firefighters in front of their Union leaders
10 might affect the answers that you received?

11 MR. REED: Objection. Speculation.

12 MR. HARRINGTON: I'm going to overrule the
13 objection. Her direct testimony was that some of
14 the expert opinion that she's given was based on
15 these interviews, so the town can explore into how
16 the interviews were conducted and the circumstances
17 of them. The objection is overruled.

18 THE WITNESS: Could you repeat the
19 question.

20 (QUESTION ON PAGE 2160 LINE 8
21 READ BY STENOGRAPHER)

22 A. Yes, that would occur to me. But my purpose
23 yesterday was much more informal. I would not say
24 that the information that I used was scientific or

1 Q. And you have no firsthand knowledge about whether
2 the Town offered a 10 percent pay increase to go
3 along with the 24-hour shift?

4 A. No, I do not.

5 Q. You were not a participant of the parties in
6 negotiations on this issue, then?

7 A. Not at all.

8 Q. You were not a witness to any -- to many of the
9 conversations that were had between Union
10 representatives and town officials on this issue?

11 A. No, I was not a witness.

12 Q. You testified that you've seen a number of changes
13 from 10/14 to a 24-hour shift schedule, is that
14 correct?

15 A. Yes, that's correct.

16 Q. And it is true that each time you saw this, there
17 were members of the Fire Department who didn't want
18 to see the change at first?

19 A. In Toronto there were people who said they did
20 not want to see change; at the end, they actually
21 all came around. But actually two of them did not,
22 they left the fire service. But they were -- they
23 were ready to retire. But most people said that
24 they wanted -- either preferred the 24 or they had

1 gained was scientific. It just gave me -- if I
2 were going to do a study here, I would use some of
3 those answers to formulate questions that I would
4 ask in a more rigorous way. So it was just sort of
5 a getting-to-know.

6 Q. Okay. Who exactly told you that the management of
7 the Town made an effort not to have discussions
8 with firefighters about the 24-hour shift
9 schedules?

10 A. I never heard -- I've never said that.

11 Q. That wasn't your testimony on direct?

12 A. My testimony was that I understood that there
13 was no, no, no -- that management has not talked
14 with firefighters about the shift schedule change,
15 but I don't know if -- I don't -- how do I say
16 that. I don't know if -- can you repeat the
17 question and then I'll answer it.

18 (QUESTION ON PAGE 2161 LINE 6
19 READ BY STENOGRAPHER)

20 A. I was told by the Union representatives that
21 there was no discussion.

22 Q. You have no firsthand knowledge of whether this is
23 true or not?

24 A. No, I do not.

1 no opinion. The others, it was a very small amount
2 who said they wanted to keep the 10/14.

3 Q. So after working the schedule for a trial period,
4 those who were -- who dissented to it originally --

5 A. Oh, the people who were working 24, they wanted
6 the 24. It was the comparison group that said, "I
7 don't want to go to the 24, I want to stay at the
8 10/14."

9 Q. And haven't you consistently found in your studies
10 that despite the fact that some firefighters were
11 opposed to the schedule at first, moving to a
12 24-hour schedule was actually safer?

13 A. Yes, it was safer -- well, it was desired.

14 Some of the reasons people didn't want to go was
15 because of personal reasons, that what they had
16 anticipated as problems did not, in fact, occur.
17 And the others, the other safety issues, I did not
18 believe -- I did not look at injuries. So I don't
19 know what the injuries were like before, during, or
20 after, but it was reported to me that there were
21 less injuries on the 24-hour shift.

22 There were -- it was also reported to me that
23 there was less use of sick time on the 24-hour
24 shift but I did not look at that myself.

1 Q. And this was in Toronto?

2 A. It was in Toronto.

3 Q. So would it be fair to conclude that in your
4 various studies, the best schedule isn't
5 necessarily the one that the firefighters always
6 want?

7 A. Well, you're never going to have a hundred
8 percent wanting something. And so when you have in
9 the 90s, I think that's pretty good, except if you
10 look at change and change agents, 90 percent
11 compliance and agreement is very, very good. So
12 when you have more than that, you're going to go
13 with the majority. I mean, that's life.

14 Q. Can you tell me exactly what studies exist in the
15 literature that show that a work week for
16 firefighters of more than 50 hours is unsafe?

17 A. Let me think about that.

18 (PAUSE)

19 A. Harma in Sweden looked at firefighters, and he
20 found that more people -- I'm trying to remember
21 the year but I can't, probably in the nineties. He
22 found that in this small town, study was only --
23 you have to appreciate that many firefighter
24 studies are a very small number of people. So my

1 literature, which I did talk about, looking at
2 extreme long hours.

3 Q. Before you get -- I don't think you answered yes or
4 no to that question.

5 A. Oh, I answered "yes" by bobbing my head.

6 Q. Okay. Now, Miss Glazner, your testimony is
7 essentially, all else being equal in terms of
8 number of hours worked per week, the 24-hour shift
9 schedule is safer than the 10/14-shift schedule;
10 did I characterize you correctly?

11 A. Yes, especially -- no. In this situation,
12 10/14 would be a better shift if people had to work
13 24 hours -- work a 24-hour shift and 56 hours and
14 not get paid for the extra time. If they worked
15 the 24-hour shift and did not work 56 hours, then I
16 would say that's a better shift.

17 MR. CAVASSA: I am going to repeat the
18 question because I don't know if you answered it
19 directly. And it may have been a poor question but
20 I'll try to design it better.

21 THE WITNESS: I also would like to say I
22 am "Dr. Glazner", I'm not "Miss Glazner."

23 MR. CAVASSA: Okay. You prefer "doctor"?

24 THE WITNESS: I do.

1 Toronto study is probably one of the largest. But
2 he found that there were less injuries on the
3 24-hour shift than on other shifts that the
4 firefighters worked.

5 But you also have to appreciate that
6 firefighting in Sweden is very different than
7 firefighting in the United States. So the kinds of
8 injuries they have and the way they fight the fires
9 to begin with are very different, so you are not
10 necessarily able to compare.

11 Q. Did Harma study a 56-hour work week?

12 A. Yes. It was over 50 hours, it was not 56.
13 It was like 53.

14 Q. Is that the only study that you can think of?

15 A. The only one. In Europe people don't work
16 56 hours. In fact, firefighters work less than
17 56 hours, less than 42. They were very -- there's
18 a push to have fewer hours rather than more hours.
19 So there was not. . .

20 Q. That's the basis of your opinion here, where the
21 interviews that you conducted and the study by
22 Harma, you said you referred to literature on the
23 safety issue, it's based on that one study?

24 A. But the other thing is that there's a growing

1 MR. CAVASSA: My sister is an NP, and I
2 always call her "nurse" even though she's working
3 toward her doctorate.

4 THE WITNESS: When she gets her doctorate,
5 she's going to want to be called "doctor."

6 Q. Dr. Glazner, your testimony is, all else being
7 equal in terms of number of hours worked per week,
8 the 24-hour shift schedule is safer than the
9 10/14-shift schedule?

10 A. Yes.

11 Q. In your interviews with the North Kingstown Fire
12 Department, did you inquire about the average
13 number of hours that firefighters are currently
14 working?

15 A. I read about it in some testimony but I have
16 not talked to anybody about it.

17 Q. Dr. Glazner, your testimony is that you've never
18 studied a 56-hour work week schedule yourself?

19 A. No, I have not.

20 Q. So you've never conducted studies on the health
21 aspects of a 56-hour work schedule for
22 firefighters?

23 A. I have not.

24 Q. Is it your testimony that you've never studied the

- 1 health aspects of a three-platoon firefighter
 2 schedule either?
 3 A. No. Well, all places that I studied were four
 4 platoons.
 5 Q. And what is the community in California that you
 6 referred to?
 7 A. The City of Orange in Orange County.
 8 Q. The City of Orange within Orange County?
 9 A. Correct.
 10 Q. Are you aware that all, if not most of -- most if
 11 not all of the departments within Orange County
 12 work a three-platoon schedule?
 13 A. I'm not aware. You also have to appreciate
 14 that I did this study in the eighties, so things
 15 could have changed and I do not know if they
 16 have.
 17 Q. Are you aware that most, if not all, of the
 18 communities that work a three-platoon schedule in
 19 Orange County have done so for decades and decades?
 20 A. I do not know.
 21 Q. -- and most operate within a 56-hour week within
 22 that three-platoon schedule?
 23 A. I do not know that.
 24 Q. Now, turning back to your resume, you're an RN?

- 1 triage nurse?
 2 A. Yes. Well, actually, I'm still working as a
 3 nurse in my consulting business.
 4 Q. Okay. And you'd agree, I'm sure, that nursing is a
 5 demanding profession both physically and mentally?
 6 A. Correct.
 7 Q. While working as a nurse, especially as a triage
 8 nurse, it's safe to say you spend a lot of time on
 9 your feet?
 10 A. I have to spend a lot of my time --
 11 Q. On your feet actively.
 12 A. Actually, I did not. I spent a lot of time
 13 sitting.
 14 Q. Doing work, paperwork and things like that?
 15 A. Yes.
 16 Q. And you have to be engaged mentally throughout the
 17 shift due to the important nature of the work that
 18 you're doing and the detailed nature of the work
 19 itself?
 20 A. Correct.
 21 Q. And nursing in general is an occupation that
 22 generally calls for 24-hour care, like
 23 firefighters; so nurses, like firefighters, are
 24 also shift workers by nature?

- 1 A. Correct.
 2 Q. And you have your Master's in nursing?
 3 A. No, I have a Master's in public health.
 4 Q. But you're an FMP?
 5 A. I am an FMP.
 6 Q. Okay. And you became licensed in 1994, '95. I'm
 7 assuming you still hold that license?
 8 A. Yes, I do.
 9 Q. And your doctorate is in public health?
 10 A. Correct.
 11 Q. You're not a medical doctor, are you?
 12 A. I'm not a medical doctor.
 13 Q. And you're not a licensed physician?
 14 A. I'm not a licensed physician.
 15 Q. And you don't have a degree in physiology?
 16 A. I do not have a degree in physiology.
 17 Q. So your testimony today is based on your field of
 18 study which includes occupational nursing and
 19 public health?
 20 A. And epidemiology and occupational and
 21 environmental health, yes.
 22 Q. In looking at your resume, it looks like you have
 23 nursing experience dating back to the 1960s up
 24 through around 1999 when you were working as a

- 1 A. Absolutely.
 2 Q. Going through nursing school, then, it's no
 3 surprise that most aspiring RNs will be working
 4 outside the traditional nine-to-five schedule that
 5 you described?
 6 A. Yes.
 7 Q. It's part of the job?
 8 A. Yes.
 9 Q. And for the most part --
 10 A. Well, actually, not the most, because nursing
 11 not only takes place in the hospital but also takes
 12 place in the community; and people who are working
 13 in the community are not likely to be working
 14 24-hour shifts. Hospital nurses and not -- so not
 15 all of nursing is in hospitals.
 16 Q. Correct. But even in those nurses who are working
 17 outside of that nine-to-five schedule that you
 18 referred to --
 19 A. Yes, yes.
 20 Q. -- they would be considered shift workers in your
 21 terminology?
 22 A. Exactly.
 23 Q. And that's nothing new, right?
 24 A. No.

1 Q. Historically, nurses have been shift workers?
 2 A. Yes. In fact, one point of interest is when
 3 the World Health Organization banned night work for
 4 women and children, the exception was nursing.
 5 Q. Okay. So --
 6 A. So, yes, it's been going on for a long time.
 7 Q. And it's worldwide?
 8 A. Exactly.
 9 Q. And it's no secret that nursing is an occupation
 10 that's historically been dominated by women?
 11 A. Correct.
 12 Q. And that remains true today as well?
 13 A. Correct.
 14 Q. Now, through your resume and your testimony, you've
 15 discussed and/or studied circadian rhythms and
 16 particularly the effect that they have on shift --
 17 or the effect that shift schedules would have on
 18 circadian rhythms?
 19 A. Yes.
 20 Q. So you're well aware of the extensive body of work
 21 from Dr. Moore-Ede in this area of medical science?
 22 A. He can do -- you know, although his company is
 23 called Circadian, he do not publish a lot on
 24 circadian rhythms.

1 Q. But you yourself have studied him -- have cited
 2 him in almost every one of your written --
 3 A. Absolutely.
 4 Q. -- published articles?
 5 A. Absolutely. I talked about the maladaptation
 6 syndrome, that's what I was looking at.
 7 Q. Okay. And you relied on it and you cited it in
 8 your dissertation?
 9 A. Yes.
 10 Q. -- and in almost every published work that you've
 11 put out since then?
 12 A. Yes.
 13 Q. You'd agree that he's, I think you called it,
 14 clever; he's a pioneer in many areas of circadian
 15 rhythms?
 16 A. Absolutely.
 17 Q. Now, I didn't realize, and it's not specifically
 18 listed in your resume, but you have testified to
 19 it, about the research and work that you've done in
 20 Toronto Canada?
 21 A. Correct.
 22 Q. And that was from approximately 2003 to 2006?
 23 A. Correct.
 24 Q. Isn't it true that the Toronto Firefighters Union

1 initially retained your services to obtain your
 2 professional opinion comparing the schedule that
 3 the fire and rescue workers were working, which was
 4 a 10/14-shift schedule, with the schedule that the
 5 Union was proposing to the city, which was a
 6 24-hour schedule?
 7 A. It did not include rescue. It only included
 8 fire.
 9 Q. And they approached the question --
 10 A. They --
 11 Q. They approached you for your professional opinion?
 12 A. They had five choices of a shift schedule on
 13 the 24 and asked me my opinion on that compared to
 14 the current schedule that they worked.
 15 MR. CAVASSA: Okay.
 16 MR. KINDER: I'm sorry. They had five
 17 24-hour shift schedule alternatives?
 18 THE WITNESS: Uh-huh.
 19 STENOGRAPHER: I'm sorry?
 20 THE WITNESS: Yes, they did. Sorry.
 21 MR. KINDER: And were they all 24-hour
 22 shift schedules?
 23 THE WITNESS: Yes, they were. It was
 24 based on a 28-day.

1 MR. KINDER: Thank you.
 2 MR. CAVASSA: For the record, I'm handing
 3 out a two-page document -- excuse me, a three-page
 4 document. It's a letter to Mr. Marks from
 5 Dr. Glazner. We ask that this be marked and
 6 introduced as a full exhibit.
 7 (DOCUMENT SUBMITTED TO PANEL)
 8 (DOCUMENT SHOWN TO WITNESS)
 9 MR. CAVASSA: I don't know what number
 10 we're up to.
 11 MR. ANDRIOLE: 53, maybe.
 12 MR. HARRINGTON: Last one I have for the
 13 town is No. 52.
 14 MR. CAVASSA: And I have 53 as well. 52
 15 is an e-mail --
 16 MR. ANDRIOLE: Yes, I have a 52. You're
 17 right, I'm sorry.
 18 MR. REED: No objection. What number is
 19 this, please?
 20 MR. KINDER: 53.
 21 MR. HARRINGTON: This is Town 53. It is a
 22 letter from Dr. Glazner to Scott Marks.
 23 (TOWN EXHIBIT NO. 53 MARKED)
 24 MR. HARRINGTON: You can proceed, Tim.

- 1 Q. Dr. Glazner, you have Town 53 in front of you?
 2 A. I'm sharing it, yes.
 3 Q. Okay. And this is a letter dated September 29,
 4 2003 from you to Mr. Marks, is that correct?
 5 A. That is correct.
 6 Q. Mr. Marks is the President of the IAFF local in
 7 Toronto, Canada?
 8 A. Correct, at that time.
 9 Q. At that time. In looking at the first paragraph,
 10 you state the following: "I've been approached by
 11 a member of your association and have been asked to
 12 give my professional opinion regarding the shift
 13 schedule presently in effect in the Toronto Fire
 14 Services and the 24-hour shift schedule that's
 15 being proposed by the city administration."
 16 Did you write that?
 17 A. I did.
 18 Q. In looking at the last paragraph on the first page,
 19 you discuss sleep debt of firefighters working a
 20 10/14 shift schedule, is that correct?
 21 (WITNESS PERUSING DOCUMENT)
 22 A. Yes, I do.
 23 Q. And sleep debt or cumulative sleep debt, as you
 24 have referred to it in other papers, you would

- 1 agree has the tendency to increase with each
 2 consecutive night shift work?
 3 A. Correct, if you're not getting sleep, yes.
 4 Q. And you've mentioned the work that you've done with
 5 the New Jersey Fire Department, specifically
 6 stating: "My experience with New Jersey
 7 Firefighters on a 10-hour day and 14-hour night
 8 schedule has shown that the vast majority would not
 9 be able to catch up with sleep during the day,
 10 particularly after a busy night of calls."
 11 A. Correct.
 12 Q. "This is mainly due to the fact that firefighters
 13 found difficulty sleeping during the daylight hours
 14 due to the disruption of circadian rhythms."
 15 A. Correct.
 16 Q. And you continued: "The result was that
 17 firefighters would arrive for the beginning of
 18 their night shift tired and sleep deprived."
 19 A. Correct.
 20 Q. "In my study of the incidents of injuries as a
 21 function of shift work, it was found that the
 22 highest proportion of on-duty injuries occurred at
 23 the beginning of the night shift between 1800 and
 24 2200 hours. In my studies, it has been possible to

- 1 corollate the high incidents of serious injuries at
 2 the fire scene, which is three to four times the
 3 national average, to the 10-hour day and 14-hour
 4 shift patterns. In the Northeast, US firefighters
 5 on a 10-hour day, 14-hour night schedule, typically
 6 do not work more than two consecutive nights."
 7 Is that your -- you wrote that?
 8 A. I wrote that.
 9 Q. You also cite Dr. Tepas from the University of
 10 Connecticut who you say has observed that: "After
 11 a quiet night shift, firefighters required a
 12 minimum of two to three hours of sleep during the
 13 day in order to minimize sleep debt accumulation."
 14 A. Correct.
 15 Q. You found that firefighters on a 10/14 schedule
 16 were considerably sleep deprived?
 17 A. Correct.
 18 Q. And in the middle section in the second paragraph
 19 of the second page, you state at the end:
 20 "Historically firefighters on a 10/14-hour shift
 21 pattern have reported more difficulty in balancing
 22 social, family, and work commitments than those on
 23 a 24-hour shift, thereby creating more stress."
 24 A. Correct.

- 1 Q. You wrote that?
 2 A. Yes.
 3 Q. Then in the next two paragraphs it looks like you
 4 rendered the following professional opinion, and
 5 correct me if I'm misquoting you or the letter:
 6 "In the US, the vast majority of firefighters
 7 work a form of the 24-hour shift. It is gradually
 8 replacing the 10-hour day and 14-hour night
 9 schedule in the Northeast United States because its
 10 advantages have been recognized as more beneficial
 11 to the firefighters' health.
 12 "While a professor of occupational health and
 13 safety nursing at UCLA, I conducted studies on
 14 firefighters on 24-hour schedules. Results of the
 15 research showed a lower incidence of fatigue and
 16 sleep deprivation than their New Jersey
 17 counterparts on the 10/14-hour schedules. They
 18 exhibited a higher level of morale, felt better
 19 overall, were more rested when reporting for duty
 20 and reported a better work-like balance.
 21 "Dr. Motohashi conducted studies on
 22 firefighters, paramedics in the Tokyo Fire
 23 Department by measuring biochemical responses
 24 throughout the duration of their shift. He was

1 able to conclude that the individuals on the
2 24-hour shift had a lower incidence of circadian
3 rhythm disruptions than those on an 8-hour rotating
4 shift schedule.

5 "In my opinion, the primary advantage of the
6 proposed 24-hour schedule for the City of Toronto
7 Firefighters is the minimizing of negative effects
8 of shift work on the 24-hour circadian rhythm of
9 the body. It would greatly reduce the level of
10 cumulative fatigue and disruptions of the sleep
11 wave cycle. As firefighters would not work
12 consecutive nights, they would have a better
13 opportunity to recover and rest at home in their
14 own bed before the start of the next workday. This
15 would help in reducing the incidents of sleep debt
16 accumulation, carry-over fatigue, and stress."

17 That was your professional opinion?

18 A. That was my professional opinion.

19 Q. And at the time you wrote this letter, your
20 professional opinion was based simply on your
21 reviewing the shift schedules which you stated at
22 the beginning of the letter?

23 A. And what was written in the literature.

24 Q. Okay. Now, sometime after you sent this letter to

1 MR. HARRINGTON: Okay. Why don't you take
2 a few minutes.

3 THE WITNESS: Okay.

4 MR. REED: Let's look it over.

5 MR. CAVASSA: If she could do so outside
6 the presence and without consulting with her
7 attorney. We're in cross-examination.

8 MR. HARRINGTON: Right. Cross-examination
9 is going on, so you can't be consulting.

10 THE WITNESS: Sorry.

11 MR. HARRINGTON: You can have a -- were
12 you at -- let's go off the record.

13 (OFF THE RECORD)

14 MR. HARRINGTON: Just for the record, the
15 Town Exhibit 54 contains a report from Dr. Glazner
16 that starts on Page 44.

17 Tim, you can continue to proceed with your
18 cross-examination.

19 Q. Dr. Glazner, you've had a chance to review
20 Section 8.11 of the report --

21 A. I did.

22 Q. -- which is Town 54? And you have that in front of
23 you?

24 A. I do.

1 Mr. Marks, you were retained to conduct the study
2 and prepare a report regarding a comparative
3 between the 10/14 shift and the 24-hour shift for
4 the city, is that right?

5 A. Correct.

6 Q. And your actual study and report was made part of a
7 larger study and report put together by a
8 committee?

9 A. Yes.

10 MR. CAVASSA: I'm distributing a document
11 labeled City of Toronto Fire Services, 24-Hour
12 Shift Committee Report Recommendation for the
13 Citywide Trial Period. That's dated October, 2005.

14 Town asks that this be introduced and marked
15 as a full exhibit.

16 (DOCUMENT SUBMITTED TO PANEL)

17 (DOCUMENT SHOWN TO WITNESS)

18 MR. REED: No objection.

19 MR. HARRINGTON: No objection. This is
20 Town 54.

21 (TOWN EXHIBIT NO. 54 MARKED)

22 MR. HARRINGTON: You can proceed, Tim --
23 do you need time to review this?

24 THE WITNESS: Yes, a little bit.

1 Q. You drafted this report?

2 A. I did.

3 Q. And this is the report that you were referring to
4 in my prior questioning; this is a report that was
5 appended to a larger report in the city?

6 A. But I was not aware that it was.

7 Q. All right. Okay. But you provided -- you drafted
8 this report and you provided it to the committee or
9 to the city?

10 A. I did.

11 Q. Before we get into the results and the report and
12 study itself, correct me if I'm wrong, and you can
13 probably explain it better yourself, but you
14 conducted a field study of two districts within the
15 City of Toronto, one that continuously worked a
16 10/14-shift schedule and then one that gradually
17 changed over to a 24-hour shift schedule?

18 A. Correct.

19 Q. And you looked at it and you conducted your study
20 and your survey at three separate times: Once, I
21 believe, when they were both working the 10-14,
22 once a few months later, and then five months
23 later, I believe.

24 A. Actually, it was three months later.

1 Q. -- three months later, when one was still working
2 the 10/14 and the other was working the 24 and had
3 been for a few months?

4 A. Correct.

5 Q. -- for three months. And then at a later time when
6 the first group was still on the 10/14 and the
7 second group had been working that 24-hour shift
8 for an even great period; what time period was
9 that?

10 A. That was about six months, six to eight months.

11 MR. CAVASSA: Okay.

12 MR. KINDER: And I think the records needs
13 to reflect that the witness was nodding her head in
14 affirmative response.

15 THE WITNESS: Sorry, you can't hear the
16 marbles saying yes.

17 A. Yes.

18 Q. Looking at Page 44, or the first page of your
19 report -- I apologize, the numbers appear to be cut
20 off down at the bottom, but you can still make them
21 out, I hope. You state: "The objective question
22 of the report is as follows: Is a 24-hour shift
23 harmful in terms of health and circadian rhythm
24 alteration to Toronto firefighters?"

1 you relied on in your dissertation?

2 A. Correct.

3 Q. If you look at Page 49, you discuss different
4 demographic characteristics of the firefighters
5 that were subject to this study, but it doesn't
6 look like you included gender among those
7 characteristics, is that correct?

8 A. I did -- I did not include gender because one
9 of my promises was that I would summarize the data
10 and not put in any data that would specifically
11 point at any particular individual. And since
12 there were only two females, they were excluded
13 from this, they were excluded when they would be
14 pointed out as females.

15 Does that make sense?

16 Q. I think so. So for the purposes of this study, you
17 didn't feel it was necessary or relevant to analyze
18 firefighters' gender when comparing the health and
19 well-being of those working the two shifts?

20 A. There was -- to be scientific, you need to have
21 a critical mass, you need to have a certain amount
22 of people, and this did not happen. But certainly
23 those two females would be very important because
24 they were females. However, they might answer in

1 Is that correct?

2 A. Correct.

3 Q. Now, turning to Page 45, the next page, if you look
4 at the second paragraph, you wrote: "Alterations
5 in circadian rhythm suggests that the individual is
6 having difficulty adjusting, causing their
7 biological rhythms to be desynchronized.
8 Desynchronization is associated with negative
9 health effects. Comparisons of individuals with or
10 without circadian rhythm alterations could support
11 reported negative health findings."

12 A. Correct.

13 Q. And you go on on Page 45 to discuss circadian
14 rhythms and shift work which you've described as,
15 as you described today, as work performed outside
16 the nine-to-five traditional work schedule?

17 A. Correct.

18 Q. You then discuss specifically Dr. Moore-Ede's work
19 in depth, including his concept of maladaptation
20 syndrome and the symptoms associated with people
21 who have difficulty working the shift?

22 A. I do.

23 Q. Okay. And you're still citing that in, what is
24 this, 2005 and this is the same line of work that

1 such a way that if you looked at it and I looked at
2 it, we could say, "Mary Smith said that."

3 MR. CAVASSA: Okay.

4 A. And that's not -- this is confidential,
5 anonymous kind of information, and I didn't want
6 anybody to say, "That's Mary Smith."

7 Q. Okay. But they were, they were part of this
8 report?

9 A. They were part of the study. They just
10 didn't -- when in the report it would identify
11 them, I didn't include it.

12 Q. Now, turning to the results of the report, I'm
13 going to turn to Page 50, the next page. On the
14 bottom of the page, Page 50, you state that:
15 "There was a marked increase in satisfaction in
16 nutrition issues with the 24-hour shift."

17 Is that correct?

18 A. That is correct.

19 Q. And in terms of sleeping, if you can turn the page
20 to Page 51, can you explain what you found in
21 Table 5 which is on Page 51.

22 A. Basically, people who work the shift have
23 problems with sleep, and people -- two things, one
24 is that they always have a sleep -- they always

1 feel like they're sleepy even though they may get
2 enough sleep. So if I ask you, "How much time do
3 you need to sleep? and you say, "Eight hours," and
4 the firefighter said, "I got eight hours but I
5 still feel tired." So that was one concept.

6 Here in Table 5, I'm looking at how -- what
7 percentage -- did you nap? Did you sleep through
8 the night? Did you sleep in one period? Did you
9 take a nap? That's what this is all about.

10 Q. And what did your results show?

11 A. I have to tell you, for much of this it was not
12 terribly conclusive. It didn't have,
13 statistically, differences between the two groups.
14 And -- but I was comparing the two groups over two
15 periods of time. So '04 was everybody was working
16 10/14 and '05 is when District 42, which was a
17 study group, was working 24. And so if you look at
18 the numbers, they are very, very close, which then
19 says this is not specifically significant.

20 Q. And what you specifically wrote was: "Table 5
21 shows that there is more consistency with sleep
22 patterns on the 24-hour shift."

23 Is that correct?

24 A. Correct.

1 begins on Page 52, you looked at various social
2 relationship factors and you compared them between
3 each shift. Can you explain what the results
4 showed.

5 If I'm looking at Table 7 correctly, it shows
6 that there was a dramatic improvement in 42
7 District in '05 related to how the people -- how
8 people they live with like the shift and 42
9 District was the 24-hour district?

10 A. Correct.

11 Q. And then Table 8 you said, again: "There was a
12 marked improvement in that 24-hour district on how
13 often significant others complain about the shift"?

14 A. Correct.

15 Q. And Table 9 shows that significant others clearly
16 liked the 24-hour shift?

17 A. Correct.

18 Q. So this subjective evidence supported the 24-hour
19 shift in these areas?

20 A. I do have to tell you that the study in every
21 place that I did is reported on self-report. For
22 some self-reporting, we know what people don't
23 like, they'll say the same thing today that they'll
24 say tomorrow, that they'll say the next day. Some

1 Q. That was your opinion?

2 A. That was my opinion.

3 Q. And you said: "Firefighters either sleep once in
4 the 24 hours or take a nap plus longer sleep?

5 A. Correct.

6 Q. And then you relied on anecdotal evidence and you
7 said: "Several firefighters said they sleep much
8 better when on the 24-hour shift. They always know
9 that "Tomorrow night I will be in my own bed."

10 You relied on those anecdotal pieces in your
11 opinion?

12 A. Absolutely.

13 Q. And then further down you relied on more anecdotal
14 evidence. You said: "Firefighters reported
15 anecdotally that when they reported the 10/14
16 shift, they often fell asleep on their way home
17 after the night shift. They have not fallen asleep
18 after a 24-hour shift."

19 A. Yes, correct.

20 Q. And that was part of the basis of your opinion as
21 well?

22 A. And I didn't ask questions about that, so
23 that's why it's anecdotal.

24 Q. Okay. If you look at Table 7, 8, and 9, which

1 of it is subjected to variation. And so --
2 although I use this all the time, and so I feel
3 very comfortable with it, there is a possibility
4 that if I went back three days later and asked
5 these same questions, I might not get exactly the
6 same results; and that's called reliability that
7 you'll get the same answer each time you ask the
8 question. Just a point of interest.

9 Q. But you went back three months later and then three
10 months later again --

11 A. Exactly.

12 Q. -- and did you get the same answers?

13 A. And I did get the same answers.

14 Q. And we'll get into it but you also conducted an
15 objective test --

16 A. Yes.

17 Q. -- comparing these firefighters as well?

18 A. I did.

19 Q. Okay. Flipping ahead to Page 56 and you begin
20 discussing health again and cited again the work
21 done by Dr. Moore-Ede?

22 A. Correct.

23 Q. Now, again, you looked at both subjective and
24 objective factors for health and safety?

- 1 A. I did.
 2 Q. And I believe 16 and 17 would be considered in the
 3 subjective category?
 4 A. Correct.
 5 Q. And they show, Table 16 and 17 showed, that both
 6 groups showed slight improvement in health but the
 7 group working the 24-hour shift showed a greater
 8 decrease in the report of symptoms?
 9 A. Correct.
 10 Q. And Table 18 on the next page showed that both
 11 groups subjectively felt less tired?
 12 A. Yes.
 13 Q. -- but the improvement for the group working the
 14 24-hour shift was greater?
 15 A. Correct.
 16 Q. And if you look at Table 19 on the next page --
 17 MR. KINDER: Sorry, what page?
 18 MR. CAVASSA: Page 19.
 19 THE WITNESS: It's Page 50.
 20 MR. CAVASSA: Sorry. I apologize. It's
 21 Table 19.
 22 MR. KINDER: I've got it.
 23 Q. You reported, again anecdotally, that firefighters
 24 reported that: "I felt much less tired while on

- 1 Q. Yes. Now, how about Table 21, which is on the
 2 following page. You discussed this in your direct
 3 testimony as well. You also looked at alcohol
 4 consumption?
 5 A. I did.
 6 Q. And is it true that that markedly improved with the
 7 firefighters working the 24-hour shift?
 8 A. Yes, it did.
 9 Q. Why, in your opinion, as you set forth in your
 10 report, did that occur?
 11 A. They, they reported to me that after the four
 12 nights they would go out to the bar at the end of
 13 the night shift and drink; but they didn't have
 14 four nights on the 24-hour shift and so, in fact,
 15 they did not go to the bar at the end of the
 16 24-hour shift and, in fact, went off to play golf
 17 and had some breakfast and, you know, were doing --
 18 that's what they reported.
 19 Again, that wasn't asked in the question. The
 20 answer yes or no was asked, but, you know, "What
 21 did you do differently?" was anecdotal.
 22 Q. So, anecdotally, you put this in the report, so
 23 this is part of your opinion or the basis of your
 24 opinion?

- 1 the 24-hour shift"?
 2 A. Right.
 3 Q. Can you explain what you did in Table 20 and what
 4 the results show.
 5 (WITNESS PERUSING DOCUMENT)
 6 A. I used the sleepiness scale, called the
 7 Stanford Sleepiness Scale, which has been shown to
 8 be valid and reliable, and so I asked people --
 9 these are the seven questions that are on the
 10 Stanford Sleepiness Scale. And I asked people
 11 basically how they responded to each of these
 12 questions. And while you can see in the study that
 13 32 District increased from -- I'm going to read my
 14 words:
 15 "It shows that the firefighters in 42 District
 16 improved dramatically on how they felt on the
 17 24-hour shift. There was an increase in feeling
 18 active, vital, and wide awake from 17 percent in
 19 2004 to 49 percent in 2005 while firefighters in
 20 District 32 only increased from 9 percent to 16
 21 percent."
 22 Q. Okay. And then the firefighters in 32 remained at
 23 the same level of sleepiness?
 24 A. Correct.

- 1 A. Correct.
 2 Q. Now, finally, you did a study measuring the
 3 temperature of firefighters. You took the
 4 temperature working both shifts to determine
 5 whether or not there had been a desynchronization
 6 or flattening of their circadian rhythms?
 7 A. Correct.
 8 Q. And, again, a finding of desynchronization has a
 9 negative long- and short-term effect on
 10 individuals, according to your report and according
 11 to work done by Dr. Moore-Ede?
 12 A. And others, yes.
 13 Q. And others. Now, all firefighters working the
 14 10/14 shift except for one showed no circadian
 15 rhythms or, in other words, desynchronization,
 16 according to your study, right?
 17 A. Correct.
 18 Q. But 60 percent of those who had switched to the
 19 24-hour shift showed the beginnings of a pattern of
 20 circadian rhythms after just a few months?
 21 A. Correct.
 22 Q. And based on these findings in particular -- bear
 23 with me, I lost my place here.
 24 (ATTORNEY CAVASSA PERUSING DOCUMENTS)

1 THE WITNESS: Tell me where you're going
2 so I can look there too.

3 MR. CAVASSA: I'll try to get everybody
4 there.

5 (ATTORNEY CAVASSA PERUSING DOCUMENTS)

6 Q. All right. If you turn to Page 62. What is the
7 last full paragraph?

8 A. The one that starts with "display"?

9 Q. Yes. If you look partway down, you based the
10 information that you just discussed, you formed a
11 conclusion: "While the number of temperatures used
12 to make these statements appear small, it is in
13 fact one of the largest studies done to date
14 discussing circadian rhythms. That is a strong
15 statement that the 24-hour shift is healthier for
16 at least some of the firefighters. This researcher
17 believes that over a period of time and with more
18 data analyzed, there will continue to be an
19 increase in synchronized circadian rhythms."

20 A. Correct.

21 MR. CAVASSA: That was your conclusion.
22 Now, I know you didn't prepare this report, but if
23 you turn to Page 30, it describes the shift
24 schedule that you were recommending.

1 Q. Okay. So your second choice in scheduling which
2 you're saying is safer, and for all of the same
3 reasons, is better than the 10/14?

4 A. Yes, it is. Can I just interject that the
5 reason that the 10/14 was so bad is because they
6 get four nights in a row. If the 10/14 were less,
7 like here, two days of 10, two days of 14, I would
8 not have been able to make that -- necessarily make
9 that same statement. But the four days in a row of
10 nights was dramatically bad.

11 Q. I agree with the difference in schedule. I just
12 want to focus on the actual -- the schedule that
13 you recommended.

14 A. Okay.

15 Q. And in looking at that schedule, it looks like, and
16 I'm reading the writing on top of the actual graph,
17 it says, 24/two off. That would mean two full days
18 off?

19 A. Correct.

20 Q. 24, that's 24 hours of working, correct?

21 A. Correct.

22 Q. -- and then seven off?

23 A. Correct.

24 Q. And then it looks like it's 24 on?

1 MR. HARRINGTON: 30 of the same exhibit?

2 MR. CAVASSA: Yes.

3 THE WITNESS: Can you tell me what it
4 starts with because it's really hard to read the
5 numbers. It's the memorandum of agreement?

6 MR. CAVASSA: Page 30, Attachment A.

7 MR. HARRINGTON: Looks like this
8 (indicating).

9 (WITNESS PERUSING DOCUMENTS)

10 THE WITNESS: Here we go.

11 MR. CAVASSA: Are you there?

12 THE WITNESS: Okay, we're there.

13 Q. You ultimately recommended the 24-hour schedule
14 over the 10/14 schedule for the firefighters, is
15 that correct?

16 A. Correct, I did.

17 Q. And the actual schedule, is this the schedule
18 that's set forth here on Page 30 of the report?

19 A. Yes, it is. But you have to remember that I
20 didn't -- this was not my first choice.

21 Q. This was your second choice?

22 A. My second choice.

23 Q. Both better than the 10/14?

24 A. Yes.

1 A. Correct.

2 Q. -- 24 off?

3 A. Correct.

4 Q. 24 on?

5 A. Correct.

6 Q. -- two off?

7 A. Correct.

8 Q. 24 on?

9 A. Yes.

10 Q. -- two off?

11 A. Yes.

12 Q. 24 on?

13 A. Yes.

14 Q. -- two off?

15 A. Yes.

16 Q. 24 on?

17 A. Yes.

18 Q. -- and then 5 off?

19 A. Correct.

20 Q. So in that middle period of every 28-day cycle,
21 firefighters will work one day on, one day off,
22 one day on, two days off, one day on, two days
23 off, one day on, two days off, and one day on,
24 is that correct?

- 1 A. No, that's not what you just read.
 2 Q. That's not?
 3 A. No. You said one day on -- just now you said
 4 one day on, one day off. It's one day on, two days
 5 off.
 6 Q. No. And I -- I'm directing you to about the one,
 7 two, three, four -- the fifth iteration there.
 8 What would be the one, two, three, four, eleven --
 9 starting on the 12th day of that 24-hour cycle.
 10 A. Okay, okay.
 11 Q. So after that seven-day period off, firefighters
 12 would actually work a full 24 hour on, 24 off, 24
 13 on, two off, 24 on, two off, 24 on, two off, and
 14 then 24 on again?
 15 A. Correct.
 16 Q. That's a total of five 24-hour shifts over a
 17 12-day period?
 18 A. Correct.
 19 Q. That's 120 hours in 12 days?
 20 A. And I told them that was a bad schedule.
 21 Q. But that was the schedule that you recommended?
 22 A. No, it's the one I compromised.
 23 Q. Is there anywhere in this report that you disclosed
 24 what you're telling us now?

- 1 A. No, it was other communication that I said that
 2 to them fairly loudly.
 3 Q. It didn't make it into your final report, though?
 4 A. It did not.
 5 Q. But you weren't trying to conceal anything --
 6 A. No.
 7 Q. -- in this final report, though?
 8 A. No.
 9 Q. So this is -- your final recommendation --
 10 A. Yes.
 11 Q. -- was everything in this final report?
 12 A. Yes.
 13 Q. And again --
 14 A. It was based on a fait accompli not -- in other
 15 words, I did not recommend this schedule but they
 16 wanted it, so we did it; and my study was based on
 17 this schedule.
 18 Q. All right. Now, after, after you have submitted
 19 this report, and you may not be aware of this
 20 because of your original testimony, are you aware
 21 that this city or another group prepared a rebuttal
 22 report to this Town 54 itself --
 23 A. No.
 24 Q. -- and to your specific findings?

- 1 A. No, I'm not aware of it.
 2 Q. And did you -- you provided -- again, you were
 3 retained by the Union in this case?
 4 A. Correct.
 5 Q. And you provided them advice and consultation
 6 throughout the process?
 7 A. Correct.
 8 (DOCUMENT SUBMITTED TO PANEL)
 9 (DOCUMENT SHOWN TO WITNESS)
 10 MR. CAVASSA: I'm handing out a 14-page
 11 document that's numbered -- at the top it says
 12 Response To City Ergonomics Department's Report On
 13 The 24-Hour Shift. I'd ask this be marked and
 14 introduced as a full exhibit.
 15 MR. HARRINGTON: Any objection?
 16 MR. REED: No, but we'll need some time to
 17 look this over before he asks questions, but no
 18 objection. Town 54?
 19 MR. HARRINGTON: Town 55.
 20 MR. REED: 55.
 21 (TOWN EXHIBIT NO. 55 MARKED)
 22 MR. HARRINGTON: Are you going to be
 23 asking questions about what's in this report?
 24 MR. CAVASSA: Just a few specific places.

- 1 MR. HARRINGTON: Because I believe when
 2 you handed it out you anticipated that she hadn't
 3 seen this.
 4 MR. CAVASSA: I did. But my questioning
 5 is -- she advised the Union throughout the process
 6 and this was the Union's rebuttal and they relied
 7 on various works that she had done and I just want
 8 to make sure that they were characterizing her
 9 correctly.
 10 MR. REED: The only thing that you're
 11 looking at is what she testified to and referenced
 12 in this?
 13 MR. CAVASSA: Just to make sure that the
 14 Union was accurately representing her studies and
 15 her work.
 16 THE WITNESS: This was written by the
 17 Union.
 18 MR. CAVASSA: It was, yes.
 19 THE WITNESS: I was not aware of this at
 20 all.
 21 MR. CAVASSA: Right.
 22 THE WITNESS: If you want --
 23 MR. HARRINGTON: Have you seen it before?
 24 THE WITNESS: No.

1 MR. HARRINGTON: Okay. In the interest of
2 time, since she hasn't seen it before, are there
3 particular --

4 MR. CAVASSA: Yes.

5 MR. HARRINGTON: -- specific sections that
6 you want to bring her attention to --

7 MR. CAVASSA: Yes.

8 MR. HARRINGTON: -- so she can answer your
9 questions?

10 MR. CAVASSA: Yes, Page 7, the last
11 paragraph.

12 (WITNESS PERUSING DOCUMENT)

13 MR. HARRINGTON: Have you had a chance to
14 review the last paragraph on Page 7?

15 THE WITNESS: I have.

16 MR. HARRINGTON: You have a question about
17 the last paragraph on Page 7?

18 MR. CAVASSA: I do.

19 Q. The Union, looking at that paragraph, which I'd
20 like to read into the record, it says:

21 "Dr. Glazner studied 500 firefighters on three
22 different fire departments on a 10/14 shift
23 schedule. She found that a majority of the
24 injuries on the fire ground occurred at the

1 times greater than the national average.

2 Q. Are you sure about that?

3 A. No, I'm not sure. Firefighters in New Jersey
4 had one out of two firefighters injured but I don't
5 remember what the national -- it doesn't seem right
6 to me but I don't remember.

7 Q. Okay. But other than that?

8 A. And I never used the words "supplemental income
9 job." That's not my words at all.

10 MR. CAVASSA: Okay.

11 A. So I think those were probably, in terms of
12 substance, I think there's a little bit of
13 paraphrasing but it's not inaccurate.

14 Q. It's not inaccurate, it's just sort of
15 paraphrasing?

16 A. Exactly.

17 Q. If you turn the page, it goes on to say: "Chief
18 Peacock of the New Zealand Fire Services contacted
19 Local 388 after reading the article in the
20 International Journal of Firefighters," and that
21 would be your article, "to confirm the pattern of
22 injuries as outlined by Dr. Glazner."

23 Were you aware of this?

24 A. No.

1 beginning of the 14-hour night shift. The level of
2 serious injuries on the fire ground while on the
3 10/14 were found to be 3.4 times greater than the
4 national average.

5 "She attributes the higher injury rates to
6 firefighters reporting tired for their 14-hour
7 night shift. She found that firefighters could not
8 sleep during the day because of their normal day
9 cycle circadian rhythms, regardless of the type of
10 commitment, family, supplemental income job,
11 department/committee meetings, et cetera.

12 "All three studied fire departments on the
13 10/14 eventually changed to a 24-hour shift
14 schedule. And depending on the city, if shorter
15 shifts would reduce the incidents of circadian
16 rhythms disruptions, then the findings of
17 Dr. Motohashi would not be valid."

18 Is that an accurate representation of the
19 report that they're describing?

20 A. No.

21 Q. It is not?

22 A. No. It was not 500 firefighters. It was 80.

23 MR. CAVASSA: Yes.

24 A. And it was not 3.4 times greater, it was 2

1 MR. CAVASSA: You were not. Okay.

2 A. And, actually, it's the International Journal
3 of Fire Engineers.

4 Q. Did I miss --

5 A. You misspoke.

6 MR. CAVASSA: I apologize. I'll get it
7 right for the record. I only have a couple more
8 questions on this document.

9 Q. On that same page, middle of the way down, it says:

10 "In their submission, Local 388 provided an
11 abstract by Dr. M. Harma," whom you mentioned in
12 your testimony already today and whom you cited in
13 your report in Section 8.11 of the Finnish
14 Institute of Occupational Health, "which looked at
15 the sleep recovery of firefighters on a 24-hour
16 shift." Looks like it's a misspelling. It says --
17 or miss -- it says: "Found that recovery time of
18 the firefighters in the study that the 24-hour
19 schedule was acceptable. One to two hours of sleep
20 after 20 hours of sleep deprivation has been found
21 to increase the alertness and psychic performance
22 almost to the normal level."

23 Is that, is that an accurate representation of
24 Dr. Harma's report which you relied on yourself?

1 A. This -- the report that I talked about is not
 2 this report. Dr. Harna has done -- frequently
 3 publishes, and I don't recall which one this one
 4 was, but that's not accurate to what I was talking
 5 about.
 6 Q. Okay. That's a different report?
 7 A. Correct.
 8 Q. And you also cited Dr. Harna in your recommendation
 9 in your 8.11, is that correct?
 10 A. Yes, but as a different -- as I said, he's
 11 prolific, he writes a lot.
 12 Q. Thank you. Now, if you would turn to Page 10. In
 13 the middle the Union cites to a report of Dr. Tepas
 14 and Dr. Paley, which found that firefighters on the
 15 10/14 were, quote, substantially sleep deprived.
 16 Firefighters on all shifts average about 6.5 hours
 17 of sleep every 24 hours, and firefighters on night
 18 shift averaged only 5 hours of sleep.
 19 Is that an accurate representation of that
 20 report which, again, you relied on in your 8.11 --
 21 A. I never cited Dr. Paley, just Dr. Tepas. It's
 22 a different report.
 23 Q. It's just a different report?
 24 A. Yeah.

1 MR. HARRINGTON: Who did you say prepared
 2 this report?
 3 MR. CAVASSA: Local 388 or -- it was the
 4 Union.
 5 MR. HARRINGTON: Okay. Because --
 6 THE WITNESS: It's not dated and it's not
 7 signed.
 8 MR. HARRINGTON: It's not dated and there
 9 is no attribution on the document itself.
 10 MR. CAVASSA: I thought she was involved
 11 in preparing it before I asked the question, so I'm
 12 not going to ask -- I was going to ask more but I
 13 am not going to ask more questions on that
 14 document.
 15 MR. HARRINGTON: Okay.
 16 MR. ANDRIOLE: May I ask a question? How
 17 do we know; you say this was from the Union, this
 18 Town 55, it was the Union that prepared this in
 19 Toronto?
 20 MR. HARRINGTON: That's his
 21 representation.
 22 MR. CAVASSA: Yes.
 23 MR. ANDRIOLE: But it doesn't say that
 24 anywhere in here, right. Where did you get it? In

1 other words, how did you --
 2 MR. CAVASSA: I got it from, I believe it
 3 was through a link through the Union's website.
 4 MR. ANDRIOLE: You got --
 5 MR. CAVASSA: I was intending -- I was
 6 intending to have the document identified. I
 7 thought it was a report that she prepared.
 8 MR. HARRINGTON: I'm sorry?
 9 MR. CAVASSA: I thought it was a report
 10 that she prepared, but, again, I'm not going to ask
 11 any more questions on the document itself.
 12 MR. ANDRIOLE: No, I understand that. I'm
 13 just concerned that you gave us a document that --
 14 well, not concerned, but you got it off the website
 15 on a link from, from what Union? The Toronto
 16 Firefighters Union?
 17 MR. CAVASSA: I believe so, yes.
 18 MR. ANDRIOLE: But you're not sure.
 19 MR. CAVASSA: Am I being cross-examined
 20 here?
 21 MR. ANDRIOLE: No, I just want to know.
 22 It really hasn't been identified. I just find it
 23 weird that --
 24 MR. CAVASSA: I just asked some questions

1 of the witness and I am not asking any more
 2 questions of the witness.
 3 MR. KINDER: It says itself that this was
 4 the stuff that was developed by the City of Toronto
 5 by Local 388. So it seems to be --
 6 MR. ANDRIOLE: And is that the website
 7 that you downloaded from, 388?
 8 MR. CAVASSA: I can get you the exact
 9 link. I don't have it off the top of my head.
 10 MR. HARRINGTON: Why don't you provide
 11 that.
 12 MR. ANDRIOLE: That would be good.
 13 (DOCUMENTS SUBMITTED TO PANEL)
 14 (DOCUMENTS SHOWN TO WITNESS)
 15 MR. HARRINGTON: We have a few documents
 16 here.
 17 MR. CAVASSA: The Town has handed out a
 18 document, it's an article labeled Factors Related
 19 to Injury of Shiftworking Firefighters in the
 20 Northeastern United States offered by Linda
 21 Glazner. We'd ask that this be marked and
 22 introduced as a full exhibit.
 23 MR. REED: No objection.
 24 MR. HARRINGTON: Okay. This is Town 56.

1 (TOWN EXHIBIT NO. 56 MARKED)
 2 MR. HARRINGTON: Doctor, are you familiar
 3 with this or do you need time to review it?
 4 THE WITNESS: I'm familiar with it but I
 5 haven't looked at it in a long time.
 6 MR. HARRINGTON: Why don't you go with
 7 your questions and see if she needs time to review
 8 specific parts.
 9 Q. Dr. Glazner, does this article appear on your CV?
 10 A. It should. That's what I'm looking for. I'm
 11 thinking, I don't know.
 12 (WITNESS PERUSING DOCUMENTS)
 13 A. No, it does not. No, it does not.
 14 Q. This article isn't on your CV?
 15 A. No.
 16 Q. Are there any others that you're aware of that is
 17 not on there?
 18 A. No, I'm not. I'm embarrassed.
 19 Q. Did you prepare -- did you draft this document,
 20 this article?
 21 A. Yes, I did.
 22 Q. And you're familiar with it even though you said
 23 you hadn't read it before --
 24 A. I've read it before. I just haven't read it

1 in North Kingstown?
 2 A. Correct.
 3 Q. You mentioned on the last sentence of that page
 4 that the three chosen departments, the three
 5 departments used for the study -- I'll strike that.
 6 I'll quote it.
 7 "So the 10/14 shift pattern of the three
 8 departments used for the study was also
 9 representative for firefighters in that state."
 10 Is that correct?
 11 A. Correct.
 12 Q. Now, correct me if I'm wrong, but the purpose of
 13 this study was to identify a temporal pattern of
 14 injuries for firefighters working a 10/14 shift
 15 schedule?
 16 A. Yes.
 17 Q. And looking at the bottom of Page 259, looks like
 18 the statistical program that you used, that would
 19 be ANOBA?
 20 A. Yes.
 21 Q. That ANOBA identified no significant
 22 relationship -- let me strike that. I'll begin at
 23 the beginning of that paragraph.
 24 "In this study, the injured firefighters were

1 recently.
 2 Q. Now, this study looks specifically at 10/14
 3 firefighting shift scheduling that is prevalent in
 4 the Northeastern United States, as the title would
 5 suggest?
 6 A. Yes.
 7 Q. According to your article on Page 256, you looked
 8 at 10/14 schedules averaging 42-hour weeks and an
 9 eight-day cycle where firefighters work 10-hour
 10 days and 14-hours nights and you pulled these from
 11 the Northeastern United States, is that correct?
 12 MR. HARRINGTON: What page are you on
 13 again?
 14 MR. CAVASSA: 256.
 15 MR. KINDER: Second page of the document.
 16 MR. HARRINGTON: Okay.
 17 (WITNESS PERUSING DOCUMENT)
 18 THE WITNESS: Question, I'm sorry?
 19 (QUESTION ON PAGE 2213 LINE 7
 20 READ BY STENOGRAPHER)
 21 A. Yes.
 22 Q. And according to Table 1 on Page 257, which is the
 23 next page, your sample included firefighters that
 24 worked the 10/10 14/14 schedule that's worked here

1 male line firefighters between 20 and 69 years of
 2 age. The majority of them were married, were
 3 middle class, and/or worked more than an average of
 4 42 hours per week. ANOBA identified no significant
 5 relationship between the injuries of the surveyed
 6 firefighters and their age, socio-economic status,
 7 marital status, job title, or working more than an
 8 average of 42 hours per week."
 9 That's what you wrote?
 10 A. That's what I wrote.
 11 Q. So you also looked at firefighters who, again, were
 12 all male?
 13 A. Correct. There were no females at that time.
 14 Q. Okay. And on that same page, the report shows that
 15 the Northeast 10/14 hour departments suffered 3.4
 16 times as many serious injuries than the national
 17 average?
 18 A. Where is this?
 19 (WITNESS PERUSING DOCUMENTS)
 20 A. There it is. Okay.
 21 (WITNESS PERUSING DOCUMENTS)
 22 A. I miss remembered.
 23 Q. So is that correct?
 24 A. Yes, it is.

24 (Pages 2212 to 2215)

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1 Q. And you're aware that the national average is made
2 up of, I think I am quoting you, various sources,
3 7 percent of the departments that work a 24-hour
4 shift?
5 A. Wasn't a 24-hour shift -- oh, currently, yes.
6 Q. Okay. Now, your conclusions showed, and I believe
7 it's contrary to what you and others did --
8 A. Can I just correct you for a minute. The
9 7 percent is currently. Back when this study was
10 done, the majority worked 10/14.
11 Q. Okay. Your conclusion showed, contrary to what you
12 and others had presumed, that the highest and,
13 again, the second highest percent of injuries had a
14 direct correlation with the beginning of the
15 14-hour night shift, is that correct?
16 A. Correct.
17 Q. And this finding contrasted with findings for other
18 shift working industries where injuries generally
19 occurred in the early morning hours or where they
20 presumed to have occurred after a long day's worth
21 of work?
22 A. Exactly.
23 Q. And you attribute this finding in this and other
24 reports, at least in part, due to the fact that

1 fatigued. Fatigue is also a mental kind of --
2 there's a mental component to it. Tired to me is
3 much more physical.
4 MR. KINDER: And would that distinction be
5 reflected in what you write when you write
6 opinions? If you say "fatigued," that's what you
7 mean, it's more profound than tired?
8 THE WITNESS: Yes, yeah.
9 MR. KINDER: Okay. Thank you.
10 MR. CAVASSA: Town would ask that this
11 document be marked and introduced as a full
12 exhibit.
13 MR. REED: Town No. 57?
14 MR. HARRINGTON: Town 57. Title is Shift
15 Work: Its Effect On Workers.
16 (TOWN EXHIBIT NO. 57 MARKED)
17 MR. HARRINGTON: You proceed.
18 Q. Dr. Glazner, do you have Town 57 in front of you?
19 A. I do.
20 Q. Do you recognize it?
21 A. I do.
22 Q. This is another article that you've written on
23 shift work, correct?
24 A. Correct.

1 most firefighters are waking up in the morning and
2 spending their days working other jobs, spending
3 time with children, attending to family matters,
4 doing household chores, various other things during
5 the day, so many are already fatigued by the time
6 they report to their night 14-hour shift?
7 A. I wouldn't use the word "fatigued," but I would
8 say tired.
9 (DOCUMENTS BEING PERUSED)
10 (DOCUMENT SUBMITTED TO PANEL)
11 (DOCUMENT SHOWN TO WITNESS)
12 MR. CAVASSA: Okay. I'm handing out
13 another document for the record that's labeled
14 Shift Work: Its Effect On Workers. Again --
15 MR. KINDER: Just before moving on, can
16 I ask what the difference is between being tired
17 and being fatigued?
18 THE WITNESS: I can't hear you.
19 MR. KINDER: What is the difference being
20 tired and fatigued? Why did you make that
21 distinction?
22 THE WITNESS: That's a good question. To
23 me, fatigued is more extreme. Tired, you could do
24 physical labor and be tired but may not be

1 Q. This document isn't specific to firefighters but to
2 shift work in general, correct?
3 A. Correct.
4 Q. On Page 416, the third column, the last full
5 paragraph, you state: "One common circumstance in
6 almost all shift work is that men constitute the
7 majority of shift workers in the public and private
8 sectors. One glaring exception is in the health
9 field where the majority of shift workers are
10 women."
11 This, you've already testified to, is a true
12 statement still today?
13 A. Sure.
14 Q. And you're aware that women make up only a small
15 proportion of shift working firefighters, is that
16 correct?
17 A. Correct.
18 Q. So the fact that women predominate in nursing and
19 these health-related fields which, as you're
20 testifying, have traditionally and historically
21 been shift work, there must be something or some
22 things aside from shift working itself that has
23 made it difficult to recruit and retain women into
24 the firefighting services?

- 1 A. I would assume so, but I do not know the answer
2 to that.
- 3 Q. So there's no -- are you aware of any studies in
4 this area?
- 5 A. I'm not aware of any studies, and it would just
6 seem to me that looking at it is because you need a
7 critical mass to be able to study, and there isn't
8 a critical mass of women firefighters. It's still
9 surprising to see female firefighters. But I have
10 not looked into this in any way, so I have no, I
11 have no opinion.
- 12 Q. Looking at Page 417. If you -- you talk about
13 circadian rhythms and shift workers, and
14 specifically in the first column last full
15 paragraph you state: "The circadian rhythm of
16 night workers is the reverse of day workers. They
17 have a 12-hour phased shift which seems to cause no
18 problem for the workers. The problem is going from
19 one phase to the other."
- 20 A. Correct.
- 21 Q. And that's still a true statement?
- 22 A. That's still a true statement.
- 23 Q. So, in other words, moving back and forth between
24 night and day shifts in a relatively shorter period

- 1 of time causes problems for shift workers?
- 2 A. Correct.
- 3 Q. The more consistent the schedule, in other words,
4 the less jumping back and forth from days to
5 nights, the more likely shift workers' circadian
6 rhythms will remain unaffected?
- 7 A. Correct.
- 8 Q. You then point out in the first full paragraph of
9 the third column on that same page: "No reports
10 identified the age, distribution, sex ratio, or
11 ethnic background of shift workers either at a
12 point in time or over time."
- 13 Is that still correct?
- 14 A. Yes. Remember, this was '91.
- 15 Q. So -- but that's still a correct statement?
- 16 A. I don't know. I really don't know. I mean,
17 with the concern about aging worker and those kinds
18 of things, there might be, but I haven't looked
19 into this, so I don't know.
- 20 Q. Specifically focusing on the sex or the gender
21 aspect of it, you're not aware in all of your
22 research and your expert work --
- 23 A. No.
- 24 Q. -- of any studies in this area?

- 1 A. No, I am not.
- 2 Q. On Page 14 again you cite to Dr. Moore-Ede numerous
3 times and you discuss the work that he pioneered in
4 the area of shift work and circadian rhythms?
- 5 A. Yes. What page are you on, though?
- 6 MR. CAVASSA: 418.
- 7 Q. Turning to Page 419, first column, going on to the
8 top of the second column, you discuss studies done
9 by, looks like, Monk, Folkard, and Tasto regarding
10 shift workers' ability to adapt to shift work in
11 terms of circadian rhythms, sleeping, and social
12 and domestic adaption. And you concluded with the
13 statement: "The researchers found that rotating
14 workers had lower or poorer adaption scores."
- 15 Is this still a fair assessment of the
16 researchers' findings that you relied on?
- 17 A. No -- I mean, at that time that was the case.
18 There's a lot of -- the definition of "adaption"
19 has broadened and has changed since '91, and so it
20 may not -- this may not be an accurate statement if
21 you said it in 2011.
- 22 Q. Are you aware of any studies that contradict this
23 statement, the research of any of these
24 individuals?

- 1 A. Not contradict but broaden so there are more
2 parameters being looked at rather than as limited
3 as it was in '91.
- 4 Q. So consistent with the findings but broader in
5 terms of --
- 6 A. Exactly.
- 7 Q. -- scope?
- 8 A. Exactly.
- 9 (DOCUMENT SUBMITTED TO PANEL)
- 10 (DOCUMENT SHOWN TO WITNESS)
- 11 MR. CAVASSA: I am handing out another
12 document for the record at the top labeled Shift
13 Work and Its Effects On Firefighters and Nurses
14 authored by Dr. Linda K. Glazner -- am I
15 pronouncing it right?
- 16 THE WITNESS: It's Glazner.
- 17 MR. CAVASSA: I apologize.
- 18 THE WITNESS: Half the time you are.
- 19 MR. CAVASSA: I ask that this be marked
20 and introduced as a full exhibit.
- 21 MR. REED: No objection.
- 22 MR. HARRINGTON: Town 58.
- 23 (TOWN EXHIBIT NO. 58 MARKED)
- 24 MR. HARRINGTON: You can proceed.

26 (Pages 2220 to 2223)

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- 1 Q. Dr. Glazner, do you recognize this document?
 2 A. I do.
 3 Q. And did you write this article?
 4 A. I did.
 5 Q. And it was published?
 6 A. Yes.
 7 Q. And this article deals with shift working but it
 8 specifically deals with firefighters and nurses, is
 9 that correct?
 10 A. Correct.
 11 Q. And if you look at the second page, second full
 12 paragraph under the subtitle Circadian Rhythms.
 13 You state: "The circadian rhythm of night workers
 14 is the reverse of day workers. There is a 12-hour
 15 phase shift which seems to be no problem with the
 16 workers. The problem seems to be going from one
 17 phase to the other."
 18 Again, that's --
 19 A. Yes, I've said that before.
 20 Q. So, again, in terms of circadian rhythms, the
 21 problem is not working the night shift, the problem
 22 is switching back and forth between night and day
 23 shift without giving the body sufficient time to
 24 adapt?

- 1 A. Correct.
 2 Q. Again, looking further down the second page and on
 3 to the next page, you cited the works of
 4 Dr. Moore-Ede as an authority?
 5 A. The part -- yes, but it's the paragraph above.
 6 Okay.
 7 (DOCUMENT BEING PERUSED)
 8 Q. And if you turn to the last paragraph of the actual
 9 article, you state: "As has been noted, both
 10 firefighters and nurses have negative medical,
 11 biological, and social effects from their work.
 12 More studies are needed in both groups. Nothing is
 13 known about female firefighters and very little
 14 about male nurses in hospitals."
 15 I assume that was a true statement then?
 16 A. Back then.
 17 Q. Is that a true statement now?
 18 A. I don't know.
 19 Q. You're not aware of any studies specifically
 20 directed at the distinction between male and female
 21 firefighters and shift working?
 22 A. No, I'm not aware.
 23 MR. CAVASSA: May we go off the record for
 24 a moment.

- 1 (OFF THE RECORD)
 2 (DOCUMENT SUBMITTED TO PANEL)
 3 (DOCUMENT SHOWN TO WITNESS)
 4 MR. CAVASSA: I am passing out a two-page
 5 article entitled Clocking Off. The Town asks that
 6 this be introduced and marked as a full exhibit.
 7 MR. REED: No objection.
 8 MR. HARRINGTON: Okay. Town 59.
 9 (TOWN EXHIBIT NO. 59 MARKED)
 10 Q. Doctor, do you have Town 59 in front of you?
 11 A. I do.
 12 Q. And this is an article labeled Clocking Off which
 13 you authored with two others?
 14 A. Correct.
 15 Q. And it was published in September of 2003 in the
 16 Institution of Fire Engineers Journal, is that
 17 correct?
 18 A. Correct.
 19 Q. Looking at your resume, this appears to be your
 20 most recently published article involving shift
 21 working and firefighters, is that correct?
 22 A. Correct.
 23 Q. Now, in the introduction you describe the article
 24 as a look at the benefits and drawbacks of

- 1 different shift work systems for firefighters in
 2 the USA and Canada, is that right?
 3 A. Correct.
 4 Q. In the second paragraph, you describe the types of
 5 shifts that firefighters generally work and that
 6 you're comparing in this article, correct?
 7 A. Correct.
 8 Q. -- between a 24-hour and a 10/14 shift?
 9 A. Correct.
 10 Q. In describing the two shifts, you state, and I'm
 11 going to read this because this document is very
 12 fuzzy and I want it clear for the record.
 13 "On the 24-hour shift, firefighters spent a
 14 full 24-hour period on duty with a break of one to
 15 three days off between shifts. The 10/14 schedule
 16 consists of a rotational type of shift, with
 17 firefighters working a series of day shifts
 18 followed by night shifts. The vast majority of
 19 firefighters work a form of the 24-hour shift
 20 (ranging from 42 to 56 hours per week). About 20
 21 percent work a combination of 10-hour days and
 22 14-hour night shifts (also ranging from 42 to 56
 23 hours per week). Of the 25 largest fire
 24 departments in the US, 19 of them work the 24-hour

1 shift."
 2 Is that an accurate statement? Did I read
 3 that correctly?
 4 A. Yes, that's correct, at that time.
 5 Q. Now, I'm going to read the last sentence of that
 6 paragraph, just because it's unclear:
 7 "The Northeast, US, and Canada are the last
 8 pockets of fire departments that work the 10/14
 9 pattern. However, there is some debate over which
 10 of these shift systems provides more advantages to
 11 the overall health and safety of firefighters."
 12 Is that accurate?
 13 A. That is correct.
 14 Q. In the next paragraph you again point out the
 15 negative impacts of rotating shifts, pointing out
 16 that: "Rotational shifts (schedules that include
 17 rotations from day shifts to night shifts) are more
 18 likely to have a negative impact on health and
 19 safety shifts (all nights or all days)."
 20 Is that accurate?
 21 A. No, actually, you didn't read it correctly.
 22 Q. Read it, please.
 23 A. "To have a negative impact on health than
 24 steady shifts."

1 Q. "Than steady shifts (all nights or all days)."
 2 A. You're getting tired.
 3 Q. Is that accurate with the correction?
 4 A. That is accurate.
 5 Q. The next section is labeled Injuries as a Function
 6 of Shift. And, again, because my copy is fuzzy,
 7 I'm going to actually try to read this verbatim.
 8 "A US study carried out by L.K. Glazner in
 9 1996 examined the relationship between shift work
 10 and firefighters' injury patterns in the Northeast
 11 US. Based on data from fire departments that
 12 worked the 10/14 pattern, the study found that
 13 injuries occurred more frequently at certain times
 14 of the day than others. The highest percentage of
 15 injuries and the second largest percentage of
 16 alarms occurred at the beginning of the night
 17 shift, that is between 6 P.M. and 8 P.M. Serious
 18 injury rate for the firefighters studied on the
 19 10/14 pattern was 3.4 times higher than the
 20 national average. They also experienced 24 percent
 21 more injuries at the fire scene than the national
 22 rate.
 23 "Further work by the same researcher looked at
 24 the injury rate of firefighters in Western USA who

1 worked a 24-hour shift. The study found that the
 2 injuries occurred mostly in the evening portion of
 3 the shift, and they were, in the vast majority of
 4 cases, due to injuries sustained during fitness
 5 training at the fire station, rather than at the
 6 fire scene. In conclusion, researcher has
 7 demonstrated that the higher injury rates are
 8 related to the 10/14 shift."
 9 Is that accurate?
 10 A. Yes, except for it says that I studied this in
 11 1996; I did not. It was in 19 -- it was in the
 12 1980s.
 13 Q. But there was a published -- you published this
 14 yourself?
 15 A. I know, and I'm looking at that, you know,
 16 that's incorrect.
 17 Q. Okay. The next -- so I just want to be clear, so
 18 your research showed that with firefighters in the
 19 Northeastern United States working the 10/14 shift,
 20 they suffered 3.4 times as many injuries than the
 21 national average?
 22 A. Yes.
 23 Q. -- and 24 percent more injuries at the fire scene
 24 than the national average?

1 A. Yes.
 2 Q. -- and the highest percentage of these injuries
 3 occurred at the beginning of the night shift?
 4 A. Correct.
 5 Q. But firefighters you studied in the Western states
 6 working a 24-hour shift suffered most of their
 7 injuries in the evening?
 8 A. Correct.
 9 Q. But, as you state, the vast majority of them, those
 10 injuries occurred during fitness training?
 11 A. Correct.
 12 Q. Now, there's been testimony -- strike that.
 13 (PAUSE)
 14 Q. Turning to the next section labeled Fatigue and
 15 Sleep Deprivation. Again, this is extremely blurry
 16 on my copy, so I'd like to read it. Disruption of
 17 the 24-hour circadian rhythm can also result in
 18 firefighter fatigue and an increased level of sleep
 19 deprivation.
 20 "One of the disadvantages of the 10/14 pattern
 21 shift is the cumulative fatigue created by the
 22 night shift. Although the 24-hour shift may be
 23 more tiring at the end of the shift, no two
 24 consecutive nights are worked, thereby allowing the

1 firefighters to catch up on their sleep the next
2 night."

3 (PAUSE)

4 THE WITNESS: And we all can't read that.

5 MR. CAVASSA: I had another copy that was
6 better.

7 MR. KINDER: I can barely read it.

8 Q. "Recuperative time is made possible by the 24-hour
9 shift. Research found that the firefighters in
10 California, which worked a 24-hour shift,
11 consistently reported much less fatigue and higher
12 job satisfaction than New Jersey firefighters that
13 work on a 10/14 pattern shift."

14 Is that accurate?

15 A. That is accurate.

16 Q. You then discuss, and you've discussed this before,
17 a sleep study conducted by the University of
18 Connecticut, or maybe you have not discussed this.
19 But in this article it discusses a sleep study
20 conducted at the University of Connecticut which
21 showed that firefighters on the 10/14 shift were
22 substantially sleep deprived?

23 A. Yes.

24 Q. Is that correct?

1 effectiveness, is that true?

2 A. Right.

3 Q. And moving on to the section entitled Commuting and
4 Off-Duty Activities, again, I want to just read a
5 few passages, because they don't appear clear in my
6 version.

7 You state 40 percent of firefighters have
8 second jobs. "There is evidence that firefighters
9 who are able to supplement their firefighters'
10 income are happier and more fulfilled."

11 A. That was in one fire department, yes.

12 Q. Which you cited as support in this paper?

13 A. Yes.

14 Q. And then you say: "The 24-hour shift has been
15 shown to be a better system, allowing firefighters
16 to balance life's demands better without
17 interfering with their regular firefighting
18 duties."

19 A. Where are you reading? The next paragraph?

20 (WITNESS PERUSING DOCUMENT)

21 A. Yes.

22 Q. And then moving on, you discuss within the Duty
23 Exchange Policies section about cumulative fatigue
24 and the difference between the 10/14 and the

1 A. Actually, I can't discuss that. That's
2 Dr. Tepas's work.

3 Q. All right. And you cite that as an authority in
4 your paper?

5 A. Yes.

6 Q. And the firefighters on the 10- and 14-hour shift
7 found difficulty in recuperating from the effects
8 of the night work?

9 A. Because the night -- who suffered were the ones
10 who worked either three nights in a row or four
11 nights in a row. The one who worked 10/14 -- ten
12 days and two days of nights did not seem to have
13 the same effect. It was only three days in a row
14 or four nights -- three nights in a row or four
15 nights in a row, which when you go back to that
16 scheduling, there would be B and C of one of the
17 articles.

18 Q. C was actually the schedule worked by these
19 firefighters?

20 A. No, these firefighters were a compilation of
21 those three fire companies.

22 Q. Okay. Now, you then discuss a Finnish study that
23 showed -- that concluded that the 24-hour shift did
24 not negatively impact firefighters' operational

1 24-hour shift. Specifically you state:

2 "In Boston and New York, firefighters work a
3 form of the 10/14 schedule but are allowed to
4 combine shifts into 24-hour periods. The practice
5 is so popular that city officials want the policy
6 changed. In a 10/14 pattern shift, it is possible
7 to work longer continuous shifts, thereby promoting
8 cumulative fatigue. In a 24-hour shift, there is
9 always at least a 24-hour period in between work
10 days."

11 Is that accurate?

12 A. That's accurate.

13 Q. Then you say: "Meanwhile, fire departments that
14 have switched to a 24-hour shift have reported a
15 decrease in sick leave due to the recuperative time
16 in between shifts."

17 Is that accurate?

18 A. That's accurate. It's probably not the only
19 reason.

20 Q. But it's the only reason cited in here?

21 A. Correct.

22 Q. Finally, looking at the section labeled Overtime,
23 in the first sentence you state:

24 "Under US labor laws, overtime for

1 firefighters and emergency workers does not take
 2 effect until after 53 hours of work per week, which
 3 gives cities the ability to schedule firefighters
 4 on longer weekly shifts without having to pay
 5 overtime."
 6 That's accurate?
 7 A. Correct.
 8 Q. And here you're referring to the Fair Labor
 9 Standards Act?
 10 A. Correct.
 11 Q. -- and specifically how cities can schedule 53
 12 hours a week or more, up to 56, depending on
 13 whether they want to pay overtime?
 14 A. Correct.
 15 Q. And those 56-hour work weeks would be a
 16 three-platoon shift schedule?
 17 A. That I am -- I'm not referring to any of that
 18 in here (indicating).
 19 Q. But you are here, at least in terms of the
 20 overtime, according to the FLSA?
 21 A. Well, just say that 53 hours -- above 53 hours,
 22 something has to happen, but I'm not saying what is
 23 going to happen. So I don't say 56 hours. I don't
 24 say three platoons. None of that is said here.

1 Q. Okay. Now, you go on to say:
 2 "Cost is a crucial issue for many fire
 3 departments, which rely on regular staffing levels
 4 to maintain services without adding new full-time
 5 fire departments."
 6 MR. KINDER: Firefighters.
 7 MR. CAVASSA: Sorry, I am reading a lot.
 8 A. You're getting tired.
 9 Q. Is that an accurate statement?
 10 A. Correct.
 11 Q. "Fire departments that have switched to a 24-hour
 12 shift have reported a decrease of overtime costs."
 13 Is that accurate?
 14 A. Yes.
 15 Q. "This is partly because of the lower sick leave
 16 usage, which reduces the need for call-backs and
 17 because there is a lower risk of crews having to
 18 respond to emergency calls at the time of shift
 19 change."
 20 A. Yes.
 21 Q. And then: "There is also evidence that the 24-hour
 22 shift improves morale among firefighters. Every
 23 chief, captain, and firefighter of Boston area fire
 24 departments noted a boost in morale as the greatest

1 benefit resulting from the change to a 24-hour
 2 shift from a 10-hour day and 14-hour night
 3 schedule. Better morale was also recognized by
 4 New Jersey Fire Departments which changed their
 5 hours to the 24-hour shift. Good morale is
 6 essential to the success of a fire department."
 7 A. Correct. I agree with that. However, reading
 8 between the lines, in order to obtain good morale
 9 means that they worked with the firefighters to
 10 make those changes.
 11 Q. Again, a fact that you're not aware of any of the
 12 circumstances that occurred here?
 13 A. No, no.
 14 Q. Okay. Now, reading the last paragraph, again mine
 15 is blurry. "Shift work in general has been proven
 16 to have negative effects on the physical,
 17 psychological, and emotional well-being of
 18 firefighters, causing stress and fatigue. One way
 19 to reduce occupational stress is to find a better
 20 work schedule.
 21 "Overwhelmingly, firefighters on 24-hours
 22 shifts report higher job satisfaction, better
 23 work/family balance, more opportunities to be
 24 involved in community or social activities, less

1 fatigued, less sleep debt, and less serious
 2 injuries at fire scenes than those on the 10/14
 3 pattern. Furthermore, the 24-hour shift has been
 4 shown to reduce administrative costs, overtime
 5 costs, absenteeism, compensation claims, and
 6 increases in productivity due to the higher morale
 7 and motivation of firefighters."
 8 Did I read that correctly?
 9 A. You did.
 10 MR. CAVASSA: No further questions subject
 11 to recross.
 12 MR. REED: I need a minute.
 13 MR. HARRINGTON: Okay.
 14 (BRIEF RECESS)
 15 MR. HARRINGTON: We are all set.
 16 REDIRECT EXAMINATION BY MR. REED
 17 Q. Okay. When you toured the stations in this
 18 community yesterday with Mr. Furtado, you said you
 19 interviewed about 15 people?
 20 A. Yes.
 21 Q. That was at least more than the Berkshire report?
 22 A. For sure.
 23 Q. Now, did any -- did you ask questions about the
 24 work schedule they presently perform?

1 A. I did.
 2 Q. What was the response?
 3 A. Everybody liked it.
 4 Q. How many Union officials were there?
 5 A. Mr. Furtado.
 6 Q. Okay. Did the --
 7 A. There might have been some others that were
 8 there, but I don't know.
 9 Q. Okay. Were any of these other gentlemen there
 10 (indicating)?
 11 A. No.
 12 Q. The firefighters you talked to, did they seem
 13 intimidated by Mr. Furtado?
 14 A. Not at all.
 15 Q. Did they express other opinions?
 16 A. Yes.
 17 Q. Now, in Toronto, I just want to get this straight,
 18 they, the Union, asked you to come in and give
 19 basically a proposal for a 24-hour shift?
 20 A. No.
 21 MR. REED: Okay.
 22 A. I got a call from Mark Mecozzi, the guy who
 23 co-authored with me, said, "We're exploring 24
 24 hours shifts. We went through the literature,

1 found you. We really need some professional
 2 opinion. Can you give me some?" So I spent some
 3 time talking. When I finished talking, about an
 4 hour, finished talking to him, he said, you know,
 5 "I really would like" -- "I'm on the" -- "I'm a
 6 member of the Health and Safety Committee. I
 7 really would like you to talk to the Chair of the
 8 Health and Safety Committee," and it was Chief Paul
 9 Hall.
 10 STENOGRAPHER: Who, please?
 11 A. Paul Halls.
 12 MR. REED: Would you slow down, Doctor,
 13 please.
 14 THE WITNESS: I'm doing it again.
 15 MR. REED: Yes, you are.
 16 A. Anyway, so I talk with -- Chief Halls called me
 17 and we spent some time and they had done an immense
 18 amount of work and they wanted my opinion on some
 19 of the things, specifically on the shift schedule
 20 and shift scheduling and 24 hours versus the 10/14.
 21 And so it was a back-and-forth kind of discussion.
 22 Q. And the end result, and I believe it's still in
 23 effect today, they are working 24 hours in Toronto?
 24 A. They are.

1 Q. Have they increased their work week from 42 to 56
 2 hours?
 3 A. They have not.
 4 Q. Okay. Do you think that had an affect to a
 5 positive morale, keeping the same 42-hour work week
 6 with the type of schedule they actually agreed to
 7 in your report?
 8 A. I think for sure. In other words, if they had
 9 gone to a longer work shift in the week, there
 10 would probably have been a lot more descension.
 11 Q. Okay. Now, you mentioned a Swedish person who did
 12 some work on shift scheduling, is that correct?
 13 A. I said Swedish. It turns out he's Finnish,
 14 but, yes.
 15 MR. REED: Close enough or me.
 16 Q. Do you know what work week the Finns work over
 17 there?
 18 A. No, I don't.
 19 Q. Okay. How about other countries? You said you
 20 mentioned something there was some article you
 21 referred to about the German, some German person;
 22 it was in German and you had to download it or
 23 something like that. What does a German
 24 firefighter work?

1 A. Most, most people who work in Europe work less
 2 than a 40-hour work week. I can't speak
 3 specifically to firefighters, but since most people
 4 are working less than 40 hours, 32 to 36, I would
 5 assume that firefighters are working less also.
 6 Q. Okay. As far as Toronto firefighters, they work,
 7 they work more than two nights in a row, am I
 8 correct?
 9 A. Not -- when they did the 10/14, they did. In
 10 their 24s, they did not.
 11 Q. So they work more than two nights in a row. In
 12 your opinion, did that have a problematic effect on
 13 the health and safety?
 14 A. Absolutely.
 15 Q. So it wasn't the two nights, it was the additional
 16 night?
 17 A. It was -- one week they worked three nights and
 18 one week they worked four nights. The third and
 19 the fourth were those.
 20 Q. So they didn't work two 10-hour days and two
 21 14-hour nights?
 22 A. No. And they worked comparable days. So, in
 23 other words, when they were working four nights,
 24 they were also working four days.

1 Q. I see. So really their shift was different than
 2 what's presently in North Kingstown?
 3 A. Absolutely.
 4 Q. Okay. Now, you said EMS, or rescue, they didn't go
 5 the 24-hour shift?
 6 A. No. They weren't involved in the study.
 7 Q. Okay. Now, I think there was a good deal of
 8 testimony of sleep debt or people, you know, who --
 9 did you have any indication -- did the Union raise
 10 this issue as a problem in North Kingstown, that
 11 there was sleep debt with the present schedule?
 12 A. No.
 13 Q. -- any nutritional problems?
 14 A. I did not hear of any negative health effects.
 15 The survey had been done but nobody -- nobody from
 16 the Union told me about negative health effects.
 17 Q. And the 15 you talked to yesterday didn't mention
 18 it?
 19 A. No.
 20 Q. Now, you looked at 54 in your report attached
 21 concerning what your findings were for the Toronto
 22 firefighters, am I correct?
 23 A. Correct.
 24 Q. How would you compare that with the Berkshire

1 report?
 2 A. Oh, I honestly say no comparison. This was a
 3 systematic, scientific, rigorous study. The
 4 Berkshire report was sort of a casual, almost kind
 5 of like what I did yesterday, a casual discussion
 6 with one person.
 7 Q. Okay. Do you believe there was any scientific
 8 foundation for the Berkshire report?
 9 A. Other than the fact that somebody made an
 10 effort to get some information, no.
 11 Q. I see. Now, you had, there was a lot of
 12 questioning from the Town's counsel about
 13 Moore-Ede, I believe the gentleman's name is, am I
 14 correct, about where you cited him in many, many of
 15 your exhibits.
 16 Did you cite -- is it the same -- let me try
 17 to get this question out.
 18 When you cited Moore-Ede, was it the same
 19 citing as the maladron (phonetic) shift syndrome?
 20 A. Maladaption syndrome.
 21 Q. Maladaption. Is that the -- that's what you
 22 basically cited --
 23 MR. CAVASSA: I'm going to just object to
 24 this. Every question has been extremely leading.

1 I object to the question as leading, and it's gone
 2 on throughout but I'm going to finally make an
 3 objection.
 4 MR. HARRINGTON: Sustained. In the
 5 interest of time, can you try rephrasing the
 6 question.
 7 Q. Yes. You used Moore-Ede's maladaptation syndrome?
 8 A. I did.
 9 Q. And in all of your articles we went to, is that the
 10 same article you used?
 11 A. Yes.
 12 MR. CAVASSA: Objection. Same ground.
 13 MR. HARRINGTON: To be honest with you, I
 14 didn't understand the question. I believe the
 15 question was: Is it the same article? And he's
 16 talking about -- the first question was about
 17 maladaptation syndrome, not an article.
 18 MR. REED: Okay.
 19 MR. HARRINGTON: So sustained. Try to
 20 rephrase the question.
 21 MR. REED: Okay.
 22 MR. HARRINGTON: His objection is to the
 23 form of the question that derives either a yes or a
 24 no answer.

1 Q. Okay. In your articles that were presented by the
 2 Town today, did you cite maladron (phonetic)
 3 syndrome?
 4 A. I cited -- I did -- in some articles I talked
 5 about maladaptation syndrome and in others I did not.
 6 Q. I see. Now, would I be correct, and if I'm wrong
 7 tell me, do you agree with --
 8 MR. CAVASSA: Objection. Already.
 9 MR. HARRINGTON: What?
 10 MR. CAVASSA: I'm going to object to the
 11 question already.
 12 MR. HARRINGTON: I haven't heard the
 13 question yet. And, quite honestly, in the interest
 14 of time, I'm going to give him some leeway so we
 15 can get through the question. This is not a court
 16 hearing. The rules, you know, the rules don't
 17 strictly apply.
 18 Q. Do you agree with Moore-Ede, or whatever his name
 19 is, on the circadian rhythm that for two 10-hour --
 20 for a 42-hour work week, or wrap shift from day and
 21 night, that causes problems?
 22 A. I didn't -- I don't know where that comes from.
 23 Q. Well, you said there's problems with the circadian
 24 rhythm working two days and two nights, am I

1 correct?

2 A. There can be, yes.

3 Q. Okay. Is that your basis of agreement with
4 Dr. Moore-Ede when you cite him?

5 A. I didn't -- I don't -- maladaptation syndrome
6 looks at the big picture of shift work, not a
7 specific schedule.

8 Q. Okay. So where is your agreement with
9 Dr. Moore-Ede?

10 A. In the concept of maladaptation syndrome, which I
11 used in the '80s and the '70s and would be less
12 likely to use now.

13 Q. Why?

14 A. Because it looked at -- it would be like trying
15 to describe a camel and you only talk about the
16 front of the camel and you ignore the back. And at
17 that time that was the whole picture of the camel,
18 but now we know that there's a back to this camel.
19 So it was accurate at the time but there's more
20 information now; and so I wouldn't use the term
21 maladaptation syndrome currently, but I would use it
22 for, you know -- I used it then and the reference
23 is from 1985.

24 Q. I see. So in any of your testimony on a 24-hour

1 A. Therefore, to eliminate, to determine factors
2 that contribute to this high industry rate, the
3 timing, relationship to frequency alarms, type and
4 place of occupancy, injuries, and it goes on to the
5 last -- to the end of the paragraph.

6 MR. HARRINGTON: Okay.

7 Q. Now, you mentioned, I believe, Boston firefighters
8 went to a 24-hour shift or you were asked that
9 question?

10 A. It was in this article, in the Clocking Off
11 article.

12 Q. I see. Now, do you know if they're working
13 56 hours?

14 A. I don't know.

15 MR. REED: Okay.

16 A. I have -- this article was a collaborative. So
17 my contribution, Marco's contribution, Andrew's
18 contribution were all -- each of us gave something.
19 And I did not verify what Marco said or what
20 Andrews said, so I took it at face value. It may
21 or may not be -- that was not one of my statements.

22 Q. And you said you've looked at three different fire
23 departments, am I correct?

24 A. Correct, in the Northeast.

1 shift, would you advocate working what the Town
2 proposed of 56 hours?

3 A. No, I would not.

4 Q. If you just bear with me for a second. If you
5 would look at, and if you bear with me for a
6 moment, it's Town 56. And I believe there's a lot
7 of testimony here on the injury rate for
8 firefighters in the Northeast?

9 A. Correct.

10 Q. Well, if you continue on 256, did you give reasons
11 why you believe the injury rates are higher for
12 firefighters in the Northeast?

13 A. Exactly, I did. I said firefighting in the
14 Northeastern United States often involves high-rise
15 apartment buildings with combustible wood and
16 plastic, at industrial locations and industrial
17 chemical fires; and, two, it is a standard
18 procedure for the firefighters to enter the
19 buildings during fire suppression.

20 MR. REED: I see.

21 MR. HARRINGTON: Can you tell us where
22 you're reading from?

23 THE WITNESS: I'm reading from Page 256,
24 second paragraph.

1 Q. -- who work a 42-hour work week?

2 A. Correct.

3 Q. Were they -- was the problem with that that they
4 worked more than two nights in a row?

5 A. Correct.

6 Q. So two nights in a row, based on your expert
7 opinion, do you feel that that's detrimental to
8 health and safety?

9 A. Yes, I do.

10 Q. You still believe that?

11 A. I still believe that.

12 Q. Okay. Then, let me ask this question. Why is
13 56 hours, in your opinion -- if you base your
14 opinion that this is detrimental to firefighter
15 health and safety, why?

16 A. Good question.

17 MR. REED: I got one.

18 A. Basically what happens is when -- the whole
19 idea of health and safety in the occupational arena
20 is based on recovery. So what you're exposed to at
21 work, you need time away from work to recover. And
22 so if you are having exposures and then leave for a
23 short period of time, having exposures, leave for a
24 short period of time, having exposures, leave for a

1 short period, having exposures, then leave for
2 short period of time, the recovery becomes less
3 able to be done.

4 It would be like stretching an elastic band
5 and then it goes back. And then if you stretch it
6 the next time, it goes back a little less; and by
7 the -- and the four nights, you can't get it back,
8 it's stretched out.

9 And so that's where the problem is. The
10 recovery time is -- the hazard itself is there, and
11 the recovery from that hazard needs some time.

12 Q. Okay. So you're not an advocate of the three
13 platoon or 56-hour work week?

14 A. Absolutely not.

15 Q. And it's based on health and safety?

16 A. Based on my concern for health and safety.

17 Q. I see. Now, one other question. Would you look at
18 Union 51, please. And I think there was some
19 question about staffing with core staffing.

20 Do you agree with -- one moment.

21 MR. HARRINGTON: Which number?

22 MR. REED: It's Union Exhibit 51, Page 11
23 workload staffing issues, Page 14.

24 (DOCUMENTS BEING PERUSED)

1 MR. HARRINGTON: Well, I'm going to allow
2 the question and allow her to answer it because the
3 first sentence talks about staffing level versus
4 shift schedule, so it implicates schedule. So from
5 her expertise on scheduling, I'm going to allow her
6 to answer the question.

7 A. Okay --

8 Q. So if you look back at it, would you agree with
9 this statement by the eminent doctor?

10 A. I'm not sure.

11 (WITNESS PERUSING DOCUMENT)

12 A. I think I would. I think I would agree.

13 Q. Okay. No other -- one other question. You had
14 mentioned about female firefighters. I just want
15 to get clear in my mind, there's been no study on
16 female firefighters on the effect of shift
17 schedules?

18 A. No, I don't believe so. There may be but I
19 don't know of any.

20 Q. I'm saying based on what you know of this --

21 A. It's a great -- in fact, I'm leaving here
22 thinking, that's a good thing for me to do.

23 MR. REED: Okay.

24 A. But, no, I don't believe there is.

1 MR. REED: Did you have time to read it?

2 THE WITNESS: I'm reading it. Am I
3 supposed to be answering a question?

4 Q. Do you agree with that?

5 THE WITNESS: Can you repeat the question,
6 please.

7 Q. Do you agree with what was written in Union
8 Exhibit 51, ma'am?

9 MR. CAVASSA: Where are we reading now?

10 MR. REED: Page 14, workload staffing
11 issues on Union 51 from the article written by
12 Dr. Moore-Ede.

13 MR. CAVASSA: I object. She's an expert
14 in -- I believe she has -- she's been qualified as
15 an expert in shift work not staffing.

16 MR. REED: I just asked her if she agreed
17 with it.

18 MR. CAVASSA: Again, the question deals
19 with staffing. It says workload staffing balance,
20 and I'd object on the grounds that she's not
21 qualified to say that, provide testimony in this
22 area.

23 MR. HARRINGTON: Hang on one second.

24 (BRIEF PAUSE)

1 MR. REED: No other questions subject to
2 redirect.

3 MR. CAVASSA: May we have one moment.

4 (BRIEF RECESS)

5 MR. REED: Thank you, Doctor.

6 MR. HARRINGTON: No, Tim has questions.

7 MR. REED: Oh, sorry. I thought she was
8 all set.

9 RECROSS-EXAMINATION BY MR. CAVASSA

10 Q. Dr. Glazner, in your interviews with approximately
11 15 firefighters in North Kingstown, is it your
12 impression that the firefighters are satisfied with
13 the number of hours that they are working now?

14 A. Yes.

15 Q. Was EMS involved in your studies in New Jersey?

16 A. No.

17 Q. -- in California?

18 A. No.

19 Q. So is it your testimony that these departments are
20 somehow irrelevant to compare to North Kingstown?

21 A. Not irrelevant but, you know, perhaps not
22 comparable.

23 Q. You testified that the New Jersey Firefighters that
24 you studied worked three or four consecutive

- 1 nights?
 2 A. Some -- there were three different shift
 3 pattern. One worked two days of days, two days
 4 off, two days of nights, two days off; one worked
 5 three, three, three, three; and the other worked
 6 four, four, four, four. So they were totally
 7 different shift schedules.
 8 Q. Can you turn to Town 56.
 9 A. Yes.
 10 Q. Specifically Page 257, Table 1. Table 1 is the
 11 list of New Jersey Firefighter Departments that you
 12 studied?
 13 A. Correct.
 14 Q. And it shows that A works no more than two
 15 consecutive night shifts?
 16 A. Correct.
 17 Q. And C works no more than two consecutive night
 18 shifts?
 19 A. Correct.
 20 Q. And B works no more than three consecutive night
 21 shifts?
 22 A. Correct, but no -- yeah.
 23 Q. And these departments lead to the basis of your
 24 opinion in these studies and in your testimony

- 1 regarding New Jersey Firefighters?
 2 A. Correct.
 3 Q. If you turn to -- and the basis of your testimony
 4 that the 56-hour work week is detrimental is that
 5 there is a period of exposure followed by a short
 6 rest period; is that correct, that was your
 7 testimony?
 8 A. No, 56 absolutely is. In other words, if you
 9 were to -- even a day and then a period of time off
 10 and then the day again, that still could be
 11 detrimental. So it's not the number of days on and
 12 off; it's the total number of 56 hours, the
 13 configuration that you need to get to that.
 14 Q. Do you know of any study that suggests that a
 15 48-hour rest period followed by a single day of
 16 work is a short or an adequate rest period?
 17 A. Don't know of any studies.
 18 Q. Do you know of any study that suggests that 48
 19 hours of rest is an unsafe rest period -- is an
 20 unsafe rest period after a single tour of duty?
 21 A. No, I don't know.
 22 Q. On what scientific evidence do you base your
 23 testimony that 48 hours off after a 24-hour shift
 24 is an adequate recovery time?

- 1 A. Based on studies of people who work 56 hours in
 2 the work week called over extremely long hours.
 3 And there's a whole recent literature in the last
 4 three years, five years on this which didn't exist
 5 before. So it's not based on firefighters. It's
 6 based on shift workers.
 7 Q. So those are not specific to firefighters?
 8 A. Not at all.
 9 Q. You can't turn to one that is specific to
 10 firefighters?
 11 A. I have to tell you that a lot of studies of
 12 firefighters don't talk about hours. They might
 13 talk about shift schedules, but they don't talk
 14 about hours, at least not when they report.
 15 Q. Have you examined the call data specific to this
 16 Department?
 17 A. It was shared with me but I didn't examine it.
 18 Q. You did not. Okay. So without looking at the call
 19 data, you can conclude easily that firefighters get
 20 sufficient amounts of sleep on most nights without
 21 interruption?
 22 A. Yes, no, I can't conclude anything.
 23 Q. Have you conducted a study of the actual work and
 24 sleep time in this Department?

- 1 A. No.
 2 Q. Are you aware of the number of calls received on
 3 average in this Department during, during the night
 4 hours?
 5 A. No.
 6 Q. So are you aware that there's never been, if
 7 there's ever been, a night with 19 calls for
 8 services as you experienced in Toronto?
 9 A. It was 19 over 24 hours. It wasn't 19
 10 throughout the night.
 11 Q. Okay. But you have no idea what the call volume
 12 is?
 13 A. I know -- it was shared with me what the total
 14 volume was for the year but not specific hours to
 15 hours or anything of that sort.
 16 MR. CAVASSA: No further questions.
 17 MR. REED: I just have a couple questions.
 18 FURTHER REDIRECT EXAMINATION BY MR. REED
 19 Q. When you said they weren't compatible, would you
 20 agree with me Toronto Firefighters, as far as their
 21 suppression, they have engine companies, ladder
 22 companies, et cetera?
 23 A. Correct.
 24 Q. And their EMS, is that part of the Fire Department

1 or not?
 2 A. They are -- they have different management,
 3 administration.
 4 Q. So could they be a third service?
 5 A. They could be a third service.
 6 Q. So that's the way they deliver EMS out there, so
 7 you didn't do any studies on that?
 8 A. No. And, in fact, the place that I was
 9 physically staying was the Marine Hall. They call
 10 the fire stations "halls." And in there was an EMS
 11 Unit. And we talked about it. They worked a
 12 12-hour shift; they like the 12-hour shift. They
 13 had no interest in going one way or another. And I
 14 offered my services to them sort of casually, and,
 15 you know, I was talking to a line person, they were
 16 comfortable not being part of the study.
 17 Q. Okay. And they were probably a third service?
 18 A. Correct.
 19 Q. I see. Now, you were asked questions, I think
 20 Town's counsel asked you questions, about why
 21 56 hours was wrong; and you said in the last, I
 22 believe, three years that there's been some studies
 23 done and it's been to non-firefighters, am I
 24 correct?

1 A. Correct.
 2 Q. Based upon your professional opinion in your area
 3 of expertise, do you believe it's still applicable
 4 to the firefighters?
 5 A. Absolutely. Especially because the kinds of
 6 problems that have been found for people who work
 7 long hours have been cardiovascular and then
 8 hypertension and stress, which are also what
 9 firefighters are at risk of. So I'd say yeah.
 10 MR. REED: No other questions.
 11 MR. CAVASSA: I have no additional
 12 questions.
 13 MR. HARRINGTON: Okay.
 14 THE WITNESS: I can go home?
 15 MR. KINDER: Can I ask a few questions?
 16 I don't have a lot.
 17 EXAMINATION BY MR. KINDER
 18 Q. These studies that you're referring to, these
 19 recent studies on long shifts, what employees have
 20 been studied?
 21 A. Good question. I don't even think -- I don't
 22 remember. I mean, I read the articles in the last
 23 couple of weeks and I truly don't remember the
 24 populations that were studied.

1 Q. Okay. To your recollection, were they populations
 2 that were allowed to be sleeping during their
 3 shifts?
 4 A. These were populations that work mainly the day
 5 shifts, and so they would be sleeping at home, you
 6 know. They weren't -- they were shift workers
 7 because they are working outside the nine to five,
 8 but they weren't working throughout the night
 9 unless they chose to.
 10 Q. Okay. And so you equate that, even though
 11 firefighters are able to sleep, and you don't know
 12 how many hours continuously and uninterruptedly
 13 because you haven't looked at the data in North
 14 Kingstown, but you know that they're allowed to
 15 sleep in North Kingstown?
 16 A. Correct. One of the gentleman that I talked
 17 with yesterday said that, like, for instance, he is
 18 rescue, and even though a call may not be for his
 19 unit to have to be out, he still has to get up to
 20 move his vehicle. So even though, you know, if I
 21 were looking at numbers, not looking at people,
 22 but if I was looking at numbers, then that would
 23 not have been reflected that his sleep was broken
 24 because the alarm went off but his unit did not

1 have to respond but he still had to get up to move
 2 the vehicle. So the answer is no, I didn't look.
 3 Q. And when you took that anecdotal report from that
 4 individual, did you identify how many times in the
 5 course of a year precisely that happened?
 6 A. No. I mean, I asked, "Was this an unusual
 7 occurrence?" or "Does this happen frequently?" And
 8 he said, "Frequently," but I didn't ask numbers.
 9 Q. In some of your own studies you found that that's
 10 from anecdotal evidence. When put to the test on
 11 how many times it actually occurs, turns out not to
 12 be necessarily frequently, correct?
 13 A. Well, actually, what the anecdotal does for me
 14 is to say modify my questionnaire so that I ask it
 15 of other people. So the answer is for that
 16 population, no, I might not have the facts, but for
 17 future populations I would have that fact.
 18 MR. KINDER: Okay. I don't have any more
 19 questions.
 20 MR. REED: Thank you, Doctor.
 21 THE WITNESS: Good-bye, guys.
 22 MR. KINDER: Good luck.
 23 MR. HARRINGTON: Thank you. Nice meeting
 24 you.

1 THE WITNESS: Thank you, this was fun.
 2 MR. HARRINGTON: Off the record for a
 3 minute.
 4 (OFF THE RECORD)
 5 (LUNCH RECESS)
 6 MR. HARRINGTON: We're back on the record.
 7 REBECCA FISHER
 8 (HAVING BEEN DULY SWORN)
 9 Rebuttal testimony IN RE: 56-Hour Work Week
 10 DIRECT EXAMINATION BY MR. REED
 11 Q. What's your home address, Rebecca?
 12 A. 291 Gardner Road, West Kingstown 02892.
 13 Q. Now, where are you employed?
 14 A. I'm employed with the Town of Middletown.
 15 Q. What department?
 16 A. The Fire Department.
 17 Q. And how many years have you been a firefighter in
 18 the Town of Middletown?
 19 A. Just over five years.
 20 Q. Okay. And where are you presently assigned?
 21 A. I am presently assigned as a firefighter
 22 working on all of the first piece apparatus.
 23 Q. So would I be correct that's an engine and a
 24 rescue, basically?

1 A. Correct.
 2 Q. As far as emergency medical certification, do you
 3 have any?
 4 A. I do. I hold a cardiac license.
 5 Q. And as far as education pertinent to the fire
 6 service, do you have any degrees?
 7 A. I have a Bachelor's Degree in public
 8 administration and I'm working towards my Master's
 9 Degree in public administration.
 10 Q. I see. Are you a member of the local there?
 11 A. I am a member of the Middletown Local.
 12 Q. Have you ever held any elected office?
 13 A. I have.
 14 Q. What are those?
 15 A. I was on the E Board in Middletown.
 16 Q. Now, are you employed by anyone else?
 17 A. I am also employed by the Rhode Island State
 18 Association of Firefighters.
 19 Q. And what's your position there, please.
 20 A. I am a legislative agent for the state
 21 association.
 22 Q. Okay. And you've testified before in these type of
 23 hearings?
 24 A. I have.

1 Q. Now, you said you were a firefighter in the Town of
 2 Middletown for approximately five-and-a-half years.
 3 Do you have any other paid firefighting experience?
 4 A. I do. I was a paid firefighter in the City of
 5 Rapid City.
 6 Q. What state would that be?
 7 A. That would be in South Dakota.
 8 Q. Was it a unionized fire department?
 9 A. It was a unionized fire department, IAFF.
 10 Q. Okay. Now, what position did you hold in that
 11 fire department?
 12 A. That fire department I was a firefighter EMT,
 13 similar to the position that I hold in Middletown.
 14 Q. And how many years did you work there?
 15 A. Four years.
 16 Q. So you had four years there, a break in service,
 17 and five-and-a-half years in Middletown?
 18 A. That's correct.
 19 Q. Now, as far as the functions of Rapid City and the
 20 functions of Middletown as far as your position on
 21 the fire department, were they similar?
 22 A. They were very similar.
 23 Q. Okay. Now, did the Rapid City provide emergency
 24 medical services, rescue?

1 A. They did. They provided first responder and
 2 ALS paramedic; however, they did not transport to
 3 the hospital.
 4 Q. Okay. Was that when you were there?
 5 A. That's when I was there.
 6 Q. Presently do you know if they are transporting now?
 7 A. Presently they are now transporting similar to
 8 like we do out here.
 9 Q. Okay. Now, what was the work schedule in Rapid
 10 City?
 11 A. In Rapid City we worked a 56-hour work week.
 12 Q. And how was that schedule derived?
 13 A. That schedule was derived by working 24 hours
 14 on, followed by 48 hours off.
 15 Q. And that was continued through the year?
 16 A. That is correct.
 17 Q. Now, what was the average work week in Rapid City?
 18 A. 56 hours.
 19 Q. Okay. Now, you've heard the term Kelly days here,
 20 was that applied to you in Rapid City?
 21 A. Yes, we had Kelly days in Rapid City.
 22 Q. And what was a Kelly day, to refresh my memory?
 23 A. A Kelly day in Rapid City was basically like a
 24 vacation day. They weren't scheduled at any

1 certain intervals; they could be taken whenever you
 2 wanted.
 3 Q. Okay. Now, did that reduce your work week?
 4 A. For the week that you had your Kelly day, yes;
 5 but because it wasn't on a regular interval, you
 6 could go long periods of time without having a
 7 Kelly day.
 8 Q. I see. Now, were you paid for the total 56-hour
 9 work week?
 10 A. Yes.
 11 Q. You didn't get a reduction in pay?
 12 A. No.
 13 Q. Okay. And did you also work overtime in the
 14 56-hour work week?
 15 A. Yes, there was mandatory overtime when you were
 16 held past your shift, and there was also selective
 17 overtime which you could take when it was offered
 18 to you.
 19 Q. I see. Now, was that a contractual item, whenever
 20 you received overtime after your shift work?
 21 A. Yes.
 22 Q. Similar to what you do in Middletown?
 23 A. Correct.
 24 Q. Now, how would you contrast the present shift that

1 A. In Middletown, if you work a shift or overtime,
 2 depending on if it's a day or night, depending upon
 3 what you work, it ends up being 24 hours and then
 4 you have a day off to recover.
 5 Q. Okay. Now, as far as, as far as Middletown, you
 6 were there for the arbitration that occurred?
 7 A. I was.
 8 Q. Did anyone in the department that you know of --
 9 and have you talked to all the members of the
 10 department about shifts?
 11 A. In Middletown?
 12 MR. REED: Yes.
 13 MR. CAVASSA: Objection to the extent that
 14 this is getting into hearsay.
 15 MR. HARRINGTON: Haven't got there yet.
 16 MR. REED: Excuse me?
 17 MR. HARRINGTON: Haven't got there yet.
 18 His objection is overruled.
 19 Q. Did you survey, based on your role as an executive
 20 board member, the shift preferences for the
 21 Middletown Firefighters?
 22 A. Yes.
 23 Q. What was their preference?
 24 MR. CAVASSA: Objection.

1 you're on based on your five-and-a-half years'
 2 experience that you have now to the four years'
 3 experience you had in Rapid City?
 4 A. The work schedule that I work now is much
 5 easier to accommodate my, my family and my
 6 down-time as opposed to the 56 hours that I worked
 7 in Rapid City. 56 hours was an extremely tiring
 8 shift to work. If you were busy all night, all
 9 day, you spent your next 24 hours off sleeping to
 10 try and catch up, leaving yourself one day off
 11 before you started the cycle again.
 12 Q. If you were held over on overtime, would you have
 13 to work another 24 hours?
 14 A. Absolutely. So then you would work 48 hours
 15 straight with one day off to recover.
 16 Q. I see. How did you feel after that?
 17 A. Exhausted.
 18 Q. Okay. Now, you also work overtime in Middletown,
 19 don't you?
 20 A. Correct.
 21 Q. Okay. Do you have the same problems you were
 22 facing in Rapid City?
 23 A. No.
 24 Q. Why?

1 A. From the survey --
 2 MR. HARRINGTON: Hang on. What's the
 3 objection?
 4 MR. CAVASSA: It's based on hearsay. She
 5 hasn't been qualified as an expert to conduct
 6 surveys that the other experts have been allowed to
 7 put in. This is blatant hearsay.
 8 MR. HARRINGTON: Well, the strict Rules of
 9 Evidence don't apply in these hearings. So the
 10 question was asked whether she had personally
 11 surveyed?
 12 MR. REED: Yes, sir.
 13 MR. HARRINGTON: Okay, and I'm going to
 14 allow that question. For now your objection is
 15 overruled.
 16 Q. Did you survey?
 17 A. I did survey the members.
 18 Q. Okay. Did you find anyone who wanted to switch
 19 schedules?
 20 A. No.
 21 Q. Okay. Now, personally, as a female firefighter,
 22 you are a minority in at least the Middletown
 23 Department?
 24 A. That's correct.

- 1 Q. And you have some exposure to the rest of the state
2 locals?
3 A. That's correct.
4 Q. You go to the state meetings?
5 A. I do.
6 Q. And you're basically part of the leadership also
7 when we have our Executive Board meetings?
8 A. That's correct.
9 Q. Okay. Do you know if women are a minority in the
10 fire service?
11 A. Yes, they are.
12 Q. Now, would the 56-hour work week create any
13 problems for you with your, basically, life outside
14 of the fire department?
15 A. Absolutely. It would be an extreme burden on
16 me. I do have a child, so child care arrangements
17 would change drastically. I don't know of anybody
18 that provides 24-hour child care. And then if I
19 was held over, that would end up being a 48-hour
20 shift, and I would be tasked with trying to find
21 child care for my son.
22 And then if you compound that with our
23 schedule, if it falls on Christmas, now I need to
24 find child care 24 hours on Christmas Day, and I

- 1 think everybody can see where that would be a
2 little bit hard as a single parent. And typically
3 women are the ones that are tasked with child care
4 arrangements. And even for the single fathers out
5 there that would also be tasked with this, it would
6 be a large burden.
7 Q. Do you think there would be any monetary cost if
8 you went to 56 hours for child care?
9 A. Yes, just the increase in hours from the
10 56-hour work week, it's an increase of 728 hours on
11 average per year. The typical cost of child care
12 right now is approximately \$10 an hour. So that,
13 in itself, just the child care piece, is
14 approximately \$7,280 increase per year that I would
15 be tasked with.
16 Q. Why do you believe there are so few women
17 firefighters in the Middletown and in the State
18 of Rhode Island?
19 MR. CAVASSA: Objection. No foundation.
20 MR. HARRINGTON: Sustained on that one.
21 MR. REED: No other questions subject to
22 redirect.
23 MR. CAVASSA: If I may have a moment.
24 (BRIEF RECESS)

- 1 MR. HARRINGTON: All set?
2 MR. CAVASSA: Yes.
3 MR. HARRINGTON: Okay.
4 MR. CAVASSA: I just have a couple
5 questions.
6 CROSS-EXAMINATION BY MR. CAVASSA
7 Q. Miss Fisher, you said you live in West Kingstown,
8 Rhode Island?
9 A. That's my mailing address, West Kingstown is my
10 mailing address.
11 Q. Where do you actually reside?
12 A. Exeter is the town.
13 Q. You reside in Exeter?
14 A. Yes.
15 Q. That's about a 45-minute commute to Middletown?
16 A. Give or take.
17 Q. Each way?
18 A. Yup.
19 Q. And how many hours, approximately, a week do you
20 work in your legislative job?
21 A. During the session I go up one, possibly two
22 days a week.
23 Q. One or two full days a week?
24 A. One or two days. The session starts at 4:00 in

- 1 the afternoon.
2 Q. And how long does it go until?
3 A. It depends on how many hearings there are.
4 Sometimes 6, sometimes midnight, it depends.
5 Q. Or it could go longer?
6 A. Of course.
7 Q. And you're commuting to Providence each way, so
8 that's -- what's that, about 45 minutes to an hour
9 from Exeter?
10 A. From my house to Providence, approximately.
11 Q. Approximately an hour each way?
12 A. No, approximately 30 to 45 minutes.
13 Q. Each way?
14 A. Correct.
15 MR. CAVASSA: Nothing further.
16 REDIRECT EXAMINATION BY MR. REED
17 Q. As far as the legislative end of it, the days you
18 work in the legislature, do you use free
19 substitution?
20 A. Do I use free substitution?
21 Q. Exchange of duties that people come in and work for
22 you.
23 A. Yes.
24 Q. Actually, you spend those days at home prior to

1 going to the legislature?

2 A. Yes.

3 MR. REED: No other questions.

4 MR. CAVASSA: Nothing further.

5 MR. HARRINGTON: Okay. Thank you, very
6 much. Sorry we locked you up for so long.

7 THE WITNESS: That's all right.

8 MR. REED: Well, we still have some other
9 witnesses on this issue. So we'd like to go on to
10 another subject. I don't know how long you want to
11 go.

12 MR. HARRINGTON: We'll go awhile longer.

13 MR. REED: Okay. Billy.

14 MR. CAVASSA: Give me a second, please.

15 (BRIEF PAUSE)

16 MR. REED: Next issue we're putting a
17 rebuttal witness on is for management rights.

18 WILLIAM MACCARONE

19 (HAVING PREVIOUSLY BEEN DULY SWORN)

20 Rebuttal testimony IN RE:

21 Section 1.3, Management Rights

22 DIRECT EXAMINATION BY MR. REED

23 Q. You've been sworn?

24 A. Yes, yes, sir.

1 manner.

2 Q. Okay. Now, how many chiefs have you worked under?

3 A. I've worked under three chiefs.

4 Q. Who were they, please.

5 A. I was hired by Chief Roger Walsh, and then
6 Chief Murray took over, followed by Chief Cambion.
7 Now there is a vacancy in that position.

8 Q. Okay. Now, when you -- did any of those chiefs
9 every mention to you that the management rights
10 clause presently in effect didn't allow them to run
11 the Department?

12 A. No.

13 Q. Now, if you look at B, when they want to come in
14 here, if you look at -- excuse me.

15 (PAUSE)

16 Q. It seems to me that they want to exercise all the
17 rights prior to the Union coming into existence; do
18 you have an opinion on that?

19 A. I think it's unwarranted. I think the whole
20 reason for a union is to have a Collective
21 Bargaining Agreement and have the two sides reach a
22 consensus and have more or less rules and terms by
23 which to abide by your relationship.

24 Q. Now, did you look at what they outlined here

1 Q. State and spell your last name, for the record.

2 A. First name is William and the last name is
3 Maccarone, M-a-c-c-a-r-o-n-e.

4 MR. REED: And the issue you're rebutting
5 in Joint 1 -- Joint 4, I should say, would be
6 Section 1.3, Management Rights.

7 Q. Do you have that in front of you, Billy?

8 A. I don't not, sir. Sorry.

9 (DOCUMENT SHOWN TO WITNESS)

10 MR. REED: Now, you've got it.

11 Q. What is the Union's position on this?

12 A. We are opposed to this.

13 Q. Why?

14 A. There's really -- we don't understand why this
15 is even here. Can't imagine a reason why this
16 would be necessary. There's been a very good, up
17 until this past May and June, there's been a very
18 good relationship between the firefighters and the
19 Town over the past five or six years.

20 I believe there's been one grievance that's
21 gone to arbitration since 2004, which I would
22 consider that is a very good relationship. Very
23 few grievances were filed. Most disagreements were
24 worked out in a very professional and efficient

1 starting with the determining of standards of
2 service -- excuse me, determining of standards --

3 MR. CAVASSA: Paul, where are you?

4 MR. REED: What?

5 MR. CAVASSA: Where are you?

6 MR. REED: Management rights.

7 THE WITNESS: It's Page 1.

8 MR. REED: Page 1.

9 MR. HARRINGTON: What section?

10 MR. REED: 1.3.

11 MR. CAVASSA: That's not what you said.

12 MR. ANDRIOLE: How many pages in your
13 document, Paul? He always has -- we never
14 rectified that. He doesn't have a --

15 MR. HARRINGTON: Let's go off the record
16 for a minute.

17 (OFF THE RECORD)

18 MR. CAVASSA: If I may have a moment,
19 please.

20 (BRIEF RECESS)

21 MR. REED: Okay. We're on 1.1 Union
22 Business. Okay.

23 Q. Billy, Paragraph A, what's the Union's position?

24 A. Paragraph A for the Town's proposal, we're very

1 much opposed to that language.
 2 Q. -- Paragraph B?
 3 A. Similarly we're opposed to the language.
 4 Q. -- C?
 5 A. Same thing, we're opposed to that change.
 6 Q. -- D?
 7 A. We're opposed to the change.
 8 Q. Why?
 9 A. For starters, I think, if it's all right, we'd
 10 like to just basically look at Union business as
 11 something that's evolved somewhat. There was a
 12 time when these arbitration proceedings were
 13 handled completely by lay people, didn't have the
 14 advantage of lawyers, and the time and the effort
 15 and the energies involved in handling such
 16 endeavors have increased substantially over the
 17 past years.
 18 And through the years our time has increased
 19 as well; I don't think it's kept pace with the
 20 increases in the other areas, but we have made some
 21 areas where we've increased the number of people
 22 allowed off and increased the total number of hours
 23 that we're allowed to utilize in a year.
 24 Q. Let me ask you this question. When you have the

1 A. 104 hours.
 2 Q. And how many hours do the members of the Executive
 3 Board get?
 4 A. Each member is afforded 56 hours.
 5 Q. I see. Now, as far as pay, who picks up the bill
 6 when the President is off or the members of the
 7 Executive Board?
 8 A. Similar to if the Town needed to put somebody
 9 off for a variety of reasons in an administrative
 10 capacity, the Town pays that fee, just as if they
 11 would pay the fee if the firefighter was needed to
 12 testify at an agreement or -- not an agreement, at
 13 a proceeding on behalf of the town or things of
 14 that nature.
 15 Q. Okay. And the Town pays the overtime rate of pay,
 16 probably?
 17 A. If there is no floater available, which in the
 18 previous -- certainly this year after all the
 19 retirements in June, I would say that's a safe
 20 assumption to make. Previous years I don't think
 21 that that's a safe assumption to make because there
 22 were floaters, and the floaters are designed just
 23 for that very reason, to fill in for vacancies
 24 whatever it may be.

1 increase in the present three and the hours off,
 2 was that negotiated between the parties or was that
 3 arbitrated?
 4 A. That was negotiated.
 5 Q. And how long has that been in here, if you can
 6 remember?
 7 A. That's the three, it goes back to the 1979
 8 contract.
 9 Q. Okay. And the number of hours?
 10 A. The number of hours actually increased
 11 slightly. In the '79 contract, there was a little
 12 bit more limited language that was within the
 13 contract. And then in '82/'83, there was an
 14 assertion of 48 hours off -- 48 hours annually to
 15 negotiate contracts and perform Union business.
 16 Then subsequently in '83/'84 it increased to
 17 56 hours; and then in '85/'86 it increased to
 18 56 hours for officers of the Union and then an
 19 additional 48 hours was afforded to the President
 20 of the Union, which is the way it currently stands
 21 now in Subsection C of the expired Collective
 22 Bargaining Agreement.
 23 Q. So let me get this straight. How many hours would
 24 the President get off a year?

1 Q. In your time on the job and reviewing of the
 2 contracts, has it ever been necessary for the
 3 firefighter, if they are granted leave, to work
 4 another schedule without being paid overtime,
 5 another shift, I should say, without being paid
 6 overtime?
 7 In other words, if you were on Union business
 8 today and you've got ten hours of Union business,
 9 would you ever -- has it ever been, since you've
 10 been hired and your review of the contracts, where
 11 you have to actually work the hours on some other
 12 shift?
 13 A. No, sir.
 14 Q. Okay. Is there anything else you'd like to go over
 15 why the Union is against this?
 16 A. Well, if I could, we made an exhibit, if we
 17 could.
 18 MR. REED: We'd like this introduced as --
 19 MR. ANDRIOLE: 73.
 20 MR. REED: -- 73.
 21 (DOCUMENTS SUBMITTED TO PANEL)
 22 THE WITNESS: If I could, the beginning --
 23 MR. REED: Hold it.
 24 THE WITNESS: Sorry.

1 (DOCUMENTS BEING PERUSED)
 2 THE WITNESS: It should be 12 pages.
 3 (DOCUMENTS BEING PERUSED)
 4 MR. CAVASSA: I object. The beginning
 5 portion appears to be contracts that are very
 6 dated. We have the most recent contracts in
 7 evidence. The middle portion appears to be
 8 argument, again, looks like it's a listing of
 9 scenarios and argument that could be or should be
 10 argued in the brief. And the final portion is law.
 11 I have no objection to introducing the law. But as
 12 far as discussing it and interpreting it, that's
 13 for the brief before this panel. And it's ALR
 14 articles as well.

15 MR. HARRINGTON: It's what?

16 MR. CAVASSA: ALR articles as well. I
 17 have no objection to them coming in; but as far as
 18 offering testimony on them, I'd object to that.

19 MR. HARRINGTON: Where do you see the ALR
 20 articles?

21 MR. CAVASSA: Looks like on Page 7 at the
 22 top, secondary support to 10 ALR 3D861. It should
 23 all be put in the brief.

24 MR. HARRINGTON: Okay. Page 7. I note

1 MR. CAVASSA: I object. This appears to
 2 be strictly argument.
 3 (ARBITRATOR HARRINGTON PERUSING DOCUMENTS)
 4 MR. HARRINGTON: It does appear to be
 5 argument. Hang on one second.
 6 (ARBITRATOR HARRINGTON PERUSING DOCUMENTS)
 7 MR. CAVASSA: I also object on relevance
 8 grounds. They're talking about lawyers' hourly
 9 rates. It's completely irrelevant.

10 (DOCUMENTS BEING PERUSED)

11 MR. HARRINGTON: I'm going to sustain the
 12 objection because -- I'll hear what you have to say
 13 as to the objection, but No. 1 appears to be
 14 argument. No. 2, the comparisons are based on
 15 trades or similarly the comparables from other
 16 communities. You need to enlighten me.

17 MR. REED: I'll try to enlighten you. The
 18 total numbers of Union business, the Finance
 19 Director said it was an increased cost on the Town
 20 that they couldn't afford and they were trying to
 21 reduce this. I believe we have the right to show
 22 the actual cost of it for this particular year and
 23 we also have the right to show what the average
 24 number of hours was that was actually used on Union

1 your objection. I'll allow it in with the same
 2 caution that I've made before about argument versus
 3 evidence. This is Union 73. It's entitled Union
 4 Leave Rebuttal Exhibit.

5 (UNION EXHIBIT NO. 73 MARKED)

6 MR. HARRINGTON: You can proceed.

7 THE WITNESS: Thank you.

8 Q. So on Page 1, Billy, and continuing the pages on
 9 this contract language, we've already talked about
 10 that in your testimony, am I correct?

11 A. That's correct, sir.

12 Q. Okay. If you went to Page 5 and --

13 THE WITNESS: Yes, sir.

14 Q. -- if you look at the first part of that above the
 15 words "How much you can expect to pay," where did
 16 you get this information?

17 A. This information was from -- part of it is my
 18 information just being part of formal negotiations,
 19 and part of it, Exhibit 15, illustrated that in
 20 FY'10, 319.5 hours of Union business was utilized.
 21 And I know that the Finance Director testified to
 22 that and it was within Town Exhibit 15, as I said.

23 And there are seven members of the Executive
 24 Board and --

1 business which is below what the contractual hours
 2 are.

3 MR. HARRINGTON: Where is that contained
 4 in the exhibit?

5 MR. REED: Well, the total members, based
 6 on the direct testimony of Mr. Maccaroni, they used
 7 319.5 hours of Union business. Based on the
 8 President and the Executive Board, which is seven
 9 members, and he listed how he came to the number of
 10 hours, that they equate the 45.6 hours.

11 Presently his testimony was that on average
 12 that's below what's presently allowed in the
 13 contract. And the Town's position was it's a large
 14 encumbrance or a large cost to allow this type of
 15 benefit to be in there.

16 (ARBITRATOR HARRINGTON PERUSING DOCUMENTS)

17 MR. HARRINGTON: So the purpose of the top
 18 of Page 5 is to show that -- it cites the Town
 19 Exhibit 15. And is the Union taking the position
 20 that the figure used by the Town is inaccurate?

21 MR. REED: No, we're not saying that at
 22 all. What we're saying is we believe this is the
 23 actual amount; and based on the number of
 24 firefighters who are allowed Union business, it

42 (Pages 2284 to 2287)

1 falls below what the contract provides for today.
2 And if they're talking cost, our position is it is
3 not a language cost in order for us to function as
4 a union.

5 MR. HARRINGTON: Okay. That part is
6 admissible because it relates to the evidence
7 that's already in the record.

8 MR. REED: Okay. And, again, we were
9 concerned with costs, so what Mr. Maccarone did is
10 try to give an estimate of how much this is
11 actually costing, if the Town is so concerned with
12 cost, from utilizing the below information to the
13 bottom of Page 5.

14 MR. HARRINGTON: That's not admissible.

15 MR. REED: Okay. Turn to Page 6.

16 MR. HARRINGTON: Okay.

17 Q. Billy, why did you put this into your exhibit?

18 A. Based upon the testimony that was offered in
19 the previous -- by the Finance Director --

20 MR. CAVASSA: I'd object because I think
21 it's going down this road to the extent that he is
22 going to be arguing law. He's not an attorney and
23 that should be properly reserved for the brief. I
24 would have no objection to the law going into

1 doesn't seem to be a lot of persuasive information
2 regarding the interpretation directly of 28-7-13.3.

3 So if you look at the National Act, you can
4 simply see that Section 8-2 on Page 6, it's the
5 standard language, I'm sure everyone on the panel
6 is familiar with, regarding to dominate or
7 interfere with the formation or administration of
8 any labor organization or contribute financial or
9 other support to it.

10 MR. HARRINGTON: Okay. Now, I'm going
11 to -- I'm going to sustain the objection and
12 anything beyond that, because you're clearly
13 arguing the law, using the national law to make an
14 argument about the -- and argument is at another
15 stage in this proceeding.

16 Q. All right. Billy, a couple of other questions.

17 The Town suggests utilizing a pool of vacation
18 hours donated by Union members, et cetera; what do
19 you think the chances of that are going to be?

20 A. Well, I don't think members are going to be
21 likely to donate vacation time towards a pool. And
22 I don't know if this would be considered argument,
23 but I think if the Town was to establish a pool
24 they would be violating the very law that they're

1 evidence, but arguments surrounding it and any
2 interpretation of this law, I'd object.

3 MR. HARRINGTON: I'm going to overrule the
4 objection for now. I've indicated to the parties
5 before that law, I will accept law and it can be
6 argued in the brief.

7 Can you give me some brief explanation as to
8 why you included it here in this exhibit.

9 THE WITNESS: Yes, sir. If the -- the
10 questions that were asked and the testimony earlier
11 is the Town's assertion that Union leave is, in
12 fact, illegal; and the assertion was made by the
13 Town's counsel that Union leave is illegal. And
14 based upon their interpretation of 28-7-13.3, which
15 is actually on Page 10. And the reason why --

16 MR. HARRINGTON: So now we're on Page 10?

17 THE WITNESS: Yes, sir. And it is the
18 Town's assertion that that Union business or
19 compensating or -- compensating or donating the
20 free service, equipment, or anything of that nature
21 was a violation of 28-7-13.3. So what I did was I
22 looked to the National Labor Relations Act, which
23 is what 28-7 is modeled after in the State of Rhode
24 Island based upon the National Act, since there

1 claiming is the problem with Union business.

2 MR. CAVASSA: Objection and move to
3 strike.

4 MR. HARRINGTON: On what basis?

5 MR. CAVASSA: He's not an attorney. He
6 has no, no basis to make such a conclusion. It's a
7 legal conclusion; that's for this panel.

8 MR. HARRINGTON: Well, that's true.
9 Ultimately it's for us. But as a member testifying
10 for the Union, he can present the Union's position.

11 Q. Okay. Can you list based on -- and how much years
12 have you been on the Executive Board, Billy?

13 A. I believe I've been five years total on the
14 Executive Board.

15 Q. Why do you believe -- do you believe it's a benefit
16 to have this in the contract to allow for Union
17 business, based on your experience?

18 A. Yes. It's absolutely essential, and the whole
19 purpose of collective bargaining is to be on an
20 equal foothold; and it's absolutely essential to
21 our existence, to be able to be as much as we can
22 on an equal footing with staff, with the
23 management.

24 And I do believe that any attempts to inhibit

1 that right and the right for us to utilize them
2 within the confines of the contract, and there are
3 limitations and there's strict limitations and
4 that's the way the contract has always been
5 administered, is to take that away and is
6 definitely infringing on our rights and is going to
7 detrimentally affect firefighters that may choose
8 to be involved in the Union, may choose to take
9 positions, hold offices.

10 In conjunction with the Town's proposal on the
11 56-hour work week or the 53-hour straight time and
12 then 3 hours of time-and-a-half, where you would
13 have potentially a very real possibility within
14 that 28-day cycle that you're going to penalize a
15 person because maybe they needed to take four or
16 five hours off to go and confer with management
17 over an issue, and now that person is not going to
18 be eligible for any overtime compensation because
19 of the Fair Labor Standards Act, because the total
20 hours worked within the 28-day cycle will fall to
21 below 212.

22 And that's a -- basically, it's punishing
23 these members for opting to be involved, for opting
24 to help other employees and help the

1 A. On behalf of the membership.

2 Q. And are you aware that the Town employees are
3 exempt from the NLRA?

4 A. No.

5 Q. You're not. Are you aware that the Rhode Island
6 Supreme Court has, at times, interpreted the State
7 Labor Relations Act in according with the NLRA and
8 at times it's gone in a different direction?

9 A. No, I'm not.

10 MR. CAVASSA: No further questions.

11 MR. REED: Nothing else unless the panel
12 has anything.

13 MR. HARRINGTON: No questions.

14 MR. KINDER: No questions.

15 MR. REED: Bobby, you're next.

16 You've been sworn, Bobby?

17 THE WITNESS: Yes.

18 MR. REED: State and spell your last name
19 for the record.

20 THE WITNESS: Robert Neill, N-e-i-l-l.

21 ROBERT NEILL

22 (HAVING PREVIOUSLY BEEN DULY SWORN)

1 labor/management relationship. And it's also --
2 it's affecting their rights to association and
3 collective bargaining.

4 MR. REED: No other questions subject to
5 redirect.

6 MR. CAVASSA: Very few questions.

7 CROSS-EXAMINATION BY MR. CAVASSA

8 Q. Section 1.11 allows for paid time off to conduct
9 Union business, is that correct?

10 A. I'd have to refer to it.

11 Q. You just testified at length about it.

12 A. I did. If you could tell me what page.

13 Q. Section 1.11 of --

14 A. Oh, the CBA?

15 MR. CAVASSA: Yes.

16 A. I would have to get it in front of me. Yes, it
17 does allow for paid time off.

18 Q. And the time of working under 1.11 pursuant to that
19 section, is being --

20 MR. REED: Let him get to the section.

21 (WITNESS PERUSING DOCUMENTS)

22 THE WITNESS: Okay, yes, 1.11.

23 Q. And this is work being performed on behalf of the
24 Union?

1 Rebuttal testimony IN RE:

2 Section 1.3, Management Rights

3 DIRECT EXAMINATION BY MR. REED

4 Q. Now, did you prepare what the Union considers
5 comparable cities for this particular issue?

6 A. I did.

7 MR. REED: And we'd like this introduced
8 as Union Exhibit 74.

9 MR. HARRINGTON: Do you have another one
10 for the towns?

11 MR. REED: Exhibit 75 would be the towns.

12 (DOCUMENTS SUBMITTED TO PANEL)

13 MR. HARRINGTON: Town has their continuing
14 objection?

15 MR. CAVASSA: Yes.

16 MR. HARRINGTON: All right. The one for
17 cities on Union business is Town 74.

18 MR. REED: The cities is 74, I believe,
19 and for the towns it's 75.

20 MR. HARRINGTON: Correct. The cities is
21 74. Town comparables on Union business is Exhibit
22 No. 75.

23 (UNION EXHIBIT NOS. 74 and 75 MARKED)

24 MR. HARRINGTON: Okay. You can proceed.

- 1 Q. All right. Bobby, what would you like to point out
2 in Union 74? The back-up data is listed in the
3 back, am I correct?
4 A. Yes.
5 Q. Okay. What would you like to point out?
6 A. Well, if you look at the cities comparables,
7 look at Central Falls, you see in the middle column
8 you can see the number of members allowed off on
9 given times for Union business.
10 Q. So it looks like it goes from all members of the
11 Union to, when we get to East Providence, two
12 members?
13 A. That's correct.
14 Q. So other than East Providence, do all of these
15 locals have significant -- more firefighters who
16 are Union members to go off to the various Union
17 functions?
18 A. Yes, equal to or more.
19 Q. Equal to or more. Would you turn to Union Exhibit
20 No. 75, please.
21 A. Yes.
22 Q. You used the same methodology?
23 A. That's right.
24 Q. And, again, East Greenwich has the same number of

- 1 have the substitute?
2 A. Yes.
3 Q. There's no loss of pay?
4 A. No loss of pay.
5 Q. And they don't have to come in on another shift or
6 work an over -- fill in for an overtime spot to do
7 that?
8 A. Correct. The only time that a substitution
9 would maybe come into play is that if the Executive
10 Board or the Union wanted to send someone over and
11 above the number they would allow a member to get a
12 substitution.
13 Q. So that's considered they could swap duties,
14 exchange duties and substitute --
15 A. Over and above the allowable members.
16 Q. Over and above allowable members. If you turn your
17 attention to Union 75, did you use the same
18 methodology?
19 A. Yes, sir.
20 Q. Why don't you have the contract year in 74 as you
21 do in 75? Was that an oversight or just --
22 A. If you look at the data, the back-up data,
23 you'll notice with the cities exhibit, if you look
24 at the data, you will see the first page, Central

- 1 members, am I correct?
2 A. Two members, yes.
3 Q. Johnston?
4 A. Johnston has three.
5 Q. Middletown has two?
6 A. Middletown is two.
7 Q. Okay. North Smithfield is two?
8 A. North Smithfield is two, yes.
9 Q. Okay. Portsmouth has a split benefit?
10 A. Correct, they do four members for negotiations
11 and two members for either through an attorney or
12 arbitrator.
13 Q. Okay. And West Warwick has two, am I correct?
14 A. Yes.
15 Q. Okay. Let me ask you this question, going back to
16 74, Bobby. In any one of these cities or towns, do
17 you have to have a substitute, similar to what the
18 Town proposed, you get a pool of people that donate
19 vacation?
20 A. If you look at the next column where it
21 requires substitution, there is none that requires
22 a substitution.
23 Q. So would I be correct that as long as they maintain
24 what the contract language is, they don't have to

- 1 Falls, the CBA is put on the side of it.
2 Q. A note of it?
3 A. I noted it, yes.
4 Q. Okay. Now, there's been two arbitration awards
5 recently introduced concerning the Town of
6 Narragansett and the Town of Middletown. Was there
7 any change, if you know, in Narragansett with three
8 members for negotiations, three members for
9 attendance of convention and meetings and limited
10 to four days a year for each?
11 A. There was no change.
12 Q. How about the Town of Middletown?
13 A. And no change for Middletown also.
14 MR. REED: Okay. No other questions
15 subject to redirect.
16 MR. CAVASSA: I have no questions on this
17 issue.
18 MR. HARRINGTON: Okay.
19 MR. REED: Just give us a second, please.
20 (BRIEF PAUSE)
21 MR. REED: Okay. The next rebuttable
22 issue will be Section 3.25 C, Out-of-Rank Pay. And
23 William MacCarone will be the Union member
24 testifying on this.

45 (Pages 2296 to 2299)

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1 WILLIAM MACCARONE
2 (HAVING PREVIOUSLY BEEN DULY SWORN)
3 Rebuttal testimony IN RE:
4 Section 3.25C Out-of-Rank Pay

5 DIRECT EXAMINATION BY MR. REED

6 Q. Do you have everything you need, Billy?

7 A. Yes, I believe so.

8 Q. Okay. How long has this present language been in
9 the contract?

10 A. Since the contract origination in '79, as far
11 back as we go for contracts, with the exception of
12 back in '79 we just had that first sentence where
13 it was "any member serving in an out-of-rank
14 assignment shall receive out-of-rank pay at the
15 rate of \$1.50," a dollar fifty, "per hour for each
16 hour worked on such temporary assignment." That
17 was the original language.

18 And then subsequent, later on it was altered
19 to add the second sentence which was just basically
20 as the fire service has evolved, so has the
21 Collective Bargaining Agreement, so has the
22 language. Now, the second sentence indicates that
23 if a fire lieutenant is filling in for a rescue
24 lieutenant, or vice versa, they don't get the

1 Your interaction with the public, your
2 interaction with other professionals, you have to
3 make split second decisions and it's -- I tend
4 to -- I don't want to use the term like "it's a big
5 deal," but it is a significant -- when you're
6 acting out of rank and you're in charge of the
7 piece of equipment, whether it's a rescue truck or
8 whether it's a fire truck, you're making a decision
9 and it's potentially life and death, and it's a
10 significant move.

11 Q. Now, when you say out of rank for a lieutenant,
12 they would be acting out of rank as a captain?

13 A. Yes, sir.

14 Q. And now what if a lieutenant -- you're a
15 lieutenant, aren't you?

16 A. Yes, I am.

17 Q. What are you if you were out and they had an
18 out-of-rank person, then the private that is on the
19 promotional list would get out-of-rank pay?

20 A. Exactly. The whole issue within the
21 Department, you take the promotional, you place on
22 the promotional test; and then, depending on your
23 ranking on that list, when you're assigned to -- as
24 an example, I'm on A Platoon, that's my assignment.

1 out-of-rank pay differential. So the only way you
2 physically get the extra dollar fifty an hour is if
3 you're filling in a rank superior to yours.

4 Q. When you are a rescue lieutenant, am I correct?

5 A. And --

6 Q. -- and a line lieutenant?

7 A. Exactly. So if -- it's not uncommon to have a
8 rescue lieutenant, typically it's a rescue
9 lieutenant, will take the examination to become a
10 fire lieutenant. They will take that examination
11 and then they're eligible to act out of rank. And
12 when I say "act out of rank," it's a term that we
13 use and the term refers to you're assuming the
14 roles, the responsibilities, and the duties of the
15 officer that you're filling in for.

16 There's really no distinction within the
17 truck, within the company, within the fire station.
18 No part of what -- the reason why we're opposed to
19 this deletion is because when you're operating out
20 of rank, you are filling in all the roles and
21 responsibilities of that officer. The
22 responsibility that's on your personally, as a
23 person who's worked out of rank, is much greater
24 than your role as just a firefighter.

1 Whoever is the highest scorer or the highest -- the
2 person with the highest designation on the acting
3 lieutenant's list would be the person who would
4 fill in for me, if I was to be out for a day to,
5 say, attend this hearing.

6 If that was the case, then I would be out for
7 a day, they would take that individual, they would
8 assume my spot on the truck and they would
9 assume -- the captains of the stations expect
10 everything to be done just as if I was there. Just
11 because I'm not there, doesn't mean that we're not
12 going to do a building inspection; it doesn't mean
13 that we're not going to do our training, monthly
14 trainings; doesn't mean that we're not going to do
15 the everyday operations outside of responding to
16 calls.

17 Because everybody knows, when the call comes
18 in, we're going to go. But the actual duties and
19 responsibilities that we perform on a daily basis
20 are still performed; however, they are performed by
21 the private or firefighter that is out working out
22 of rank in that temporary assignment.

23 Q. Well, who is -- would the private have to sign the
24 fire report, the NIOSH reports?

- 1 A. Yes, sir.
- 2 Q. And, again, the private in charge of a rescue would
- 3 have to sign the rescue reports?
- 4 A. Yes.
- 5 Q. So would I be correct, as far as the privates go,
- 6 they would be responsible for the piece of
- 7 apparatus and the driver that's involved?
- 8 A. Yes, absolutely.
- 9 Q. And when you're an acting captain, would you be
- 10 responsible that particular day for all four
- 11 platoons to make sure that things are going right
- 12 and the apparatus?
- 13 A. Yes.
- 14 Q. Now, how long has the dollar fifty been in there,
- 15 again?
- 16 A. That's the same rate that it was in 1979.
- 17 Q. And what's the Union's position on the City's
- 18 proposal to delete this whole section?
- 19 A. It would significantly handcuff our ability for
- 20 promotions, our ability to -- takes the incentive
- 21 away from any individual that wants to -- or the
- 22 largest incentives taken away from any individual
- 23 that wants to assume that role.
- 24 And it's also -- it's, more or less, it's a

- 1 It would actually cost the Town 15 additional
- 2 dollars to compensate the individual who's working
- 3 there. So it's a savings to the Town. I think
- 4 it's very -- it would be detrimental to morale. I
- 5 think it would be detrimental to the members who
- 6 work very hard and aspire to become officers; and
- 7 it's not, it's not appropriate, it really isn't and
- 8 it's not -- as I said, it's actually a cost savings
- 9 for the Town.
- 10 Q. Okay. Now, even if they were paid overtime and you
- 11 moved the person up, they'd get whatever the dollar
- 12 fifty is and the person called back, you'd have to
- 13 pay privates all the time, am I correct?
- 14 A. No. The way it's administer, unless there's an
- 15 emergency, they can't move up and fill. What they
- 16 have to do is the floater is an extra body, the
- 17 floater is an extra person. They will float over
- 18 to the acting position, whoever is the senior
- 19 person on that promotional list, and then they move
- 20 over. So the cost, there would be no additional
- 21 cost to the Fire Department for that move with the
- 22 exception of the dollar fifty per hour.
- 23 Q. Okay. And it's only if you are actually in the
- 24 position, am I correct?

- 1 slap in the face to the person whose has studied,
- 2 has worked hard. It's not uncommon -- in times --
- 3 unfortunately, with this arbitration here, we have
- 4 had such a turnover with people leaving because of
- 5 the fear of the unknown. But it's not uncommon for
- 6 a person to remain No. 1 or No. 2 on that
- 7 promotional list for several years. It tends to
- 8 run, the attrition rates within the Department,
- 9 tend to run, you'll have several go in a short time
- 10 frame, and then you'll have a period of two or
- 11 three more years with very few retirements, very
- 12 few resignations.
- 13 Because of that, those individuals, as I said,
- 14 it's not uncommon for them to remain No. 1, No. 2
- 15 on that list for years and to work frequently out
- 16 of rank.
- 17 Additionally, this is -- when used correctly,
- 18 this is a savings to the community, because the
- 19 out-of-rank system is when you move individuals,
- 20 when you have floaters, as we had previous to this
- 21 past June, you have the floaters, the floater moves
- 22 in. When I take the day off to come to this
- 23 hearing, if we had a floater, it would not cost the
- 24 Town the overtime to replace me.

- 1 A. Yes.
- 2 Q. -- if you actually work the hours?
- 3 A. Yes, you have to work, exactly, hour for hour,
- 4 yes. And even in Town's 15, they kind of lay out
- 5 the -- I don't think there's a need to get it out,
- 6 unless the panel feels it's necessary. It lays out
- 7 the total amount; and while \$7,218 is not -- it's
- 8 certainly a lot of money, but for what is
- 9 accomplished with the out of rank, it's -- I don't
- 10 believe -- given the large scale of the
- 11 expenditures, this is a positive; this is something
- 12 that is beneficial to the community, and it's
- 13 beneficial to the Fire Department.
- 14 Q. Now, prior to -- you're down to 56 firefighters
- 15 now?
- 16 A. Yes.
- 17 Q. Prior to that, what was the number of firefighters
- 18 when you had a full complement and all the slots
- 19 were filled?
- 20 A. It varied, it varied anywhere from, I would
- 21 have to say, upper 70s to even approaching 80, down
- 22 to where it is now.
- 23 Q. Well, when you were at the mid to upper 80s, was
- 24 out of rank used more?

47 (Pages 2304 to 2307)

1 A. It was close to 80. I don't believe if it ever
2 achieved 80, but absolutely.

3 Q. Would that save overtime?

4 A. It does, it absolutely does.

5 MR. REED: No other questions subject to
6 redirect -- excuse me, I do have one or question.

7 Q. Did the Town put any evidence on regarding this, if
8 you know, if you can remember?

9 A. No, all we have is this sheet. In Town 15,
10 which, I mean, coincidentally it shows me at 112
11 hours of out-of-rank pay for FY10. I have my
12 letter of promotion. In order to work out of rank,
13 you have to be on the list to be promoted. I was
14 promoted July 12 of 2009. I don't know how I could
15 have worked 112 hours of out of rank between July
16 1, '09 and July 12, '09. So I really don't know
17 how when there was no -- nothing was admitted as
18 far as this sheet was concerned, but even with
19 that, it's \$7200, but I don't, I don't understand
20 that.

21 MR. ANDRIOLE: What Town exhibit is that,
22 just so I know?

23 THE WITNESS: That's 15.

24 Q. So you don't think you worked 110 hours in nine

1 days?

2 A. I don't think I worked 112 hours in nine days,
3 no.

4 Q. -- all acting out of rank?

5 A. Acting out of rank. And I was promoted
6 July 12.

7 MR. REED: No other questions subject to
8 redirect.

9 (PAUSE)

10 MR. CAVASSA: I have no, I have no
11 questions.

12 MR. HARRINGTON: Okay.

13 MR. REED: Okay. Bobby, you're next.

14 ROBERT NEILL

15 (HAVING PREVIOUSLY BEEN DULY SWORN)

16 Rebuttal testimony IN RE:

17 Section 3.25C, Out-of-Rank Pay

18 DIRECT EXAMINATION BY MR. REED

19 Q. Bob, did you again prepare a set of exhibits based
20 on comparable cities and comparable towns?

21 A. I did.

22 MR. REED: Okay. We'd like the first one
23 introduced as Union Exhibit, I believe, 76,
24 temporary service out of rank for cities.

1 (DOCUMENT SUBMITTED TO PANEL)

2 MR. CAVASSA: Continuing objection.

3 MR. HARRINGTON: Town has it's continuing
4 objection?

5 MR. CAVASSA: Yes, continuing objection.

6 MR. REED: And Union Exhibit No. 76,
7 temporary service out of rank for towns.

8 THE WITNESS: Exhibit 77.

9 (DOCUMENT SUBMITTED TO PANEL)

10 MR. HARRINGTON: The cities comparables is
11 Union 76 and the towns comparables is Union 77.

12 (UNION EXHIBIT NOS. 76 and 77 MARKED)

13 Q. Okay. Bobby, these, just looking at the CBAs
14 again, this is Providence's CBA?

15 A. Yes.

16 Q. And these are the most current we have?

17 A. That's correct, for cities, yes.

18 Q. For cities, yes. Would I be correct, in reviewing
19 this quickly, that there is some type of
20 out-of-rank pay in all of the cities?

21 A. That's correct.

22 Q. Okay. And some, in your opinion -- well, if you
23 looked at Pawtucket, would your hourly rate
24 be greater -- you're from Pawtucket, aren't you?

1 A. Yes, I am.

2 Q. Would the hourly rate be greater between the ranks
3 than the dollar fifty an hour presently received by
4 North Kingstown Firefighters?

5 A. Yes. For example, if a firefighter in
6 Pawtucket were to take on the role of lieutenant,
7 it would break down to approximately around
8 90-something-odd dollars per week over the 42-hour
9 work week. So it would change the hourly rate.

10 Q. Again, what's your position on the Pawtucket Fire
11 Department?

12 A. I'm a captain.

13 Q. Do you find any benefit -- you had to go up through
14 the rank structure, am I correct?

15 A. I did.

16 Q. Would I correct the rank structure is private to
17 lieutenant, lieutenant to captain, captain to
18 Battalion Chief --

19 A. Battalion Chief to Assistant Chief.

20 Q. -- to Assistant Chief and then Chief of the
21 Department?

22 A. Correct.

23 Q. Okay. Did you act -- you're a captain now?

24 A. I am.

- 1 Q. Have you ever -- did you act out of rank as a
 2 lieutenant when you were a firefighter on the
 3 promotional list?
 4 A. When I was a firefighter acting as a
 5 lieutenant.
 6 Q. And did you act as a lieutenant as a captain?
 7 A. All the way through all ranks.
 8 Q. And have you ever acted as a Battalion Chief?
 9 A. I have.
 10 Q. Do you find, based on your experience -- how many
 11 years do you have on the job over there?
 12 A. I will have 28 in March.
 13 Q. 28 in March. Based on your experience in
 14 Pawtucket, do you see any value for acting out of
 15 rank?
 16 A. There's a lot of benefit for acting out of
 17 rank. First of all, depending upon how the
 18 overtime is set up, instead of calling back a
 19 captain for overtime, they could use an acting
 20 lieutenant, and so they just pay him by the day
 21 rate of whatever the difference is in pay.
 22 If it's a long-term fill in, they pay just on
 23 the acting rank and they don't apply it to any
 24 holiday or longevity pay, so the Town saves on that

- 1 as far as applying it to holidays and longevity.
 2 Q. Now, you heard Mr. Maccarone's testimony about
 3 experiences. Is there, in your opinion, again,
 4 based on your 28 years in Pawtucket, when you moved
 5 up, let's say, to acting lieutenant, was there more
 6 responsibilities, more decisions, et cetera, that
 7 went into the process?
 8 A. Absolutely.
 9 MR. REED: Okay.
 10 A. When you're a firefighter, you're responsible
 11 for yourself and, you know, the safety of the
 12 people you work with. But, you know, when you're a
 13 lieutenant, you're in charge of the truck and all
 14 three of your personnel. And you can even maintain
 15 control at some fire scenes and more personnel
 16 depending upon what your delegated job is at the
 17 scene.
 18 Q. Even as an acting lieutenant, if you were the first
 19 piece of apparatus on the scene, would you be
 20 responsible for making the initial tactical
 21 decisions?
 22 A. That's right. If not, I would be the incident
 23 commander until I was relieved by a higher ranking
 24 officer.

- 1 Q. And would you make the tactical decisions?
 2 A. I would have to, yes.
 3 Q. Do you have any choice?
 4 A. No, I don't.
 5 Q. As far as an acting captain, what's the difference
 6 between, based on your experience, between the
 7 lieutenant and captain position?
 8 A. Lieutenant is basically in charge of two or
 9 three other firefighters on an engine company. A
 10 captain is basically in charge of the same amount
 11 of people on an engine company but also takes
 12 charge of station duties, station maintenance, the
 13 piece of apparatus itself, and all members in that
 14 particular station that are on that, that are
 15 assigned to that piece of apparatus.
 16 Q. How about a Battalion Chief in Pawtucket?
 17 A. Battalion Chief in Pawtucket is responsible for
 18 the entire platoon from day personnel that work in
 19 the Fire Prevention Office that he outranks; also
 20 anybody that is working during the day, the
 21 Battalion Chief is in charge of.
 22 Q. So at night would you be -- when you're act as a
 23 Battalion Chief, would you be the highest ranking
 24 officer on duty?

- 1 A. At nighttime, the Battalion Chief is the
 2 highest ranking officer on duty.
 3 Q. And you'd be the tactical head of at least
 4 Pawtucket for that particular group?
 5 A. I would be.
 6 Q. Okay. Would you turn your attention to Union 57,
 7 please.
 8 A. Yes.
 9 Q. Again, is there any comparable fire department that
 10 doesn't receive acting-out-of-rank pay?
 11 A. No, all of them do receive some type of
 12 compensation, whether it be highest rank or, in the
 13 North Kingstown case, a change in hourly rate.
 14 Q. Again, I'm going to ask you the question in
 15 Narragansett. You've got a star there; what does
 16 that signify?
 17 A. I couldn't find it in the Collective Bargaining
 18 Agreement, some of the language was unclear. So I
 19 verified it with John Stone who is the president.
 20 Q. Now, are you aware of the award that came down in
 21 Narragansett?
 22 A. I am.
 23 Q. Do they still receive the next highest rank up to
 24 captain?

1 A. Yes, they do.
 2 Q. And, again, there's a star before Providence; what
 3 does that signify?
 4 A. Same situation, it was unclear language or I
 5 wasn't sure of the interpretation of the language
 6 that was there, whether it wasn't there or it was
 7 lack of, so I talked to President John Silva who
 8 told me that they get the next highest rank.
 9 Q. And in Middletown, an arbitration award was entered
 10 into this proceeding, did they have any change of
 11 the language to the rank of position being filled?
 12 A. Not that I'm aware of.
 13 MR. REED: No further questions subject to
 14 redirect.
 15 MR. CAVASSA: Just a couple
 16 clarifications.
 17 CROSS-EXAMINATION BY MR. CAVASSA
 18 Q. So this is not -- out-of-rank pay is not a
 19 contractual benefit in Narragansett as far as
 20 you're concerned?
 21 A. I'm, I'm not sure. I don't know if I can
 22 answer that.
 23 Q. But you said you looked through the contract and it
 24 wasn't in there?

1 A. Well, looking at, looking through the data.
 2 If you look -- well, if you look at Narragansett,
 3 you'll see in the absence of an available captain
 4 on any work shift, the senior on-duty lieutenant
 5 shall be compensated at the captain's rate of pay.
 6 In the absence of two available lieutenants on the
 7 work shift, the senior on-duty private shall be
 8 compensated.
 9 So they do have contractual language but I may
 10 have asked him prior to the arbitration award and
 11 that's why that asterisk is there.
 12 MR. CAVASSA: Okay. No other questions.
 13 MR. HARRINGTON: Okay. Moving on. You
 14 know what, let's take a couple minutes' break.
 15 MR. REED: Okay.
 16 (BRIEF RECESS)
 17 MR. HARRINGTON: Okay. Back on the record.
 18 MR. REED: Next issue will be Section 2.1,
 19 Arbitration/Grievance Procedure. Billy Maccarone.
 20 Hold on for one second.
 21 (BRIEF PAUSE)
 22 WILLIAM MACCARONE
 23 (HAVING PREVIOUSLY BEEN DULY SWORN)
 24

1 Rebuttal testimony IN RE:
 2 Section 2.1, Arbitration/Grievance Procedure
 3 DIRECT EXAMINATION BY MR. REED
 4 Q. Okay. Billy, do you have all your paraphernalia in
 5 front of you?
 6 A. I believe so.
 7 Q. What's the Union's position on the first change
 8 from the Town?
 9 A. 2.1, the Town is looking to delete also from
 10 the first sentence, if you look at the first
 11 section of the Subparagraph F of the contract, they
 12 basically -- their claim is that it's a meaningless
 13 term, is what it says in the parentheses, brackets.
 14 Q. What's the Union's position?
 15 A. We're against the removal of the term.
 16 Q. Why?
 17 A. It's never been an issue. It's never been a
 18 problem, to my knowledge, because there's never
 19 been -- as I stated earlier, we've actually
 20 enjoyed, up until this past June, a very good
 21 relationship with the Town. There's been extremely
 22 few grievances. There have been extremely few
 23 problems in terms of the administration of the
 24 agreement and in terms of the relationship between

1 the parties.
 2 Q. How long has the present grievance procedure been
 3 in the contract in Section 2.1 Subsection F and
 4 2.1 Subparagraph F?
 5 A. I believe back to '79, the origin of the
 6 contract.
 7 Q. Now, Section 2.3 is a waiver.
 8 A. Yes.
 9 Q. And what's the Union's position if they're late?
 10 The grievance would cease to exist and it would
 11 have to be withdrawn with prejudice?
 12 A. We would be opposed to that for a number of
 13 reasons. Primarily, there's no, there's no similar
 14 duty upon the Town. There's no -- it's putting an
 15 undue burden upon the Union for no real good cause
 16 or reason. There's no -- nothing has been admitted
 17 into the record to say this is a problem. There's
 18 no history of problems. It seems as if it's --
 19 there's no need for this section.
 20 Q. Okay. Now, would there be any cost savings, in
 21 your opinion, to the Town?
 22 A. To the Town?
 23 MR. REED: Yeah.
 24 A. I wouldn't imagine so, no.

1 Q. And, again, could you estimate the number of
 2 grievances you've had, let's say, in the last five
 3 years?
 4 A. As I said, there's been one grievance going
 5 back to 2004. And in preparing for this hearing,
 6 we were debating whether there was another
 7 grievance -- that's how few grievances we have, we
 8 remember the specific instances. My memory was
 9 that we threatened a grievance, and the issue was
 10 rectified. And party on the Executive Board thinks
 11 that we physically wrote the grievance and gave it
 12 to the Chief and then rectified it. That's the
 13 extent of the grievances since 2004.
 14 Q. As far as, let's say, in the last five years, have
 15 you gone to arbitration in a rights case about a
 16 contract violation?
 17 A. This is my first violation that I'd ever been
 18 to, so, no.
 19 MR. REED: No other questions subject to
 20 redirect.
 21 MR. CAVASSA: No questions.
 22 MR. HARRINGTON: Okay.
 23 MR. REED: Excuse me. One other question.
 24 Q. Did the Town put in any evidence in here?

1 A. I don't believe so.
 2 MR. REED: All right. Bobby, do you have
 3 the comparables?
 4 MR. NEILL: I do.
 5 (DOCUMENTS BEING PERUSED)
 6 MR. REED: All right. We would like to
 7 leave this issue open because for some reason we
 8 don't have the comparables.
 9 MR. NEILL: I had my folder but they were
 10 mixed up.
 11 MR. REED: Do you want to look for them
 12 for another minute or two?
 13 MR. HARRINGTON: We will give you a minute
 14 to see if you can find them.
 15 (DOCUMENTS BEING PERUSED)
 16 MR. NEILL: I just have the originals, not
 17 the copies.
 18 MR. ANDRIOLE: Do you want to put him on
 19 and then let them come in?
 20 MR. HARRINGTON: That's just more work for
 21 me.
 22 (BRIEF PAUSE)
 23 MR. REED: The next issue we're rebutting
 24 is Section 3.23, Training and Education, and the

1 language asking to be changed is Subparagraph B.
 2 MR. HARRINGTON: What section are you on?
 3 MR. REED: 3.23, Training and Education.
 4 (DOCUMENTS BEING PERUSED)
 5 MR. HARRINGTON: I'm sorry, I have it.
 6 MR. REED: Or did I make another mistake.
 7 MR. HARRINGTON: No, I didn't look forward
 8 enough. Go ahead.
 9 WILLIAM MACCARONE
 10 (HAVING PREVIOUSLY BEEN DULY SWORN)
 11 Rebuttal testimony IN RE:
 12 Section 3.23, Training and Education
 13 DIRECT EXAMINATION BY MR. REED
 14 Q. All right. Billy, how long has the present
 15 language -- what's the -- how long has the present
 16 language been in the contract, if you know?
 17 A. I do not know this one, how long it's been in
 18 the contract.
 19 Q. Well, you've been a firefighter for how many years?
 20 A. It's definitely been in the contract since
 21 1999.
 22 Q. Okay. When you talk about training and education,
 23 what type of training and education are we talking
 24 about?

1 A. This is in the contract under 3.23, Section B.
 2 This is language that dates back to the, I guess it
 3 would be, the 1980s. We were all basic EMTs. And
 4 then in the switch-over to cardiac life support,
 5 advanced life support involved sending firefighters
 6 to EMT cardiac school.
 7 What they did was when you got hired as a
 8 firefighter in North Kingstown, you had to be an
 9 EMT basic, and then within a year, part of the
 10 terms of your probation was that you completed the
 11 cardiac life support course. I took my cardiac
 12 class or course prior to getting hired. To my
 13 knowledge, when I got hired in 1999, it was off of
 14 a promotional list that was made in '96, '97. That
 15 list was the first list when they required the
 16 cardiac license as a term to be hired.
 17 So, therefore, from '99 forward, if you were
 18 hired as an EMT cardiac, there was no need to send
 19 you to the cardiac school as had previously been
 20 employed leading up to it. When I was in my
 21 cardiac course, there was a firefighter from North
 22 Kingstown who was the last one. My understanding
 23 is he, in fact, no longer works for the Town. He
 24 was the last one that the Town actually sent to

1 cardiac school in this manner.

2 With the exception of recently, the Town made
3 a decision to hire a basic EMT, and they sent that
4 person to cardiac school as well. But that's not a
5 decision that was made by us; the Town hired a
6 person with a basic licence.

7 Q. Well, did the Town pay him time-and-a-half, if you
8 know?

9 A. I believe they did. And under this section, it
10 would require the Town to pay time-and-a-half for
11 attending mandated classes related to your EMT
12 licence.

13 Q. Well, let me ask this question. It says paramedic
14 courses. So there's a basic license. There's the
15 EMT license. Is there a higher certification such
16 as paramedic?

17 A. There is a paramedic course. I don't -- I
18 couldn't speak as to why the language is stated in
19 that manner, with the exception of perhaps there
20 was a forethought that eventually we could become
21 paramedics on a large scale, similar to in the '80s
22 when we were basics and they brought us up to the
23 cardiac level.

24 Whether or not that was a thought, I don't

1 rate?

2 A. That is correct.

3 Q. What is the Union's opinion on this language?

4 A. Well, we're against it because it's a
5 requirement. And the Town, if the Town was to
6 require people to go -- and it's also -- it's very
7 clear that the overtime rate is only when you're
8 being required to attend a course during times that
9 you're not scheduled to work.

10 So I would expect to be compensated at a
11 time-and-a-half rate when I'm working above and
12 beyond my scheduled tour of duty. When I need to
13 get this type of course, if it was taught at night,
14 if I'm required to go and take that class, I should
15 be paid for it.

16 Q. Now, is there anything you want to go over in the
17 exhibit, go over -- the Town raises a question of
18 cost on this also.

19 A. The Town did. In 15 -- we had asked for a
20 clarification, because in Town 15 -- I can give you
21 the section. I don't know if you need to go to it
22 or not. But it was Tab 9. What it was was a
23 spread sheet that was put in.

24 MR. HARRINGTON: Hang on one second.

1 know, but that's how this portion has been
2 administered, as far as I know.

3 Q. So based on -- you're an EMTC, am I correct?

4 A. Yes.

5 Q. So in your opinion -- and you've been a basic.
6 Now, was there a change in the amount of
7 requirements, the knowledge that you needed to go
8 from basic to EMTC?

9 A. Very much so. It's a large difference in terms
10 of the scope and the protocol between a basic EMT
11 and an advanced life support EMT, whether they are
12 a cardiac or if they are even further advanced as a
13 paramedic.

14 Q. So is it your opinion that the paramedic
15 certification would be much more involved?

16 A. It is, absolutely it is more involved.

17 Q. And would it probably be, based on your opinion,
18 outside the realm of in-house training?

19 A. I would think so but I couldn't say
20 conclusively whether or not that that's so.

21 Q. So would I be correct as far as the paramedic
22 course, with this language, if you were required to
23 go outside of your normal tour of duty, you would
24 be paid the straight time, not the time-and-a-half

1 MR. CAVASSA: I'm there. Thank you.

2 MR. HARRINGTON: Go ahead.

3 A. It was a spread sheet that was submitted that
4 had a number of individuals with varying hours for,
5 I believe it's FY10. It doesn't say on this. I'm
6 sure it must be -- it says FY10, so I'm assuming
7 this as well, FY10 Page 2. It caught us by
8 surprise because I know for a fact Ray Furtado, the
9 president, was on the sheet as working nine hours
10 for training. So we had asked to get some
11 clarification on it.

12 To my knowledge, we haven't gotten any, but
13 Ray seemed to remember in recollecting that there
14 was a drill that he did work nine hours on, because
15 that's an odd number to just have nine hours. So
16 using the Department's computer system, I looked up
17 the drill and found that on May 5 of '10 there was
18 a drill. And many of the hours that are on the
19 sheet correspond. Steven Cerrone, nine training
20 hours; he's listed on the sheet as having nine
21 hours of overtime.

22 Q. When you say "the sheet," is that the sheet you
23 prepared?

24 A. Yes, sir, I'm sorry.

1 Q. Do you have a copy for everyone so they could
2 follow?
3 A. I'm sorry, I do not. Could we make a copy of
4 this? Is it possible to make copies?
5 MR. HARRINGTON: Do we have somebody still
6 here?
7 MR. EMBURY: Yes, the room is open.
8 MR. REED: If we may just take a brief
9 moment.
10 MR. HARRINGTON: Yes.
11 (BRIEF RECESS - PHOTOCOPIES BEING MADE)
12 MR. REED: Okay. We'd like this
13 introduced as Union 78, please, and it's North
14 Kingstown Fire Department accountability sheet,
15 date 5/5/10, shifts start at 7:30 Group B Shift,
16 OIC Deputy Chief Leary, Joseph.
17 MR. HARRINGTON: This is Union 78.
18 (UNION EXHIBIT NO. 78 MARKED)
19 Q. All right. Okay. So am I correct, Group B was
20 working that day, Billy?
21 A. Yes, sir.
22 Q. And Joseph Leary was the Deputy Chief?
23 A. Yes, he was -- well -- yes.
24 Q. Or did Joseph Leary prepare who was on duty that

1 or they have them wherever. This particular drill
2 was in Quonset. This particular drill lasted the
3 duration. If you notice, the additional personnel
4 were hired at time-and-a-half to come back and
5 fulfill the roles of this team, this disaster team.
6 So what they did was they staffed the Special
7 Hazards truck, Engine 4 with the crew that would
8 normally be assigned to Engine 6. They staffed, it
9 looks like, Engine 1 with -- Special Hazards with
10 Engine 1's normal crew. They staffed Truck 5 or
11 Truck 10 with Engine 5's normal crew, and they
12 staffed the reserve rescue with overtime personnel.
13 This was to respond to the drill and go
14 through the process of a decontamination drill. It
15 was in conjunction -- this particular one was in
16 conjunction with the Coast Guard and the Federal
17 Government and State of Rhode Island EMA.
18 Now, the one thing that's interesting is that
19 when you look at the hours, they tend to line up
20 with -- Captain Furtado or Ray Furtado had stated
21 he didn't go to EMT school last year. He had no
22 need to. He's a rescue officer; he holds a
23 license. However, he did work this drill for nine
24 hours, and it's on the sheet that the Town provided

1 day?
2 A. No. This is a very unique ride sheet. In
3 that, if you notice, typically on duty the most
4 we're going to have is 17 personnel. As you can
5 see, this is many -- much more than 17 personnel.
6 What this was, if you notice, Engine 1 has two
7 captains assigned to it. Engine 4 is in service
8 this day with a captain and two firefighters.
9 Engine 5 has two officers and two firefighters, and
10 Engine 6 actually has, it appears as if they have,
11 six individuals, two officers and four firefighters
12 assigned to it. And then Rescue 2, which is the
13 reserve rescue, has an officer and a firefighter
14 assigned to it.
15 And Special Hazards, which is normally not a
16 staff -- which is normally not staffed, has an
17 officer and a firefighter assigned to it. And also
18 you will notice on the second page, Truck 10 is in
19 service with, I think, two of the firefighters from
20 Engine 5, or I should say officers from Engine 5.
21 These -- the reason for this was this
22 particular day there was a large scale disaster
23 drill and it was one of the things you see on the
24 6:00 news, sometimes they have them at the airport

1 for nine hours.
2 This money, the money that was paid out this
3 day, the Town should be able to, federally or
4 within the State and Federal Government, get that
5 money back through EMA. And I tend to think that
6 this exhibit, this training exhibit that the Town
7 put together, it doesn't have anything to do with
8 EMT training. It doesn't have anything to do
9 with -- it has to do with overtime hours that were
10 somehow logged as training within the Town Hall.
11 And the Town, in their diligence of slashing and
12 burning all of the portions of the contract, took
13 this as a --
14 MR. CAVASSA: Objection. Move to strike
15 the comment.
16 MR. HARRINGTON: It's stricken.
17 A. -- took the numbers as they saw training and
18 made the assumption that this is what this is. It
19 is not. I don't think anybody was required to go
20 to EMT school last year. The Town could not
21 provide back-up to say, if they were, who was
22 required.
23 Q. Why do you say the Town -- why do you believe that
24 no one had to go to EMTC school?

1 A. With the exception of one individual, we all
 2 have the EMT cardiac licenses, and --
 3 Q. And I understand that. So when was your -- you
 4 recertify every how many years?
 5 A. I'd have to look that up. It's either two or
 6 three years.
 7 Q. So is it your testimony that there's no need for
 8 recertification in the year you just talked about,
 9 2010?
 10 A. I don't believe so. My recollection is no.
 11 But if there was a need for recertification, it's
 12 done in-house. It would involve some overtime,
 13 I'm sure, for the individuals that are physically
 14 bringing the training to us. But if anybody --
 15 and that's not these individuals.
 16 If you look at the sheet they provided, Chief
 17 Fenwic Gardiner is a Deputy Fire Chief who worked
 18 25 hours of, quote unquote, training last year. I
 19 do not believe he went to EMT school 25 hours last
 20 year. I know Captain Furtado didn't go to EMT
 21 school for nine hours.
 22 Q. How about yourself?
 23 A. I'm not listed on here. I didn't have to go to
 24 EMT school either, but I'm not listed for getting

1 Section 3.2. It's on page --
 2 MR. HARRINGTON: Okay. I got it.
 3 MR. CAVASSA: He already provided
 4 testimony on that.
 5 MR. REED: One moment.
 6 (DOCUMENTS BEING PERUSED)
 7 MR. REED: Time and Class/Step,
 8 Section 3.2?
 9 MR. HARRINGTON: Did you say there was
 10 already testimony on this?
 11 MR. REED: I don't believe so.
 12 MR. CAVASSA: Last hearing date.
 13 MR. MACCARONE: By whom, do you know who?
 14 Can I ask that?
 15 MR. REED: Justin Puckett?
 16 MR. CAVASSA: Yes.
 17 MR. REED: He talked about -- I believe he
 18 talked about just rebutting your salary
 19 classification.
 20 MR. CAVASSA: He lumped them both
 21 together. I haven't crossed him on it yet, but he
 22 lumped them both together and he talked about the
 23 time and step and the provision for new hires.
 24 Unless I am dreaming, but I'm fairly certain he

1 any extra hours here.
 2 MR. REED: No other questions subject to
 3 redirect.
 4 MR. CAVASSA: Just one quick minute.
 5 MR. HARRINGTON: Okay.
 6 (BRIEF RECESS)
 7 MR. CAVASSA: I just have one question.
 8 CROSS-EXAMINATION BY CAVASSA
 9 Q. The training hours that you were discussing, isn't
 10 it true that it's the Fire Department itself that
 11 submits the training hours to the Finance Office,
 12 if you know?
 13 A. I have no idea who does that.
 14 MR. CAVASSA: No other questions.
 15 MR. HARRINGTON: Okay.
 16 MR. REED: May I just have one moment,
 17 please.
 18 (BRIEF RECESS)
 19 MR. HARRINGTON: Okay.
 20 MR. REED: The next issue would be
 21 Section 3.2, Time and Class/Step. The same
 22 witness, William MacCarone.
 23 MR. HARRINGTON: 3.2 slash what, Paul?
 24 MR. REED: It says Time and Class/Step,

1 testified on the topic.
 2 MR. ANDRIOLE: On the 21st date --
 3 MR. HARRINGTON: Let's go off the record.
 4 (OFF THE RECORD)
 5 MR. HARRINGTON: Let's go back on the
 6 record.
 7 MR. REED: So we're back at 3.2, Time and
 8 Class/Step. Okay. Billy, you've been sworn.
 9 MR. MACCARONE: Yes.
 10 WILLIAM MACCARONE
 11 (HAVING PREVIOUSLY BEEN DULY SWORN)
 12 Rebuttal testimony IN RE:
 13 Section 3.2, Time and Class/Step
 14 DIRECT EXAMINATION BY MR. REED
 15 Q. What's the Union's position on the change that they
 16 reflect -- excuse me, the change reflected by the
 17 Town?
 18 A. The Town is seeking to eliminate all steps
 19 beyond Step B for essentially all new hires or all
 20 employees hired after July 1 of 2010.
 21 Q. Now, how many steps are there presently?
 22 A. Presently there are six steps; A through F is
 23 the representation within the terms of the CBA.
 24 Q. And how long has that been in effect?

1 A. From '79 until 2004 there were Steps A
2 through D.
3 Q. Okay. Now, do you have an exhibit prepared to
4 support our position on this, Billy?
5 A. Yes, actually, I have two, if I could. The
6 first one I'd like to present is actually just
7 something to support what I'm referring to. The
8 Fire Department had -- well, I'll wait until it
9 gets out.
10 (DOCUMENT SUBMITTED TO PANEL)
11 MR. REED: It's titled 1998 NKFD Personnel
12 Roster, date 1-1-1998, and it's a three-page
13 document.
14 THE WITNESS: It's to --
15 MR. REED: Hold it. We'd like this
16 introduced as a full exhibit, Exhibit No. 80.
17 MR. KINDER: 79.
18 MR. REED: 79.
19 MR. HARRINGTON: Okay. This is Union 79.
20 Personnel -- 1998 Personnel Roster.
21 (UNION EXHIBIT NO. 79 MARKED)
22 MR. HARRINGTON: Okay. You can proceed.
23 Q. Billy, what's the purpose of introducing this to
24 support our position against the Town's proposal?

1 A. Part of the reason why we have the steps that
2 we have today is related to a retention problem
3 that the Fire Department had in the mid to late
4 '90s to the turn of 2000. What this represents as
5 the 1998 personnel roster is it's a -- I recreated
6 this from a combination of Union records and the
7 Town records. And the only reason why it was
8 necessary was to get a baseline personnel, a base
9 of how many personnel we had employed as of 1998.
10 Q. Now, when it says the "rank" here, that's the rank
11 structure?
12 A. Yes, it is.
13 Q. These are the names that were on the roster in
14 1998?
15 A. Yes.
16 Q. And under "Roll," what does that mean?
17 A. Roll, that's simply a reference to the
18 employee's roll call number.
19 Q. I see. So that change is done by the amount of
20 time a firefighter had on the job?
21 A. Exactly. Every, every -- when you're hired,
22 you're assigned a roll call number.
23 Q. And so, if I'm correct, Rigley was the most senior
24 man at that particular time?

1 A. Yes.
2 Q. -- or woman?
3 A. Yes.
4 Q. Okay. And it looks Kaylo was the junior
5 firefighter, am I correct?
6 A. As of 1998, yes.
7 Q. All right. Now, this is the roster. And Page 3,
8 what does that propose to show?
9 A. Page 3 is an illustration of the retention
10 issue that I referred to earlier. As of 6/30/98 we
11 had 70 full-time employees in the Fire Department
12 with a minimum staffing at that time of 15. That
13 includes the Fire Marshal and the two mechanics.
14 So, in reality, we had 67 personnel divided among
15 the four platoons.
16 Between 6/30/98 and 12/31/98, we had seven
17 employees resign. Now, the differentiation I made
18 between resigned and retired was, if somebody left
19 the service with less than 20 years, that's a
20 resignation. If somebody left the service in
21 excess of 20 years, that's a retirement. For
22 purposes of --
23 Q. Well, slow down. In that particular year you had
24 no retirees but seven people resigned?

1 A. Just in that six-month period.
2 Q. I see. Below that it says "new hires," what does
3 that represent?
4 A. That represents the hiring that was done within
5 that six-month window to replace the employees that
6 had left.
7 Q. So seven left and seven were hired?
8 A. That's exactly how it was done for that time
9 period. Typically, when the -- in the past the
10 Fire Department would hire single individuals, one
11 or two at a time, because the attrition tended to
12 be more one or two at a time. In the late '90s,
13 this is right around the time when I came into the
14 service, the problem with retention was so poor, so
15 bad that they were actually hiring individuals
16 anticipating other people leaving. They knew the
17 writing was more or less on the wall that people
18 were going to leave to go elsewhere.
19 And what they were actually doing was they
20 were hiring groups of anywhere between four, six,
21 eight, those type numbers, to replenish the
22 personnel to bring the numbers up in anticipation
23 of -- you can more or less dictate or get an idea
24 how your retirements are going to play out just

1 through the age of the individuals and the years on
2 service. And you can say to the individual, do you
3 plan on retiring this year or do you have any idea?
4 Resignations, there's no indicator above that or
5 indicators are often very difficult to ascertain.
6 So they just knew people were going to be leaving.

7 So for the seven that left, they hired the
8 corresponding seven. The next six-month period,
9 you had five retire at the end of fiscal year '99,
10 and they hired nine to bring the total force up to
11 74. Again, with the minimum staffing of 15 at that
12 time. The next six-month period you had one resign
13 and two retire for a total of three lost, you're
14 down to 71. The following six months you didn't
15 have anybody leave, there was no attrition, there
16 was no hiring.

17 The next six months you had one resignation
18 and two retirements, for a total of three, total
19 loss. You had -- the next six months, now we're up
20 to the end of FY01, you had one retire, now we're
21 down to a total force of 67 with a staffing,
22 minimum staffing of 15.

23 In the first half of '01, they hired six and
24 you had one individual resign. The second half --

1 yeah, I guess that would be the first half of -- or
2 the last half of FY02, that probably is going to
3 get confusing, they hired six more to bring the
4 total staffing to 78. And then 12/31/02 they hired
5 eight more because they had seven resign and two
6 retire.

7 When I transposed the numbers down, I carried
8 12/31 down. So when you go to the second column
9 down there, the second row, if you could just move
10 one over to 6/30/02. They had two retire to 75.
11 '03 there was at least -- between 6/30 of '03 and
12 12/31/03, there was no movement.

13 Between 1/1/04 and 6/30 of '04 you had three
14 people resign and two retire. The same thing in
15 '04, there was no resignations or retirements in
16 that --

17 MR. CAVASSA: In the interest of time, we
18 follow the way that the document -- the methodology
19 behind it. I don't see the link to the steps but
20 we'll agree that it's the same methodology that
21 used throughout, if it speeds things up.

22 THE WITNESS: If I could, is it possible
23 to just interject one thing.

24 MR. HARRINGTON: Yes.

1 A. It's relevant that in '08 Engine 5 came into
2 service. So even if it was established as 15, the
3 required was 17. And I would also point out the
4 almost equaling number of resignations in terms of
5 during that entire time span you had 24
6 resignations and 30 retirements. And similarly,
7 since '05, there's only been four resignations.
8 And from '98 to '04, there were 20 resignations.
9 So that's, what, that's the line, the parallel that
10 I'm attempting to draw with the steps.

11 Q. Okay. Now, I've asked this question, but how long
12 has the present step system been in place?

13 A. The steps -- from '79 to '04 we had Steps A
14 through D. In 2004 we added a new Step A, which
15 was a 4 percent reduction over or under, I should
16 say, the previous step.

17 Q. Why was that done?

18 A. That was done to add a fifth step and to lower
19 the starting employee's salary in a manner such as
20 to incentivize individuals to stay. Because that
21 was in '04; and in '05 we had a 4 percent increase
22 step added, Step F.

23 So what we basically did between '04 and '05
24 was you added two new steps: A brand new Step A

1 that was a 4 percent reduction and a brand new Step
2 F which was a 4 percent increase.

3 Q. Would I be correct that you reduced starting pay,
4 whether the firefighter progressed, they got an
5 additional rate of pay?

6 A. Exactly, and the primary reason for that was to
7 try to incentivize employees to stay, to try to
8 incentivize members to not go elsewhere and to try
9 to cut down on the resignations --

10 MR. CAVASSA: Objection. Lack of
11 foundation and speculation.

12 MR. HARRINGTON: Sustained. If you can,
13 can you give some -- how do you know those
14 conclusions that you're testifying to?

15 THE WITNESS: Well, if I can, I can say
16 that the reason for us travelling down this road as
17 a Union was to try to build this type of incentive.
18 And if you -- what I was trying to lay out with the
19 number of resignations declining drastically since
20 these changes were employed, with the exception of
21 I could gladly pole and conduct some sort of
22 survey, hopefully scientific enough to your liking,
23 to say to the members that left, "Why did you
24 leave?" "Would you have left if you made more

1 money" --

2 MR. HARRINGTON: That's not the objection.

3 THE WITNESS: I'm sorry.

4 MR. HARRINGTON: You were testifying that
5 the change was done, one reduction on one end, on
6 the low end, and an increase on the other end, were
7 done to create an incentive.

8 THE WITNESS: Yes.

9 MR. HARRINGTON: How do you know that or
10 are you assuming that?

11 THE WITNESS: I believe -- I was not part
12 of -- I was not part of this contract negotiation.
13 But in conversations with previous Executive Board
14 members that were a part of the process, that
15 was -- that is my understanding based upon --

16 MR. HARRINGTON: Then I am going to
17 sustain the objection.

18 MR. REED: I have another question.

19 Q. As far as retention, has it slowed down from what
20 it was in those years that you identified?

21 A. Yes, it has.

22 Q. -- by resignation?

23 A. I believe it has.

24 Q. Does anything show that on this particular document

1 Q. -- same emergency medical certification?

2 A. Yes, I hope so.

3 Q. -- same training?

4 A. I would hope so. Even better training, you can
5 never have enough training.

6 Q. In your opinion, would they face the same risk as
7 firefighters who prior to June -- who were hired
8 prior to June 30, 2010 that enjoy the number of
9 steps that you presently have in place?

10 A. Yes.

11 Q. Okay. Do you, in your opinion, based on your time
12 as a firefighter and as a lieutenant in charge of a
13 piece of suppression apparatus, think that the
14 perils of employment that these firefighters would
15 face would be less than what a firefighter hired
16 before June 30, 2010 would be?

17 A. No. They would face the same, if not greater.
18 I think we've displayed on a number of times that,
19 if anything, the dangers and the perils that we are
20 facing are increasing. The responsibilities that
21 we have are increasing.

22 Q. Okay. Now, did you make any comparisons with any
23 other bargaining units in the Town concerning how
24 they handled their steps?

1 as far as it seems to be '98, '99, the first two,
2 and 2002, but it seems to slow down since
3 basically --

4 A. Drastically, drastically it has slowed down.

5 Q. Okay. Now, if you look at the language, this would
6 only affect firefighters hired July 1, 2010. Why
7 is the Union against that?

8 A. The Union is against that because that's going
9 to create, in essence, a second tier of firefighter
10 or a less than qualified -- or less than
11 compensated firefighter. It's going to create two
12 classes beyond what is currently proscribed within
13 the rank structure.

14 Q. Well, you're a lieutenant on a piece of apparatus,
15 am I correct?

16 A. Yes.

17 Q. You've tested for the position?

18 A. Yes.

19 Q. Do you expect when and if the Town hires after
20 July, 2010 for those firefighters to come through
21 the same hiring process?

22 A. I would expect.

23 Q. -- same qualifications?

24 A. I would hope.

1 A. Yes, I did.

2 Q. Did you prepare an exhibit?

3 A. I did.

4 MR. REED: We'd like this introduced for
5 identification as Union Exhibit 80, and it's
6 Section 3.2 of the Union exhibit, Time and
7 Class/Step.

8 THE WITNESS: Yes.

9 (DOCUMENT SUBMITTED TO PANEL)

10 (DOCUMENT BEING PERUSED)

11 MR. CAVASSA: I object on the same basis
12 as I have been for these exhibits, that is to the
13 extent that it's not argument. These documents,
14 there's no new evidence. This is not -- the
15 contracts are in the record, I believe. Looking
16 through this, the Police contract is in evidence.
17 The Teachers contract has been submitted into
18 evidence. I don't know what new is being offered
19 here, other than argument.

20 MR. HARRINGTON: Well, I am going to
21 overrule the objection and give you some latitude
22 to explain whether it's the same as what's in
23 before or not. So this is Union 80.

24 (UNION EXHIBIT NO. 80 MARKED)

1 STENOGRAPHER: May I change paper, please.

2 (PAUSE)

3 STENOGRAPHER: All set, thank you.

4 MR. KINDER: May I be clear. Was that a
5 question from the Arbitrator whether or not there's
6 anything new in this?

7 MR. HARRINGTON: I overruled his objection
8 to allow the testimony.

9 MR. KINDER: Oh, I'm sorry. I though you
10 were asking whether or not there was anything new.

11 MR. HARRINGTON: No. I overruled the
12 objection to give him some latitude to explain
13 what's in the document as to whether it's different
14 than what's been offered in other exhibits or if
15 it's the same.

16 Q. Okay. Billy, would you explain the first couple of
17 pages basically, Page 1 and 2.

18 A. Sure. Page 1 just represents 2004, the changes
19 that I outlined earlier, so that is just back-up
20 for that, as well as 2005 with the step, because it
21 is -- that's a unique instance and those changes
22 took place within the '04 to '07 CBA, one
23 implemented in '04 and the second implemented in
24 '05. So that just spells that out, to clarify for

1 somewhat describe the changes that were made. And
2 the only way for the panel to have known that
3 Step A was a 4 percent reduction would have been to
4 go through Step A in '04, where a 4 percent
5 reduction would have go to through, add 2 percent
6 to the base from the year before, and then subtract
7 off the 4 percent. So that's just trying to make
8 it clearer.

9 Similarly, if you look at Page 7 which I
10 think -- Page 6 appears to be out of this, there
11 must have been a problem with the printer. Page 7,
12 the police officer will reach top step quicker, and
13 the police officer only has two steps for the
14 police dispatcher, which I understand is not even a
15 full position even though it's still in the
16 ranking, but of all the positions there's only one
17 step as far as when you make a rank or when you get
18 promoted.

19 If you look at the 2010/2013 Teachers
20 contract, they have ten steps; and those percentage
21 of salary increases vary, some of them are 7 and 8
22 percent, some of them as low as 4 or 5 percent,
23 each of the steps, up until 10.

24 Then if you look at Page 8 it was similar, it

1 the panel. My apologize if that's not a
2 clarification.

3 And then on Page 2, similarly in the '04/'07
4 agreement in which we implemented the additional
5 steps, there were less -- the pay increases for us
6 were less as compared to other bargaining units in
7 Town. The '04/'07 Police CBA language, which I
8 don't believe is in evidence and we can provide the
9 entire CBA if the panel would like, they receive
10 2 percent raises twice a year, so it was compounded
11 out probably about a 12.3, 12.4 percent raise over
12 those three years from '04 to '07. At the same
13 time we agreed to lower the first step and
14 increase the last step but they maintained Steps A
15 through D.

16 If you look at Page 3, it simply is for
17 illustrative purposes, I would think, to assist the
18 panel in seeing the fact that in '04 we did have A
19 through D. The language within the contract can be
20 a bit difficult to make through and to go through
21 when it comes to the steps and, at least for me, to
22 illustrate it out it's easier for me. So I thought
23 it would assist the panel.

24 If you look at Page 3, 4, and 5, that will

1 was a simple breakdown for ease of the panel, to
2 try to explain to the panel what the ramifications
3 of such a proposal would be upon a firefighter if
4 this proposal was awarded. And what you basically
5 look at, just if this proposal was awarded, none of
6 the other Town's proposals were awarded, at the end
7 of the day your firefighter would be making roughly
8 on average about 72 percent of what a police
9 officer makes and roughly on average about 62
10 percent of what a teacher makes on an annual basis.

11 Then if you further compound in the Town's
12 proposed wage reduction, 25 percent, in conjunction
13 with the 56-hour work week, basically if a
14 firefighter who has 20 years of service with our
15 current longevity would be reduced to, and a
16 firefighter EMTC, which is the majority of them
17 with the exception of one, would be making \$16.02
18 an hour in comparison to a patrol officer making
19 \$30.61 or a teacher making \$61.40.

20 Now, the teacher comparison, just so that
21 we're on the same page, the contract calls for
22 185 days at 6 to 6 1/2 hours per day; that equals
23 1,202.5 hours. I figured it at 6.5 hours, even
24 though it's 6 to 6.5. I divided that by the annual

1 salary to come up with the 61.40.
 2 So if you take that and compound that, if the
 3 Town's wage reduction proposal with the 56-hour
 4 work week was adopted, the potential for a
 5 firefighter with his EMT cardiac license, he would
 6 be making half of what a police officer was making
 7 and about a little more than a quarter of what a
 8 school teacher was making.
 9 Q. And that's for people who would be hired after
 10 July 1 --
 11 A. Yes.
 12 Q. -- 2010?
 13 A. Yes.
 14 Q. So you projected this into the future, am I
 15 correct?
 16 A. I did project into the future and there was no
 17 change in wage increase. I didn't anticipate
 18 anybody's wages increasing. This is only a
 19 projection.
 20 Q. So that's only a projection based on the present
 21 wage structure?
 22 A. Yes.
 23 Q. Anything else to point out?
 24 A. On the last page, if the Town's 25 percent wage

1 classroom?
 2 A. I'm sure they do.
 3 Q. -- and they grade tests outside of the classroom?
 4 A. I'm sure they do.
 5 Q. -- and they perform extra help outside of their
 6 6.5 hours?
 7 A. Possibly, I'm sure they do.
 8 Q. -- and they prepare lesson plans outside of the
 9 6.5 hours?
 10 A. Possibly.
 11 Q. And you didn't factor that into your calculation?
 12 A. No.
 13 Q. Are you aware that the teacher step schedule is
 14 mandated by state law?
 15 A. Nope.
 16 Q. Do you know how many firefighters are not currently
 17 at the top step?
 18 A. Hang on a second. I'm sorry. Could you repeat
 19 that question. How many firefighters --
 20 Q. Are currently below the top step.
 21 A. I couldn't say -- right now I could not say
 22 with certainty. I could look at the attrition
 23 sheet I prepared and give you an idea. Would you
 24 like that?

1 reduction and the longevity was to be awarded, and
 2 this was 7 percent longevity, this wasn't even
 3 taking into account no longevity, but if you were
 4 to take into account 7 percent longevity, maximize
 5 what the Town is seeking to impose, it would just
 6 drive the number even further to where a
 7 firefighter after 20 years of service would be
 8 making 25 percent of what a teacher was making.
 9 It's extremely unfair. It's extremely
 10 inequitable, and it's without, without merit.
 11 MR. REED: No other questions subject to
 12 redirect.
 13 MR. CAVASSA: I just want to take a
 14 minute, please.
 15 MR. HARRINGTON: Yes.
 16 (BRIEF RECESS)
 17 MR. HARRINGTON: Ready?
 18 MR. CAVASSA: Yes.
 19 CROSS-EXAMINATION BY MR. CAVASSA
 20 Q. Mr. Maccarone, you testified teachers are only
 21 working 6 1/2 hours under the contract?
 22 A. Contractually they're required to but I'm sure
 23 they work more hours at home and whatnot.
 24 Q. So you're aware they prepared tests outside of the

1 Q. If you can't say with certainty, then, no.
 2 A. Referring to that, I can get a ballpark. Would
 3 you like me to try to refer to that?
 4 MR. CAVASSA: No.
 5 MR. HARRINGTON: No, he indicated he
 6 didn't want a ballpark.
 7 A. I can't state with certainty.
 8 MR. CAVASSA: I have no other questions.
 9 MR. HARRINGTON: Any other questions?
 10 MR. REED: No. The next section is going
 11 to be pretty long.
 12 MR. HARRINGTON: All right. So the next
 13 one would take you awhile?
 14 MR. REED: According to the witness, yes.
 15 MR. HARRINGTON: All right. Why don't we
 16 go off the record.
 17 (OFF THE RECORD)
 18 MR. HARRINGTON: Okay, with that, we're
 19 done for today.
 20 HEARING ADJOURNED at 3:45 P.M.:
 21 INTEREST ARBITRATION
 22 JULY 1, 2010 - JUNE 30, 2011
 23 NORTH KINGSTOWN FIREFIGHTERS LOCAL 1651
 24 - And -
 TOWN OF NORTH KINGSTOWN
 NO. 11 390 01218 10 DAY XI

59 (Pages 2352 to 2355)

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CERTIFICATE

I, CAROLE A. MALAGA, hereby certify that the
foregoing is a true, accurate, and complete
transcript of my notes taken at the above-entitled
NORTH KINGSTOWN FIREFIGHTERS INTEREST ARBITRATION.

IN WITNESS WHEREOF, I have hereunto set my
hand this 12th day of March, 2011.

CAROLE A. MALAGA, RPR/NOTARY PUBLIC

DATE: JANUARY 26, 2011

IN RE: INTEREST ARBITRATION

INTEREST ARBITRATION

JULY 1, 2010 - JUNE 30, 2011

NORTH KINGSTOWN FIREFIGHTERS LOCAL 1651

- And -

TOWN OF NORTH KINGSTOWN

NO. 11 390 01218 10 DAY XI

5-4

Shift Scheduling & Employee Involvement: The Key to Successful Schedules

William Davis & Acacia Aguirre, M.D., Ph.D.

*Bring Employee more
decision on bring in
shift change.*

*pg 6
pg 9*



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Introduction

Literally thousands of different work schedules are in use today but, contrary to popular belief, there is no one “golden schedule” that surpasses all others. The optimal work schedule for any facility is one that balances operational requirements, employee preferences and lifestyle issues, and the human factors considerations that influence safety and employee performance.

Finding the ideal schedule for a particular facility—one that will minimize the costs, risks, and liabilities of the 24/7 operation—requires careful attention to the process of shift schedule design. In other words, who chooses the shift schedule and how they choose it is vital to its success. The design of any shift schedule not only should be adapted to the conditions of the particular workplace or operation but also should take into account the local operational needs and specific characteristics of the workforce. Doing so can only be fully accomplished by involving both employees and local management in the process.

Both research studies and CIRCADIANT's 25 years of consulting experience show that employee participation in the schedule selection and change process is critical to the initiative's success. Employee involvement in schedule redesign through education, participatory design, and group implementation considerably increases both financial and performance benefits compared to schedules changed by management mandate alone (Ala-Mursula et al 2002; Moore-Ede 1994; Smith et al 1998). In contrast, management-mandated schedules often neither properly take into account the needs of employees nor gain employee support, thereby potentially resulting in less than optimal 24/7 facility performance due to increased employee fatigue, turnover, and absenteeism, and decreased morale.

Evaluating Your Shift Schedule

It is important for operations to re-evaluate work schedules on a regular basis, as the assumptions or data used to develop a shift schedule become out of date as the business operations and the demographics of the workforce change. The advantages of the original schedule are lost and hidden costs accumulate as the shift schedule becomes out of synch with a company's current realities. Therefore, re-evaluation, and potentially redesign, of the schedule may be necessary in order both to maximize the productivity and safety of workers and to minimize the operational costs of the facility.

The key reasons for redesigning work schedules include:

- Adjustment of staffing levels or number of crews to permit time for training, to reduce excessive levels of overtime, or for other business purposes
- Business expansion or contraction requiring a change in work days or days in a week (e.g., a move from 5-day to 7-day operations)

SHIFT SCHEDULING & EMPLOYEE INVOLVEMENT: THE KEY TO SUCCESSFUL SCHEDULES

- Operational risk assessment showing that the existing schedule causes excess employee risks or costs (e.g. absenteeism, errors, accidents and lost-time injuries, employee turnover, complaints of excessive fatigue)
- Demographic changes to the workforce (e.g., more younger employees, more women) that makes the previous schedule no longer suited to employee lifestyle
- To increase recruitment and retention efforts
- To change from a 'crisis' to a 'proactive' mode for staffing and scheduling

CIRCADIAN's survey report of 400 shiftwork operations, *Shiftwork Practices 2007*, shows that 11% of 24/7 facilities used their current schedule for less than 1 year, 29% used their current schedule for 2 to 5 years, 39% used their current schedule for 5 to 10 years, and 34% hadn't changed schedules in more than 10 years.

How long a company sticks to one type of schedule varies among industries. As might be expected, the capital-intensive and highly-automated utility and processing industries, for instance, require very few schedule changes because process drives production more than do market demand fluctuations. In such industries, maximum productivity and efficiencies normally come from having four equally-balanced crews designed to run the operation at full capacity. Continuous production operations need to be staffed so that they can produce at the same level 168 hours per week or, in other words, so that they have the same productive capacity at midnight on Saturday as they are at noon on Tuesday.

Specific Benefits of Employee Involvement

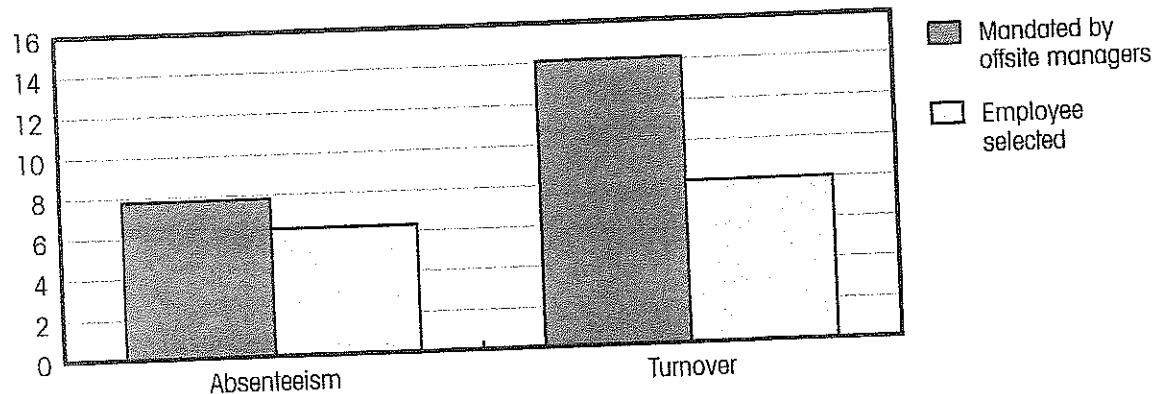
Schedules are usually selected in one of three ways: They are either mandated by management, negotiated with a union, or selected by employees. The 1990s showed an encouraging trend toward employee involvement in the shift schedule design process. During the late 1990s, 54% of facilities surveyed reported employee involvement, while management-mandated decisions dropped to 22%. Unfortunately, this trend has reversed in the past years. In 2006, 45% of facilities reported that their current schedules were mandated by management, either off-site (e.g., corporate) or on-site managers. Only 26% percent of facilities allowed employees to select the schedule and 15% negotiated with the union.

This decrease in the number of facilities that allowed employees to select a schedule is noteworthy, since research shows that involving employees in the selection process results in better employee morale and satisfaction with the new schedule, lower absenteeism and turnover, and increased operational efficiency.

Indeed, surveys of facility managers demonstrate that work schedules developed through employee-driven processes (vs. management-mandated ones) can lead to lower levels of absen-

teism and turnover (See Figure 1), resulting in average direct cost savings of \$1,880 per employee (*Financial Opportunities in Extended Hours Operations: Managing Costs, Risks, and Liabilities*, Circadian Technologies 2003).

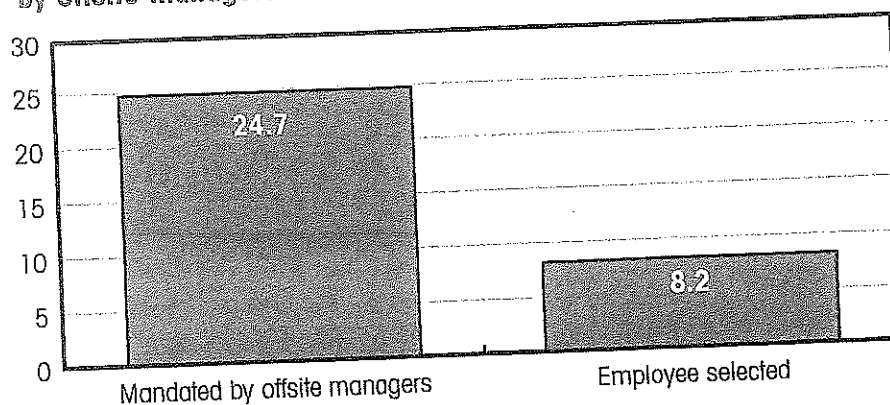
FIGURE 1.
 Absenteeism and turnover rates in facilities with schedules mandated by offsite managers vs. those that allow employees to select schedules.



Shiftwork Practices Survey 2007.

Fatigue was also lower in facilities in which employees chose the schedule: 8.2% of managers in these facilities reported severe employee fatigue problems compared to 24.7% of managers in facilities with schedules mandated by offsite managers (See Figure 2).

FIGURE 2.
 Percentage of facilities reporting severe fatigue problems with schedules mandated by offsite managers vs. those that allow employees to select schedules.

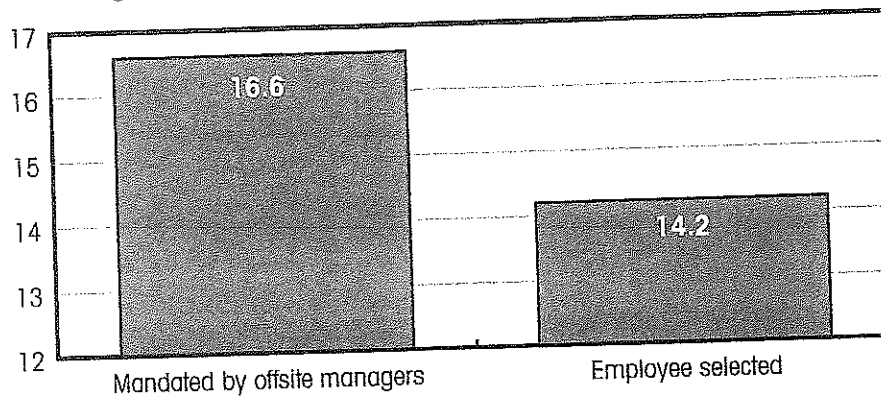


Shiftwork Practices Survey 2007.

SHIFT SCHEDULING & EMPLOYEE INVOLVEMENT: THE KEY TO SUCCESSFUL SCHEDULES

This increased fatigue could be related in part to an increase in overtime (see Figure 3). In facilities with schedules chosen by employees, overtime rate was 14.2% compared to an overtime rate of 16.6% in facilities with schedules mandated by offsite managers (*Shiftwork Practices Survey 2007*).

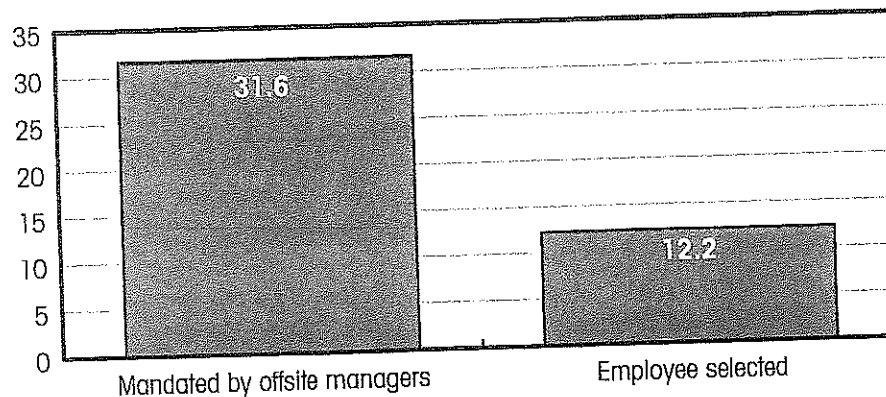
FIGURE 3.
Overtime rates for facilities in which schedules were mandated by offsite managers vs. those that allowed employees to select schedules.



Shiftwork Practices Survey 2007.

The data also shows a connection between the schedule selection method and employee morale. According to the *Shiftwork Practices 2007* survey data shown in Figure 4, the percentage of facilities reporting poor to very poor morale is almost three times higher (31.6%) when schedules are mandated by offsite managers than when employees select them (12.2%).

FIGURE 4.
Percentage of facilities reporting poor to very poor morale and shift schedule selection method.



Shiftwork Practices Survey 2007.

Employee participation in the process of designing and implementing a new work schedule is just as important as the characteristics of the new work schedule itself. Studies comparing schedule implementation methods have shown that employee involvement in schedule redesign considerably increases the benefits compared to schedules changed by management mandate alone (Ala-Mursula et al. 2002, Bradley, 1991, Holtom et al. 2002, Smith et al. 1998), including:

- increased worker satisfaction with schedule design
- decreased unscheduled absences from illness
- maintained teamwork among employees as well as in-role and extra-role performance on individual levels
- decreased physical and psychological circadian malaise and overall tiredness associated with shiftwork
- improved daytime sleep quality
- improved quality of employees' home and social lives
- decreased turnover and number of vacant positions
- increased organizational commitment
- improved employee understanding of administrative issues involved in management of the facility
- reduced employee complaints

The International Labor Organization conducted a survey in the US, Europe, and Japan to analyze the essential steps in the shift schedule change process (Kogi and diMartino 1995). The results showed the positive effect of joint labor-management efforts in developing and implementing a new schedule. The participation of an independent, expert third party also increased the success of the process. The expert third party not only provided expert advice on ergonomic scheduling criteria, but had a major role in facilitating the process, helping labor and management resolve conflicting interests, and reaching compromises.

Case Studies

The following examples clearly illustrate the benefits of employee involvement in the shift schedule selection process:

Example 1:

Business imperatives demanded a change from a 5-day (Mon-Fri) 16h/day operation to a 24/7 operation in an aircraft maintenance facility. Given the mistrust and negative environment in the organization, the method of making the change was critical. Moreover, an employee survey (with 82% participation rate) indicated that the majority of employees preferred to remain on the 5-day/16 hour schedule. The operation selected a collaborative approach that involved all stakeholders to implement the new schedule. After the 12-month trial period, the new 24/7, 12-h shift schedule was evaluated. The results showed that, overall, productivity increased and the level of on-time performance improved by 6%. The improved performance resulted in increased revenues with only a moderate wage drift to cover pay. Overtime levels for those working 12-hour shifts decreased over the 12-month period. Finally, workplace morale showed a substantial improvement (Frazer et al. 2000).

Example 2:

An oil refinery decided to change shift schedules due to a high turnover rate (12.5% per year). The problem was most marked among young employees. The facility operated on 8-hour shifts with a backward rotation. A joint labor-management committee was created first to collect different schedule options, then to evaluate them taking into account ergonomic criteria, management constraints, and safety concerns, and finally to select two alternative options on which employees would vote. The employees selected a 12-h shift schedule. After the trial period, 82% of the workers reported an overall positive change and voted in favor of permanently implementing the schedule. Moreover, the turnover rate significantly decreased and the applicant supply increased (Jeppesen and Boggild 2000).

Example 3:

A major paper and packaging company engaged CIRCADI-AN to conduct a Shift Schedule Optimization Process (SSOP) in order to identify and implement the optimal work schedule for one of their mills. The SSOP is a participatory process that involves management and employees working together to identify the optimum schedule for both stakeholders. The SSOP included: 1) an analysis of the operating criteria required by management to run the mill in a safe and effective manner; 2) an analysis of the most desired schedule features important to the workforce (obtained from a comprehensive survey); and 3) biocompatible schedule requirements produced by CIRCADI-AN from information derived from its years of physiological research on shiftworkers.

SHIFT SCHEDULING & EMPLOYEE INVOLVEMENT: THE KEY TO SUCCESSFUL SCHEDULES

The workforce self-selected a 4-crew, 12-hour rotating schedule featuring a 7-day-long break for each crew during each 4-week rotation. In addition, the selected schedule required employees to work no more than 4 consecutive workdays. The schedule further required that employees work half the days of the year.

Since this schedule was a substantial departure from the former 4-crew, 8-hour, backward rotating "southern swing," a substantial negotiation period with the three union locals was required to obtain agreement on the numerous pay and Human Resource policy issues and changes.

Pre- and post-implementation schedule surveys revealed an overall decrease in fatigue as well as an improvement in other health factors, including the quality and quantity of sleep (See Figure 5.)

FIGURE 5:
Effect of shift adjustment on fatigue, sleep, and other health factors

Physiological Adjustment Scales	% Often to Very Difficult (Old Schedule)	% Often to Very Difficult (New Schedule)
Getting Sufficient Quantity of Sleep	54%	20%
Getting Good Quality of Sleep	59%	21%
Staying Alert While Working	25%	14%
Doing Your Job Safely	11%	9%
Doing Your Job Effectively	12%	10%
Fighting Fatigue or Drowsiness	32%	15%

In addition to fatigue and alertness benefits, the percentage of employees reporting frequently to always having a problem with specific aspects of their work schedules dropped dramatically with the implementation of the new schedule (See Figure 6.)

FIGURE 6:
Effect of shift adjustment on employee perceptions on work-related issues

Schedule Attributes	% Frequently to Always a Problem (Old Schedule)	% Frequently to Always a Problem (New Schedule)
Number of Work Days in a Row	64%	11%
Speed of Rotation	44%	9%
Direction of Rotation	50%	8%
Days On and off Pattern of Your Current Schedule	58%	8%
Amount of Weekend Time Off You Are Currently Getting	75%	5%
Number of Scheduled Days Off You Are Currently Getting (Excluding Overtime)	62%	6%
Length of Scheduled Breaks (In Between Blocks of Work Days)	57%	7%
Need to Come in on a Day Off (Training, On-Call Responsibilities, etc.)	27%	12%
Need to Hold-Over on Short Notice or Come In Early to Cover a Shift	30%	12%

Areas of Concern

The successful implementation of a new shift schedule is a complex process, often compounded by conflicting interests of the parties involved and difficult labor-management relations. At the company or corporate level, there could be concerns regarding financial aspects and production needs while the employees may foster a resistance to change due to insecurity about dealing with new conditions and loss of money or jobs.

Although each employee will bring his or her own preferences to the process, individual preferences can be grouped using cluster analysis to extract the significant preferences from the facility as a whole. The concept of trying to "please all of the people all of the time" should be openly discussed at frequent intervals with the aim of reaching a compromise that satisfies the group as a whole. In unionized facilities, the cooperation of trade union members is critical to the success and final employee support of the chosen schedule. Each employee affected by the schedule should be equally involved in its design.

Conclusions

The success of the work schedule in meeting the goals of maximized productivity and safety of the workers and minimized operational costs and risks to the facility will depend greatly on who chooses the work schedule and how they choose it. Facilities in which employees are consulted during the scheduling process experience fewer accidents, improved morale, decreased absenteeism and turnover, and optimized production levels. Employee-driven scheduling processes, in which operational requirements, employee preferences, and physiological factors are optimized, represent the best approach to designing and implementing new shift schedules.

For more information about scheduling, or details about how to implement an employee driven Shift Schedule Optimization Process in your workplace, please call CIRCADIAN at 781-439-8300 or email a specialist at info@circadian.com.

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ABOUT THE AUTHORS

Bill Davis is Vice President of Operations for CIRCADIAN. He is responsible for Global management oversight on all Domestic and International consulting projects, ranging from workforce management, to scheduling optimization, to shiftworker staffing, crewing, and training, to overtime management, and to employee health, safety and productivity initiatives.

Prior to his tenure at CIRCADIAN, Bill spent 10 years with International Paper as a Corporate Safety Manager and as a Plant Manager. He also spent nearly a decade with Jones and Laughlin/LTV Steel, starting as a steel mill shiftworker and working his way up the safety management ranks. This real-world industrial background has provided Bill with a natural rapport with managers, union representatives, and employees at all organizational levels.

Dr. Acacia Aguirre has over fifteen years experience focused on researching, training, and reporting on the impact of managing human capital in extended hours operations, with a focus on safety, health and alertness. Dr. Aguirre's work at CIRCADIAN includes providing training and consulting support on major client engagements, such as fatigue risk assessments, workload analysis, evaluation of employee alertness, health and safety, scheduling, and implementation of fatigue countermeasures. She is also actively involved in publishing educational materials for working in extended hours operations.

Prior to joining CIRCADIAN, Dr. Aguirre practiced as a sleep disorder specialist at one of the major teaching hospitals in Paris, France. She was also part of a research team specialized in circadian rhythms and their relationship to sleep disorders and shiftwork.

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ABOUT CIRCADIAN™

CIRCADIAN is the global leader in providing 24/7 workforce performance and safety solutions for businesses that operate around the clock. Through a unique combination of consulting expertise, research, software tools, training and informative publications, CIRCADIAN helps organizations in the 24-hour economy optimize employee performance and reduce the inherent risks and costs of their extended hours operations.

Working from offices in North America, Europe, Australia and Asia, CIRCADIAN experts ensure that over half the Fortune 500, and other leading international companies, improve their competitiveness in the global 24/7 economy. CIRCADIAN's core expertise is the staffing, scheduling, training and risk management of their most vital asset – the 24/7 workforce.

For more information about CIRCADIAN, please visit our website at www.circadian.com.

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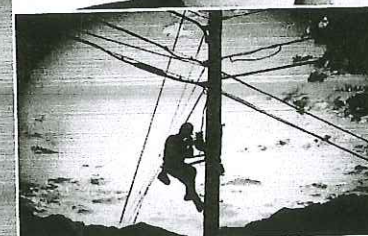
2-5

Evolution of Fatigue Risk Management Systems:

The "Tipping Point" of employee fatigue mitigation

Martin Moore-Ede, M.D., Ph.D.

*Science behind long term
EFFECTS
STAFF increase TO reduce O.T.*



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ages in the sleep obtained, which may or may not be detected by peers and managers or the self-awareness of the employee. The fourth level is the occurrence of fatigue-related errors and the fifth and final level is the number of actual incidents (accidents, injuries, production errors) caused by fatigue-related errors. These five levels make up the line of defenses, and when the holes in the “Swiss cheese slices” line up, fatigue related accidents and injuries occur.

What Dawson & McCulloch’s Fatigue Risk Trajectory provided was a systematic process for analyzing fatigue risk that is readily understood by managers educated in SMS processes. As such, it represented an important conceptual step that helped to tip the balance of general acceptance of FRMS, including, importantly, the general acceptance of “Fatigue Risk Management Systems” as the preferred nomenclature.

One of the key features of FRMS is that the process seeks to identify the holes in the “Swiss cheese slices” from a fatigue perspective and should also identify the mitigation required to either close the holes or at least reduce their size. The outputs from these mitigations, together with the identified fatigue issues, will then feed into the SMS, e.g., in the form of additional policies, revised procedures, or assurance criteria, which will update and strengthen the management systems.

8. Best Practices in FRMS implementation

While Dawson’s fatigue risk trajectory concept provides a valuable framework for the systematic analysis of fatigue risk, a limitation of this approach is that it is excessively sleep centric, as illustrated by the title of Dawson & McCulloch’s *Sleep Medicine Reviews* article “Managing Fatigue: It’s About Sleep” and various other presentations of the concept by Dawson titled even more provocatively “Managing Fatigue: It’s About Sleep - Stupid”.

Optimizing the amount of sleep employees obtain is obviously important, but there are other levels of defense necessary in order to assure alertness on the job. CIRCADIAN®’s experience in designing and implementing FRMS over the past twenty years has led to the appreciation of the critical path for assessing and managing fatigue risk. As illustrated in Figure 8, there are five key “defenses in depth” that must be managed by FRMS. The first three of these defenses impact sleep management, but the last two provide alertness management, which is a significantly different issue:

1. Workload-staffing balance

The staffing level, and not the shift schedule, is the primary determinant of overtime levels, average time off-duty, and other key factors related to employee fatigue. Therefore, it is vital to first address taskload/workflow issues, ensure adequate staffing levels, and to proportionally balance them to workload across the 24/7 schedule. Workload/staffing balancing strategies are discussed in more detail by Todd Dawson in the CIRCADIAN® white paper *Proportional Staffing and Flexible Workforce Management*.²⁸

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STAFFING LEVELS

A Key to Managing Risk in 24/7 Operations

William G. Sirois & Martin Moore-Ede, M.D., Ph.D.



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One of the most important, but frequently overlooked, root causes of employee fatigue and human error is an imbalance between workload and staffing levels. Extensive academic research and industrial attention has been paid to the relative merits and risks of shift scheduling alternatives such as 12 hour shifts versus 8 hour shifts, fixed shifts versus rotating shifts, clockwise rotations versus anti-clockwise rotations, fast rotating versus slow rotating schedules, etc., *without* recognizing the underlying impact of staffing levels in the outcome metrics that are used. Even some much cited fatigue risk management schemes (e.g. Dawson & McCulloch 2005) start with duty-rest or shift scheduling as the initial risk level (Sleep Opportunity) without recognizing the underlying risks of fatigue associated with staffing levels.

Because the number of positions to be filled on each shift is essentially fixed in most 24/7 operations, it is the staffing levels, not shift schedules, that play the largest role in determining:

1. The actual amount of overtime per employee
2. The actual time off between shifts
3. The actual time off between consecutive blocks of shifts
4. The actual length of shifts
5. The actual work hours per week
6. The actual number of consecutive days worked
7. The overall discrepancy between the published shift schedule and the actual shift schedule worked
8. The negative impact that all of the above has on sleep opportunity, quantity, and quality in terms of fatigue related to health, safety, and performance

STAFF = Reduce OT

Consequences of Understaffing

If the staffing level is lower than optimal then the employees in that operation have to work additional hours or extra shifts to keep the positions filled. These hours may be added on by:

1. Holding employees over for additional hours at the end of their shift (i.e. effectively increasing the actual shift length and reducing off-duty rest hours between shifts).
2. Calling employees in early for additional hours at the beginning of their shift (i.e. increasing the actual shift length and reducing off-duty rest hours before the shift).
3. Scheduling employees to work on their days off to cover open shifts (thereby increasing the number of consecutive workdays and/or reducing the number of consecutive days off).

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4. Short notice call-in to cover vacant positions (creating the potential to miss or compromise a planned sleep period and thus start the shift unrested and/or less fit for duty).
5. Having employees work double or even triple shifts (increasing actual shift length and reducing off-duty rest hours after the shift).

As a result, the amount of overtime worked by employees will be significantly increased, and the additional hours and days worked will make the published shift schedule a work of fiction. Up to a point, overtime is often welcomed, if not desired by many employees, as an understandable way to increase their paychecks. Some employees will volunteer for all of the overtime they can get, which buffers those who don't want the extra hours. This also makes life easier for their supervisors. However, from every scientific and operational perspective, any significant understaffing, especially when there is uneven distribution of overtime, will affect both acute and chronic fatigue levels, and can represent a high-risk occupational health and safety exposure.

This white paper does not advocate a goal of zero overtime. After all, when distributed and managed efficiently, overtime provides a measure of operational flexibility and it gives people a chance to earn additional pay. Instead the objective of the white paper is to educate managers at 24-hour operations on the causes and consequences of understaffing, and to help them address staffing and scheduling imbalances so that they can run safer and more productive operations.

Scheduled Overtime

The mathematics of staffing a 24/7 operation can appear deceptively simple if you overlook the operational realities of running the business. To start with, the simplest example of a 24/7 operation is one that is staffed at a fixed crewing level with an equal number of positions to fill on every shift. The usual approach is to take the 168 hours per week and distribute the work across 4 crews, each scheduled to work 42 hours a week on average. Under US Federal Law, this creates a weekly built in overtime of 2 hours per person on each of the 4 crews (i.e. 8 hours of premium time per week) to achieve the necessary coverage. **This should be looked at as the cost of capacity...not overtime cost per se.** Otherwise, trying to maintain a 40-hour work week and eliminate this built-in overtime, will create an open, 8-hour shift each week that somebody will have to cover at premium time...thus, no cost savings, only the added headache of having to schedule coverage every week. There are really only 2 options if continuous coverage is to be maintained...someone will have to work an overtime shift at 1.5 times pay, or "shiftbreakers"/ relief personnel will have to be provided at pay plus benefit costs. Again, this provides no cost savings. Thus, **there is no additional cost to operating with an average 42-hour work week,** and it is far more operationally efficient. For purposes of fatigue risk in continuous operations,



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then, we define “overtime” as “extra hours worked over and above the regularly scheduled 42 hours”...not over 40 hours. Yes, the extra 2 hours is subject to premium pay, but that is the unavoidable cost of 24/7 capacity.

Unscheduled Overtime

Often overlooked are the real drivers of overtime in 24/7 operations. In any given week, employees may not be available to fill their scheduled shifts because of multiple reasons including:

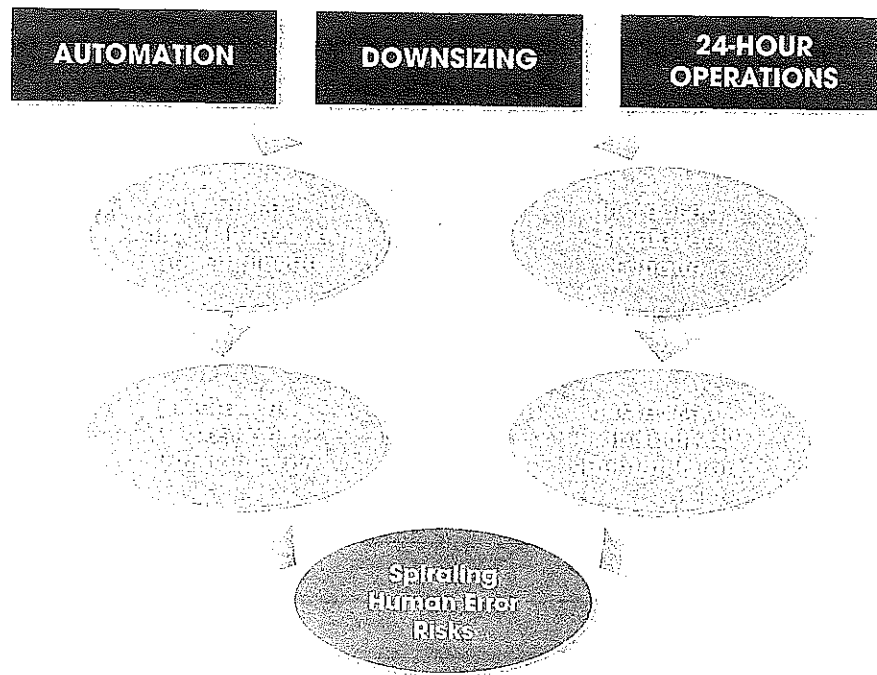
1. Vacation days
2. Floating holidays
3. Sickness related absenteeism
4. Non-sickness related absenteeism/personal days
5. Injury related absenteeism
6. Training
7. Special work assignments (committees, team building, projects, etc.)
8. Jury duty, bereavement, FMLA, etc.
9. Turnover/delays in filling position with adequately trained employees

Many 24/7 operations do not realistically estimate or measure the full impact of these factors and hence run their shifts with fewer staff than needed, effectively increasing the relief coverage requirement (i.e. overtime) and impacting the time on duty and off duty of their personnel. Furthermore, many companies do not monitor and analyze their historical payroll and human resources data so that they are unable to make even simple forecasts about scheduled and unscheduled absenteeism. Thus, absent this data, they are unable to accurately define seasonal, weekly and daily fluctuations in coverage demand. Moreover, many companies rarely recognize the annual increases in vacation time that their employees accrue, creating additional overtime coverage requirements every year, rather than staffing up to cover those absences at straight time.

Root Cause of Staffing Imbalance

Over the last 30 years there has been a conscious effort to re-engineer business processes to achieve “total quality”, to achieve Kaizen, to become “lean and mean” and to take greater advantage of automation to improve productivity, loosely defined as product output (or revenue generated) per employee. Thus by reducing headcount, the productivity metric automatically increases and Wall Street’s perception of stock value goes up. As a result, the productivity measure of business performance has significantly increased statistically as the headcount has been reduced (Hammer and Champy, 1993). On the other hand, capital expenditures for equipment doesn’t show up in operating budgets, and the price of raw materials is relatively fixed, so the budget cutters/productivity experts see headcount reduction as the “low-hanging fruit” in meeting their targets. Under such pressure, operating managers must respond to corporate mandates to do more with less. By reducing staffing to the minimum level required to cover the base hours, they meet their targets and earn their bonuses without fully understanding the risks and collateral costs of employee fatigue that are created by the resulting increase in overtime (Figure 1).

FIGURE 1:
The Challenge of Productivity Initiatives



The financial risk (probability x cost) of human error incidents has escalated because technology, automation and expansion of 24/7 operations places more assets at risk per employee, while increasing the fatigue related error-risk per employee if staffing is not adequately managed.

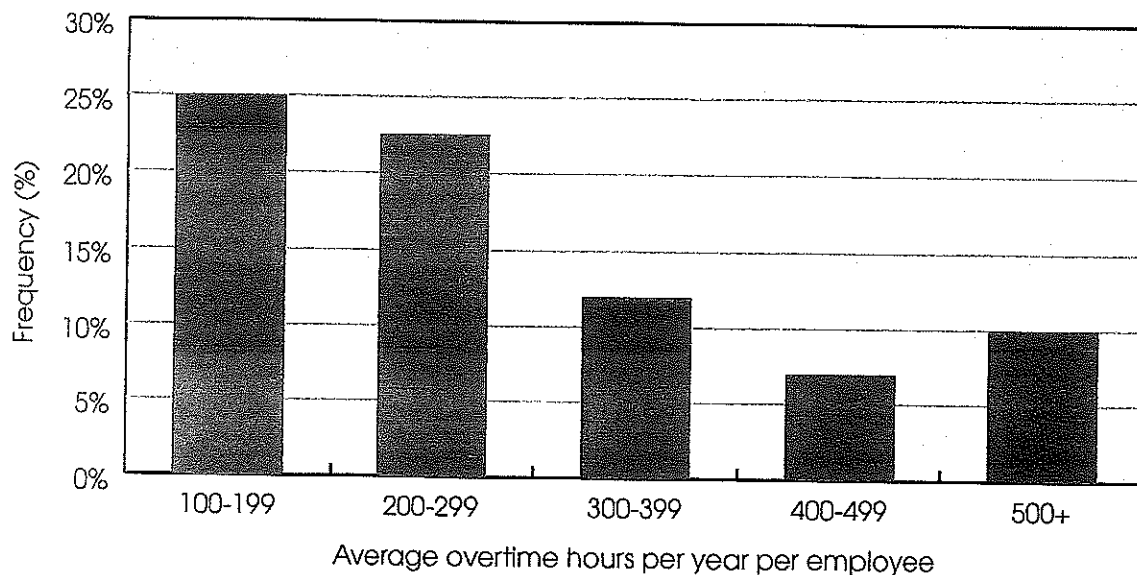


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Overtime Levels in North American 24/7 Operations

Studies of average overtime levels show that overtime is a frequent feature of North American 24/7 shiftwork operations. Figure 2 shows the statistics for the average overtime levels from a survey of 623 North American shift work operations (Kerin 2003).

FIGURE 2:
Average employee hours of overtime per year in North American shiftwork operations.



However, these average levels of overtime are not evenly distributed between employees. In many cases, the **majority of the overtime is worked by a minority of employees**, with the result that the overtime levels in these individuals is much higher than the facility average. Thus the 80/20 rule often applies whereby 20% of employees are volunteering for 80% of the available overtime.

If this overtime practice is left unmanaged, it quickly builds a financial **dependency on overtime** and a **hard-to-break overtime culture that sets your people up to fail due to the resulting fatigue**, thereby creating serious safety, production, and customer satisfaction risks. Given that the company assets at risk per employee today is at unprecedented levels, a simple mental mistake, a moment of inattention, or a 10-second microsleep can be extremely costly, if not catastrophic. With fewer and fewer people working more and more hours and getting more and more tired, **the risk and frequency of fatigue-related human error in the workplace has increased dramatically** (Figure 1). Concurrently, the cost of those errors has increased exponentially. Consequently, the risk of serious incidents is spiraling ever upwards, where risk is defined as the probability of an incident multiplied by its costs. Thus, it is critical to monitor and manage both the average levels of overtime and the individual overtime levels for each employee.

STAFFING LEVELS

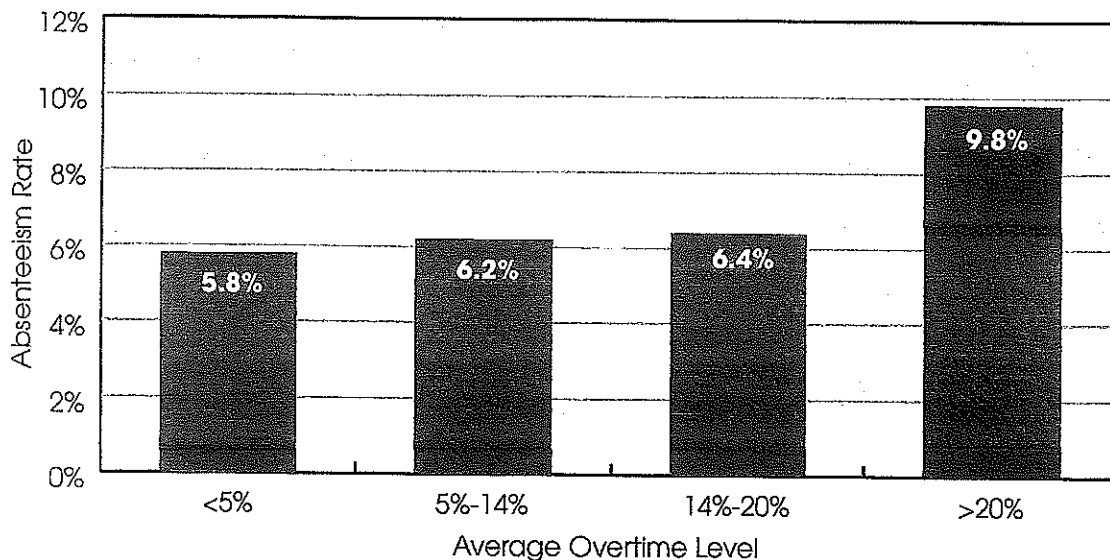
The actual benefits of lean staffing are not what they seem.

Let's consider the often-cited argument that by cutting staffing levels and relying on overtime to fill open shifts a company's overall benefits and training costs are reduced. Normally these employee benefits average between 30% and 40% of base salary unless there are substantial pension commitments. In other words, with a generous benefit package, including "accounting factors", each new employee costs a company one and a half times base pay.

On the other hand, running "lean" by short staffing and creating more open shifts that have to be covered with overtime also requires paying at least time and a half and often double time. So what's the difference? Where's the savings?

The difference, of course, is the increased risk of fatigue and the human error, the increased absenteeism and presenteeism, reduced productivity, and increased worker's compensation costs of those employees caused by that fatigue. The difference is also the stress on employees related to shortened and disrupted off-duty family time and increased total weekly workload hours. These stressors cause increased absenteeism (Figure 3), which creates yet more overtime coverage requirements, compounding the fatigue and employee stress problems, and thus creating a vicious cycle of "fabricated" overtime.

**FIGURE 3:
How Overtime Affects Absenteeism**



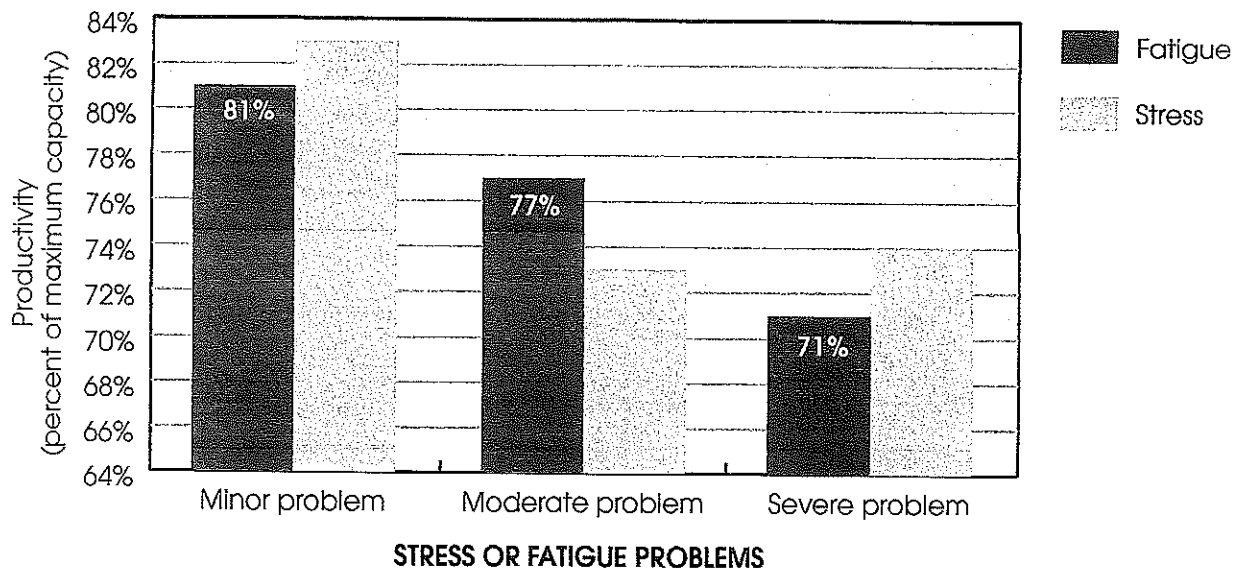
Interrelationship between the absenteeism rate and overtime percentage. (Source: Aguirre & Moore-Ede, "Shiftwork Practices", 2007).

Staffing Expanded Hours of Operation

Another common scenario where staffing imbalances and overtime can increase significantly is when production has to be increased to meet greater market demand, to improve the utilization of capital equipment (by expanding traditional 5-day operations to continuous, 24/7 production scheduling), or to consolidate older facilities and equipment into the remaining sites and operating those sites 24/7. With such business decisions, especially if there is uncertainty about how long the increase in business demand will last, managers may be reluctant to hire the additional employees required to support a 24/7 schedule. Rather, they may be more inclined to hedge their bets by maintaining the traditional 24/5 schedule and by covering the weekends with voluntary or mandatory overtime. As a result, employees can be required to work six or seven days per week with only occasional days off, consequently experiencing burn-out from fatigue and stress in exchange for the allure of higher income. Businesses can get by with this model in the short term, but it is clearly not a sustainable way to operate one's business productively in the longer term.

The negative impact of fatigue and stress on productivity is clearly illustrated in Figure 5 which shows the results from an analysis of 400 industrial and transportation operations in North America (Aguirre A, 2005).

FIGURE 5:
Reduction in productivity as a function of stress and fatigue as reported by facility management



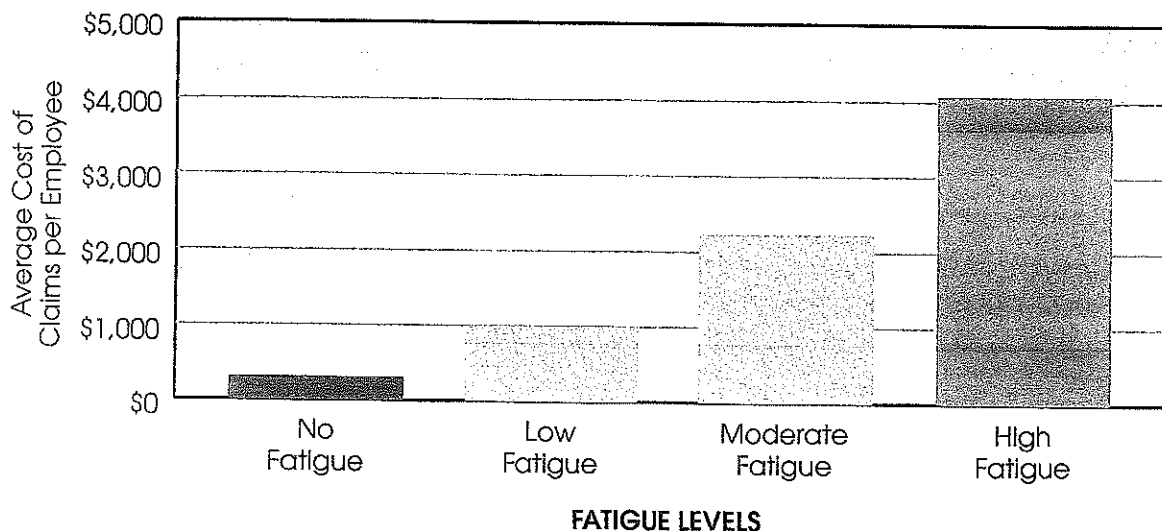
(Source: Aguirre, A. Shiftwork Practices Survey, 2005).

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Turnover due to normal attrition, relocation, and voluntary/involuntary termination, coupled with hiring delays, today's retention issues, and required training time begets yet more overtime and more employee fatigue, and stress. It has thus become critical for companies to get ahead of the curve through advanced planning and hiring, particularly given the fact that we are currently in the midst of having to replace 40% of the North American skilled workforce as the baby-boomer bubble in employee demographics reaches retirement age!

It is well established that fatigue-related human error is a major contributor to industrial accidents and injuries. The most common root cause of that fatigue is understaffing-driven excessive overtime (e.g. greater than 12% average additional hours worked over and above regularly scheduled time, especially when overtime distributed unevenly across the workforce). As illustrated in Figure 4, it is therefore of no surprise that fatigued shiftworkers exhibit up to 4 times the worker's compensation costs compared to non-fatigued employees. ***Thus, from a purely business perspective, the higher absenteeism, turnover, safety, and medical costs associated with overtime, coupled with reduced performance and productivity, make understaffing a highly questionable practice.***

**FIGURE 4:
Workers' Compensation Costs and Fatigue Levels**

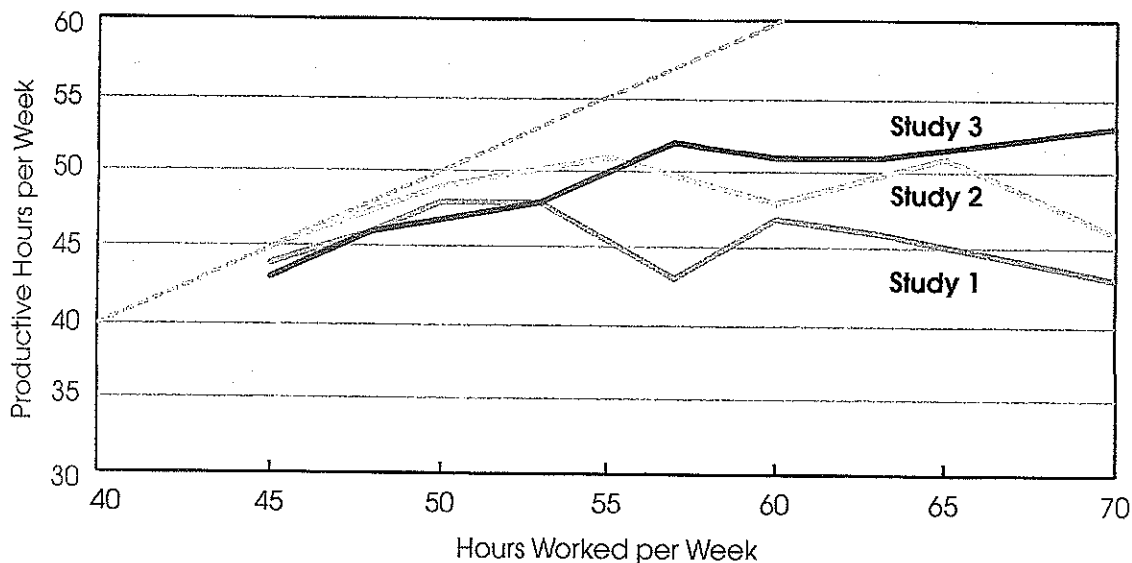


The average rates of worker compensation claims per employee (total employees including claimants and non-claimants) per year paid in 24/7 industrial and transportation operations with levels of employee fatigue ranging from low to high. (Source: Aguirre, A. Shiftwork Practices Survey, 2005).

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Moreover, studies in hands-on maintenance and construction work have shown that the amount of productive work performed per week per employee typically levels off at 50-55 hours per week. Thus, working people more than 8-12 hours of overtime per week (or about one extra shift per week) may not yield the projected benefits in terms of productive work output (Figures 4). In the series of studies reported by Nevison, the theoretical 1:1 relationship between work and productive output holds true with four (4) weeks of long hours (Study 1), nor even with one week of long hours (Studies 2 & 3) (Figure 6).

FIGURE 6:
Productive work output reaches a plateau when weekly work hours are increased beyond 50-55 hours in hands-on construction and maintenance operations



Study 1 shows actual productive hours after working 4 weeks of long hours. Study 2 and 3 show the productive hours in single weeks of long hours. In comparison the dotted line shows the linear increase machine productivity (Nevison 1992).

While machines operate linearly; we humans do not. As indicated above, the tipping point is about 10-15 hours of overtime work per week. The more hands-on the work, the more accurate is this statistic. In highly automated operations, some mitigation will obviously occur...depending on the tasks and activities being performed, as well as the work environment. However, **the inescapable conclusion is excessive levels of overtime can make understaffing a losing proposition.**

Addressing Staffing and Scheduling Imbalances

The workload-staffing imbalance is thus one of the first issues that must be addressed in reducing safety incidents, in improving employee health and in increasing operational efficiency. The key issues to be aware of are:

1. The causal chain of employee fatigue risk starts with workload staffing and scheduling imbalances, as shift schedules and duty-rest rosters cannot be optimized unless the staffing levels are properly determined and unless they are sufficient to support the integrity of the schedule.
2. The predictability of the established work schedules, and thus the consistency of the employee work/rest/sleep cycles, cannot be maintained without proper staffing.
3. Shiftworkers build their lives, their family and social relationships, and their sleep/wake/activity cycles around their shift schedules. Unscheduled overtime due to understaffing severely disrupts this work/life balance.
4. Shiftworkers can become dependent on overtime, creating a "habit" or overtime culture that is difficult to change.

Determining the necessary staffing levels may be less challenging if Hours of Service regulations, Industrial standards such as API/ANSI RP-755, or union agreements exist which set hours of work and hours of rest. However, consistently operating up against the outer boundaries of these rules may actually be counterproductive by contributing to excessive fatigue, since it is difficult to write simple rules to cover all combinations of the complex possibilities, particularly with regard to circadian time of day risks. Indeed, the API-ANSI RP-755 Standard for the petrochemical industry specifically cautions against staffing and scheduling to the outer boundaries of the Standard.

Before hiring additional employees it is always advisable to conduct a detailed analysis of the workload-staffing imbalances and the various options for addressing them. For example, this may include:

1. Re-examining and re-engineering processes designed to reduce the number of positions or the types of jobs that are needed to be filled per each shift.
2. Cross-training and qualifying employees to fill multiple positions, effectively increasing the available staff for relief coverage, for providing scheduling flexibility, and for improving the distribution of overtime across the workforce to minimize the risk of fatigue related human-error due to excessive individual overtime.
3. Increasing use of temporary labor, where appropriate.
4. Where applicable, evaluating the fluctuations in workload to determine predictable patterns, and building a proportional staffing system that better aligns with those fluctuations.



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5. Adjusting staffing levels to maintain a maximum overtime budget of 12%.
6. Initiating your recruiting and training process in advance of the time you will need fully trained personnel at their positions.

To ensure that all these options have been explored, a scheduling factor analysis is needed to periodically assess and confirm that the proper accounting of vacations, training time, and other scheduled and unscheduled absences (which create open positions) have been properly conducted. Once all of these factors have been determined, and the staffing levels optimized accordingly, then the optimal shift schedule can be determined and implemented. This relief factor analysis should be conducted annually to monitor and address any changes that occur in overtime levels.

Addressing Workload and Staffing Imbalances

There are different levels of complexity involved in calculating staffing and crewing requirements including the following factors:

1. Small work groups
2. Larger work groups
3. Few job classifications
4. Multiple job classifications
5. Cross training levels
6. Variability of workload/service demand
7. Complexity of benefits and pay practices
8. Budgeted amounts of overtime
9. Attrition rates
10. Collective Bargaining Agreements

Regardless of these scenarios, **every staffing analysis needs to begin by determining the base manpower loading.** For the vast majority of companies, decades of industrial engineering studies and continuous improvement processes have established these parameters by both department and by job classification to a high degree of operational effectiveness. Thus, the base manpower load in terms of hourly and daily positions to be filled by job classification are generally considered a "given" for most operations. Yet further opportunities certainly exist for **determining the minimum number of positions that need to be filled by hour of each day and day of each week**, and these can be routinely addressed over time.

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The next step is to determine the "not at work days" for each individual employee, in terms of **scheduled benefit days** available for that person to be off work. This includes vacation time, floating holidays, training time, special assignments, and other assigned activities that take employees away from their regular jobs, thus creating open shifts.

Next comes an evaluation of the **unscheduled absences** for each individual...sick days, FMLA, bereavement, jury duty, etc. The combination of the scheduled and unscheduled absences, then, represents the amount of relief coverage required to keep all of the positions filled each and every day. Unless a department can run short-staffed when periodically required, somebody (who is qualified) has to fill the vacant position. This can only be done in one of two ways:

1. There are qualified and fit-for-duty relief personnel available to fill those positions.
2. The positions (i.e. open shifts) are filled with overtime.

Based on extensive field experience, a 10-12% overtime budget (based on actual hours worked over and above regularly scheduled) is usually safe, healthy and productive...provided there is a reasonable distribution of those overtime hours across the workforce. At 15% average overtime levels, it is advisable to start hiring additional people, and at 20% it is arguably unsafe to operate because of the significantly increased risk of human error. This is particularly true with night shifts, rotating schedules and/or long, irregular hours.

For small departments of say less than 40 or 50 people and with only 1 or 2 job classifications, and few progressions, staffing levels can be readily calculated with paper and pencil. Simply convert the total hours of scheduled and unscheduled absences into full time equivalents (for each job classification) to determine the total number of relief personnel required. Then subtract 10-12% overtime (again in full time equivalents) to determine the required number of relief coverage personnel. Add this to the base manpower load (i.e. the number of positions to be filled) to identify the optimal staffing levels for a given unit, department and job classification.

However, when the size of the workforce numbers in the hundreds, and/or includes a large number of job classifications with different qualification levels and seniority rules and bidding progressions, etc., the mathematical complexity requires the use of staffing algorithms for achieving efficiency and accuracy. These can be home grown, or outsourced to subject matter experts for objective processing.

Proportional Staffing

Thus far we only have considered the simplest staffing model for 24/7 operations whereby the workload is consistent and the shifts equally staffed every day of the year. But many shiftwork operations are not like this. **Workload in some businesses inherently fluctuates by the nature of their production or service demands** (think police departments, emergency response teams, overhead linemen, food processors, etc.). Production and/or service demand in such operations can fluctuate by:

1. Hour of day
2. Day of week
3. Seasonally
4. Cyclically
5. Randomly (customer demand, sales promotions, weather, unpredictable events, etc.)

If such operations are staffed at similar levels across all shifts (by establishing an average staffing level), the net result is an oscillation between **being overstaffed (with unproductive increase in cost)** and **being understaffed (with the excessive costs of overtime and increased employee stress and fatigue)**. An example of this is a large city police force which until recently was staffed with a similar number of patrol officers for every shift of the week despite the fact that the number of emergency calls on Friday and Saturday nights was many times higher than those on Tuesday and Wednesday mornings at 3 a.m. Even in less extreme examples, in which efforts are made to try to predict the necessary staffing level hour by hour, day by day or month by month, the mathematical algorithms required are generally too complex to enable efficient alignment of manpower to service demand (Figure 7). This capability simply does not exist internally in most companies, and is best left to subject matter experts.

Proportional staffing determinations require a minimum 3-4 year retro analysis of hourly and daily production or service demand to determine the time of day and day of week algorithms. Staffing levels and schedule relief factors can then be matched to those algorithms (for each and every employee) to achieve the optimal alignment of manpower requirement for servicing the variable demand. This then serves as the basis for calculating the most efficient shift patterns, shift starting times, and manpower utilization rates. In this fashion, both overtime and "undertime" are significantly reduced and employee utilization rates thus increase.

Other Considerations

As mentioned earlier, one overlooked factor that has recently become an important consideration in staffing analyses is the **increasing rates of employee attrition due to retirements**. It is a statistical fact that businesses in the industrialized world will have to replace 40% of their skilled workforces represented by the aging "baby boom" generation. This bubble exists not only because of the size of the post-war generation, but also because of the large scale reductions in new employee hiring rates over the past twenty years that were made to achieve (through attrition) the headcount reductions needed to meet corporate productivity goals. This means more than just a simple replacement of existing personnel in the workforce. With the sophistication and complexity of today's high tech equipment, systems and processes has come longer training and orientation time for new hires. For example, control room operators in refineries, chemical plants and power generation stations require upwards of 2 years of training to fully qualify as operators. So, for staffing calculations, this means hiring replacement operators 2 years in advance of a pending retirement to ensure a seamless transition and continuity of safety and operational efficiency. Another frequently overlooked staffing factor is the **annual increase in vacation time** being accrued by each employee. Additional relief coverage needs to be provided just to maintain the status quo, but very few companies are making this adjustment. The net result is annual overtime creep, along with increasing risk of fatigue-related human error.

Conclusions

There is now an extensive global body of scientific evidence and operational experience confirming that shiftwork and fatigue in the 24/7 workplace represents a high risk occupational health and safety exposure. Fatigue Risk Management Systems (FRMS) have emerged as the internationally accepted standard for managing these inherent costs, risks and liabilities of shiftwork (Moore-Ede, 2010). The enormous assets at risk per employee today have exceeded traditional methods for managing shiftwork-related fatigue, and the high levels of overtime have bred increasing amounts of human error. **The consequences of that human error today are unprecedented, such that a 10 second microsleep is increasingly likely to cause a major incident or production loss...if not a catastrophic failure.**

This white paper has shown that understaffing is a major contributor to not only fatigue and human error, but also to the health, safety, performance, and quality of life of our employees. Just as annual health check ups are important for each individual's well being, so is a comprehensive, annual examination and re-calculation of staffing levels critical for every business operation. Equally important is that we recognize the cost/benefits of "optimal" staffing vs. understaffing,

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and the impact of high levels of overtime created by that understaffing. When we do the math, short staffing just doesn't add up.

We often hear that it is just not financially possible to make the significant increases in staff needed to reduce overtime to safer levels, that it would be cost prohibitive. In fact, there is plenty of money available! There is an enormous reservoir of cash currently being spent on overtime that could be readily tapped to pay for the extra staff on essentially a cost neutral basis. This conversion could be done gradually over time to help current overtime beneficiaries adjust their personal finances, and to begin to enjoy an increased quality of life and a higher level of performance.

Since overtime levels are the telltale metric for understaffing in 24/7 operations, it's advisable to not only set budgets for overtime, but also to monitor and report overtime levels monthly by department and by individual employee. An additional monthly chart or column should also track the distribution of overtime in hourly buckets (e.g. 0-99 hours/year, 100-199, 200-299, etc.). In the final analysis, it's the distribution of overtime across the workforce and the calendar year that will maintain the integrity, safety and performance of a properly staffed workforce. This may require updating overtime policies and/or Collective Bargaining Agreements, but this effort will produce long term win-win benefits for the company its employees. Moreover, you will now be better positioned to develop a successful Fatigue Risk Management System (FRMS), and to achieve the next major step change in employee health, safety, and quality of life on the one hand, with increased operating efficiency and productivity on the other.

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DR. MARTIN MOORE-EDE has been a leading pioneer and expert on managing the risks of human fatigue in transportation and industrial businesses that operate 24/7. After experiencing the challenges of fatigue as a surgeon-in-training required to work 36-hour shifts, Dr. Moore-Ede was one of the first to define the challenges of living, working and sleeping in a 24 hour a day, 7-day a week world. As a professor at Harvard Medical School (1975 – 1998), he led the team that located the biological clock in the human brain that controls the timing of sleep and wake, and pioneered research on how the human body can safely adapt to working around the clock and sustain optimum physical and mental performance.

In 1983 Dr. Moore-Ede founded Circadian Technologies, Inc. As Chairman and CEO, he has guided the growth of the international network of Circadian companies, "CIRCADIAN®", which now advises over half of the Fortune 500 companies on 24/7 work schedules and fatigue risk management.

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CIRCADIAN® is the global leader in providing 24/7 workforce performance and safety solutions for businesses that operate around the clock. Through a unique combination of consulting expertise, research, software tools and informative publications, CIRCADIAN® serves as a subject matter expert to help organizations in the 24-hour economy to optimize employee performance and reduce the inherent costs, risks and liabilities of their extended-hours operations.

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A Key to Managing Risk in 24/7 Operations

William G. Sirois & Martin Moore-Ede, M.D., Ph.D.



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Capt. Raymond Fortaud, NRPD

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One of the most important, but frequently overlooked, root causes of employee fatigue and human error is an imbalance between workload and staffing levels. Extensive academic research and industrial attention has been paid to the relative merits and risks of shift scheduling alternatives such as 12 hour shifts versus 8 hour shifts, fixed shifts versus rotating shifts, clockwise rotations versus anti-clockwise rotations, fast rotating versus slow rotating schedules, etc., *without* recognizing the underlying impact of staffing levels in the outcome metrics that are used. Even some much cited fatigue risk management schemes (e.g. Dawson & McCulloch 2005) start with duty-rest or shift scheduling as the initial risk level (Sleep Opportunity) without recognizing the underlying risks of fatigue associated with staffing levels.

Because the number of positions to be filled on each shift is essentially fixed in most 24/7 operations, it is the staffing levels, not shift schedules, that play the largest role in determining:

1. The actual amount of overtime per employee
2. The actual time off between shifts
3. The actual time off between consecutive blocks of shifts
4. The actual length of shifts
5. The actual work hours per week
6. The actual number of consecutive days worked
7. The overall discrepancy between the published shift schedule and the actual shift schedule worked
8. The negative impact that all of the above has on sleep opportunity, quantity, and quality in terms of fatigue related to health, safety, and performance

Consequences of Understaffing

If the staffing level is lower than optimal then the employees in that operation have to work additional hours or extra shifts to keep the positions filled. These hours may be added on by:

1. Holding employees over for additional hours at the end of their shift (i.e. effectively increasing the actual shift length and reducing off-duty rest hours between shifts).
2. Calling employees in early for additional hours at the beginning of their shift (i.e. increasing the actual shift length and reducing off-duty rest hours before the shift).
3. Scheduling employees to work on their days off to cover open shifts (thereby increasing the number of consecutive workdays and/or reducing the number of consecutive days off).

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4. Short notice call-in to cover vacant positions (creating the potential to miss or compromise a planned sleep period and thus start the shift unrested and/or less fit for duty).
5. Having employees work double or even triple shifts (increasing actual shift length and reducing off-duty rest hours after the shift).

As a result, the amount of overtime worked by employees will be significantly increased, and the additional hours and days worked will make the published shift schedule a work of fiction. Up to a point, overtime is often welcomed, if not desired by many employees, as an understandable way to increase their paychecks. Some employees will volunteer for all of the overtime they can get, which buffers those who don't want the extra hours. This also makes life easier for their supervisors. However, from every scientific and operational perspective, any significant understaffing, especially when there is uneven distribution of overtime, will affect both acute and chronic fatigue levels, and can represent a high-risk occupational health and safety exposure.

This white paper does not advocate a goal of zero overtime. After all, when distributed and managed efficiently, overtime provides a measure of operational flexibility and it gives people a chance to earn additional pay. Instead the objective of the white paper is to educate managers at 24-hour operations on the causes and consequences of understaffing, and to help them address staffing and scheduling imbalances so that they can run safer and more productive operations.

Scheduled Overtime

The mathematics of staffing a 24/7 operation can appear deceptively simple if you overlook the operational realities of running the business. To start with, the simplest example of a 24/7 operation is one that is staffed at a fixed crewing level with an equal number of positions to fill on every shift. The usual approach is to take the 168 hours per week and distribute the work across 4 crews, each scheduled to work 42 hours a week on average. Under US Federal Law, this creates a weekly built in overtime of 2 hours per person on each of the 4 crews (i.e. 8 hours of premium time per week) to achieve the necessary coverage. **This should be looked at as the cost of capacity...not overtime cost per se.** Otherwise, trying to maintain a 40-hour work week and eliminate this built-in overtime, will create an open, 8-hour shift each week that somebody will have to cover at premium time...thus, no cost savings, only the added headache of having to schedule coverage every week. There are really only 2 options if continuous coverage is to be maintained...someone will have to work an overtime shift at 1.5 times pay, or "shiftbreakers"/relief personnel will have to be provided at pay plus benefit costs. Again, this provides no cost savings. Thus, **there is no additional cost to operating with an average 42-hour work week,** and it is far more operationally efficient. For purposes of fatigue risk in continuous operations,

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then, we define **"overtime"** as **"extra hours worked over and above the regularly scheduled 42 hours"**...not over 40 hours. Yes, the extra 2 hours is subject to premium pay, but that is the unavoidable cost of 24/7 capacity.

Unscheduled Overtime

Often overlooked are the real drivers of overtime in 24/7 operations. In any given week, employees may not be available to fill their scheduled shifts because of multiple reasons including:

1. Vacation days
2. Floating holidays
3. Sickness related absenteeism
4. Non-sickness related absenteeism/personal days
5. Injury related absenteeism
6. Training
7. Special work assignments (committees, team building, projects, etc.)
8. Jury duty, bereavement, FMLA, etc.
9. Turnover/delays in filling position with adequately trained employees

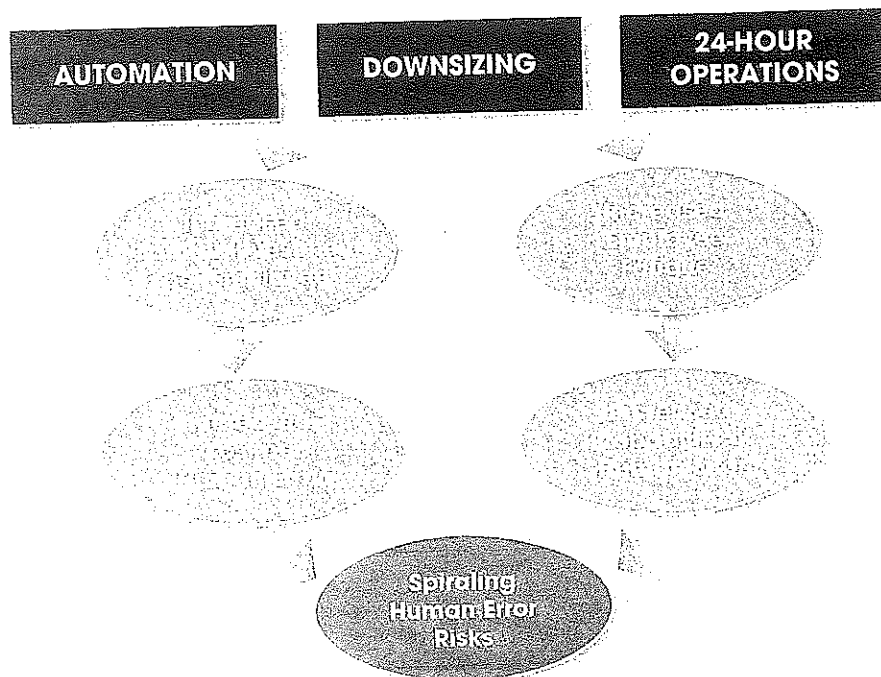
Many 24/7 operations do not realistically estimate or measure the full impact of these factors and hence run their shifts with fewer staff than needed, effectively increasing the relief coverage requirement (i.e. overtime) and impacting the time on duty and off duty of their personnel. Furthermore, many companies do not monitor and analyze their historical payroll and human resources data so that they are unable to make even simple forecasts about scheduled and unscheduled absenteeism. Thus, absent this data, they are unable to accurately define seasonal, weekly and daily fluctuations in coverage demand. Moreover, many companies rarely recognize the annual increases in vacation time that their employees accrue, creating additional overtime coverage requirements every year, rather than staffing up to cover those absences at straight time.

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Root Cause of Staffing Imbalance

Over the last 30 years there has been a conscious effort to re-engineer business processes to achieve “total quality”, to achieve Kaizen, to become “lean and mean” and to take greater advantage of automation to improve productivity, loosely defined as product output (or revenue generated) per employee. Thus by reducing headcount, the productivity metric automatically increases and Wall Street’s perception of stock value goes up. As a result, the productivity measure of business performance has significantly increased statistically as the headcount has been reduced (Hammer and Champy, 1993). On the other hand, capital expenditures for equipment doesn’t show up in operating budgets, and the price of raw materials is relatively fixed, so the budget cutters/productivity experts see headcount reduction as the “low-hanging fruit” in meeting their targets. Under such pressure, operating managers must respond to corporate mandates to do more with less. By reducing staffing to the minimum level required to cover the base hours, they meet their targets and earn their bonuses without fully understanding the risks and collateral costs of employee fatigue that are created by the resulting increase in overtime (Figure 1).

FIGURE 1:
The Challenge of Productivity Initiatives

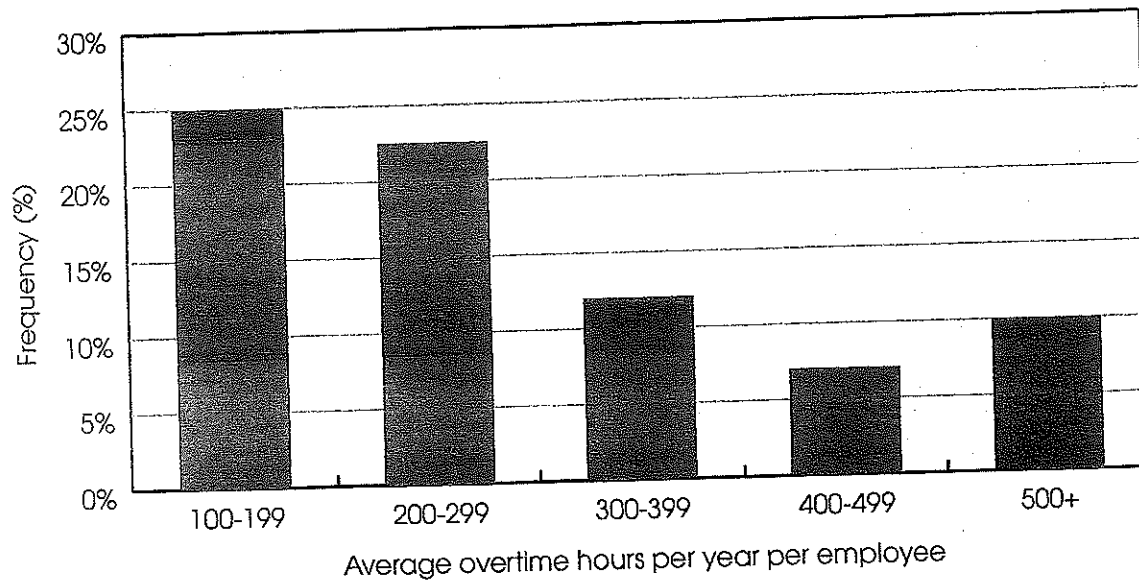


The financial risk (probability x cost) of human error incidents has escalated because technology, automation and expansion of 24/7 operations places more assets at risk per employee, while increasing the fatigue related error-risk per employee if staffing is not adequately managed.

Overtime Levels in North American 24/7 Operations

Studies of average overtime levels show that overtime is a frequent feature of North American 24/7 shiftwork operations. Figure 2 shows the statistics for the average overtime levels from a survey of 623 North American shift work operations (Kerin 2003).

FIGURE 2:
Average employee hours of overtime per year in North American shiftwork operations.



However, these average levels of overtime are not evenly distributed between employees. In many cases, the **majority of the overtime is worked by a minority of employees**, with the result that the overtime levels in these individuals is much higher than the facility average. Thus the 80/20 rule often applies whereby 20% of employees are volunteering for 80% of the available overtime.

If this overtime practice is left unmanaged, it quickly builds a financial **dependency on overtime** and a **hard-to-break overtime culture that sets your people up to fail due to the resulting fatigue**, thereby creating serious safety, production, and customer satisfaction risks. Given that the company assets at risk per employee today is at unprecedented levels, a simple mental mistake, a moment of inattention, or a 10-second microsleep can be extremely costly, if not catastrophic. With fewer and fewer people working more and more hours and getting more and more tired, **the risk and frequency of fatigue-related human error in the workplace has increased dramatically** (Figure 1). Concurrently, the cost of those errors has increased exponentially. Consequently, the risk of serious incidents is spiraling ever upwards, where risk is defined as the probability of an incident multiplied by its costs. Thus, it is critical to monitor and manage both the average levels of overtime and the individual overtime levels for each employee.

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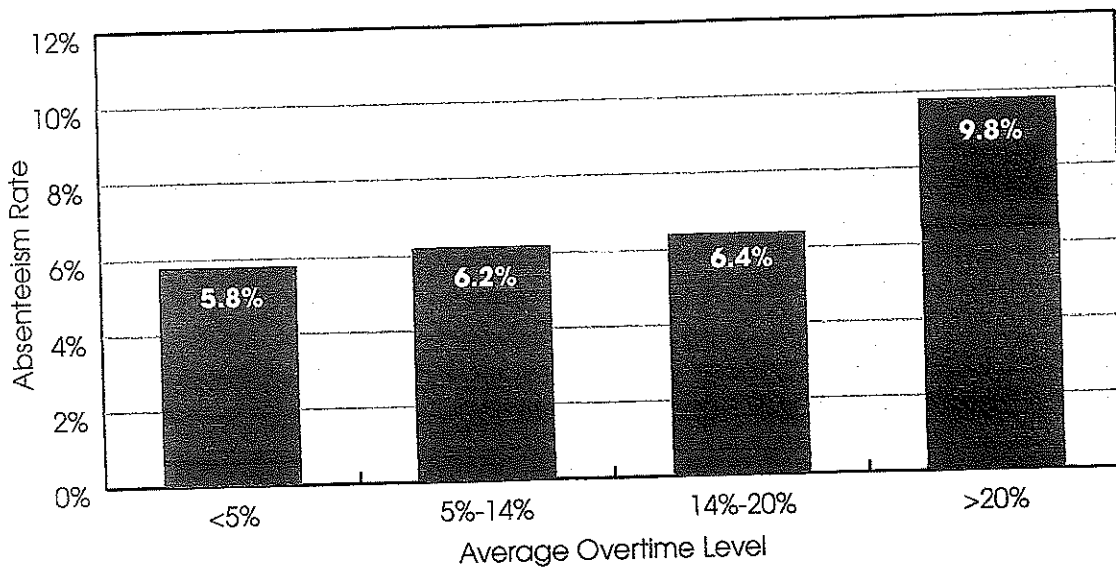
The actual benefits of lean staffing are not what they seem.

Let's consider the often-cited argument that by cutting staffing levels and relying on overtime to fill open shifts a company's overall benefits and training costs are reduced. Normally these employee benefits average between 30% and 40% of base salary unless there are substantial pension commitments. In other words, with a generous benefit package, including "accounting factors", each new employee costs a company one and a half times base pay.

On the other hand, running "lean" by short staffing and creating more open shifts that have to be covered with overtime also requires paying at least time and a half and often double time. So what's the difference? Where's the savings?

The difference, of course, is the increased risk of fatigue and the human error, the increased absenteeism and presenteeism, reduced productivity, and increased worker's compensation costs of those employees caused by that fatigue. The difference is also the stress on employees related to shortened and disrupted off-duty family time and increased total weekly workload hours. These stressors cause increased absenteeism (Figure 3), which creates yet more overtime coverage requirements, compounding the fatigue and employee stress problems, and thus creating a vicious cycle of "fabricated" overtime.

FIGURE 3:
How Overtime Affects Absenteeism



Interrelationship between the absenteeism rate and overtime percentage. (Source: Aguirre & Moore-Ede, "Shiftwork Practices", 2007).

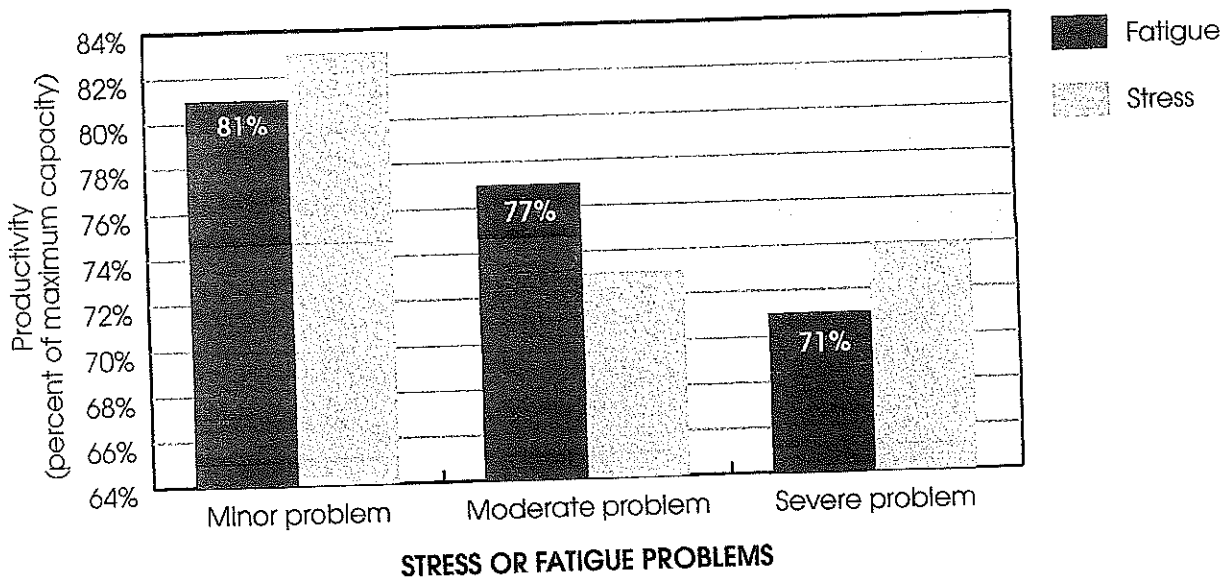
STAFFING LEVELS

Staffing Expanded Hours of Operation

Another common scenario where staffing imbalances and overtime can increase significantly is when production has to be increased to meet greater market demand, to improve the utilization of capital equipment (by expanding traditional 5-day operations to continuous, 24/7 production scheduling), or to consolidate older facilities and equipment into the remaining sites and operating those sites 24/7. With such business decisions, especially if there is uncertainty about how long the increase in business demand will last, managers may be reluctant to hire the additional employees required to support a 24/7 schedule. Rather, they may be more inclined to hedge their bets by maintaining the traditional 24/5 schedule and by covering the weekends with voluntary or mandatory overtime. As a result, employees can be required to work six or seven days per week with only occasional days off, consequently experiencing burn-out from fatigue and stress in exchange for the allure of higher income. Businesses can get by with this model in the short term, but it is clearly not a sustainable way to operate one's business productively in the longer term.

The negative impact of fatigue and stress on productivity is clearly illustrated in Figure 5 which shows the results from an analysis of 400 industrial and transportation operations in North America (Aguirre A, 2005).

FIGURE 5:
Reduction in productivity as a function of stress and fatigue as reported by facility management



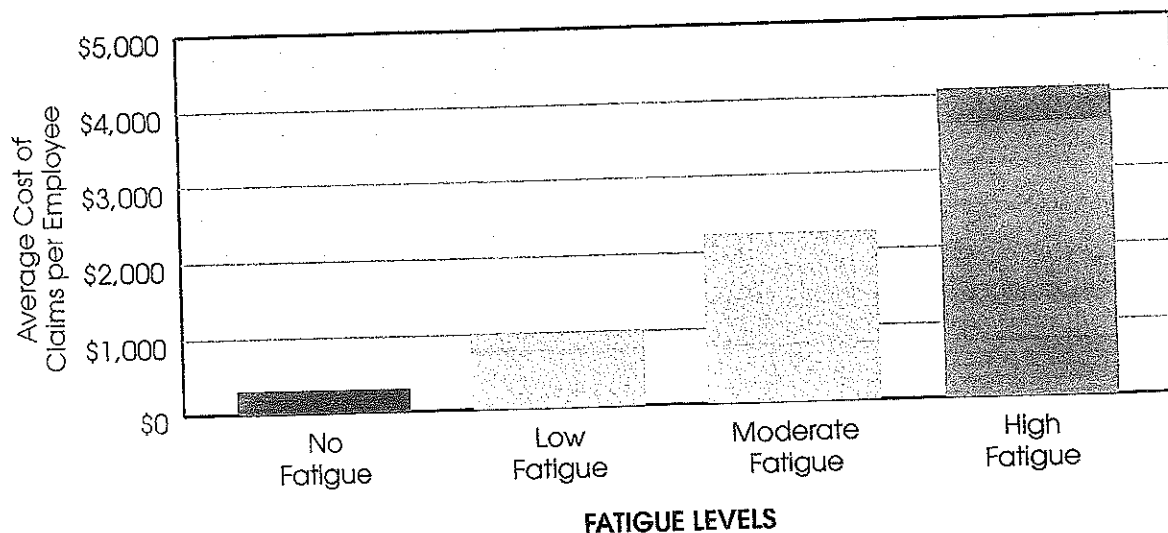
(Source: Aguirre, A. Shiftwork Practices Survey, 2005).

STAFFING LEVELS

Turnover due to normal attrition, relocation, and voluntary/involuntary termination, coupled with hiring delays, today's retention issues, and required training time begets yet more overtime and more employee fatigue, and stress. It has thus become critical for companies to get ahead of the curve through advanced planning and hiring, particularly given the fact that we are currently in the midst of having to replace 40% of the North American skilled workforce as the baby-boomer bubble in employee demographics reaches retirement age!

It is well established that fatigue-related human error is a major contributor to industrial accidents and injuries. The most common root cause of that fatigue is understaffing-driven excessive overtime (e.g. greater than 12% average additional hours worked over and above regularly scheduled time, especially when overtime distributed unevenly across the workforce). As illustrated in Figure 4, it is therefore of no surprise that fatigued shiftworkers exhibit up to 4 times the worker's compensation costs compared to non-fatigued employees. ***Thus, from a purely business perspective, the higher absenteeism, turnover, safety, and medical costs associated with overtime, coupled with reduced performance and productivity, make understaffing a highly questionable practice.***

FIGURE 4:
Workers' Compensation Costs and Fatigue Levels

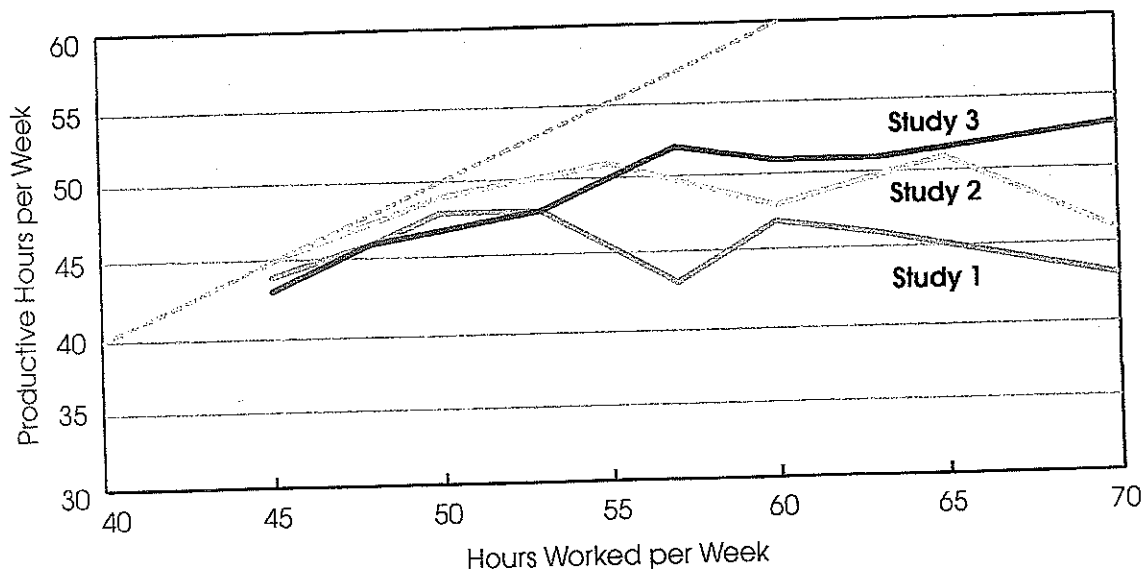


The average rates of worker compensation claims per employee (total employees including claimants and non-claimants) per year paid in 24/7 industrial and transportation operations with levels of employee fatigue ranging from low to high. (Source: Aguirre, A. Shiftwork Practices Survey, 2005).

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Moreover, studies in hands-on maintenance and construction work have shown that the amount of productive work performed per week per employee typically levels off at 50-55 hours per week. Thus, working people more than 8-12 hours of overtime per week (or about one extra shift per week) may not yield the projected benefits in terms of productive work output (Figures 4). In the series of studies reported by Nevison, the theoretical 1:1 relationship between work and productive output holds true with four (4) weeks of long hours (Study 1), nor even with one week of long hours (Studies 2 & 3) (Figure 6).

FIGURE 6:
Productive work output reaches a plateau when weekly work hours are increased beyond 50-55 hours in hands-on construction and maintenance operations



Study 1 shows actual productive hours after working 4 weeks of long hours. Study 2 and 3 show the productive hours in single weeks of long hours. In comparison the dotted line shows the linear increase machine productivity (Nevison 1992).

While machines operate linearly; we humans do not. As indicated above, the tipping point is about 10-15 hours of overtime work per week. The more hands-on the work, the more accurate is this statistic. In highly automated operations, some mitigation will obviously occur...depending on the tasks and activities being performed, as well as the work environment. However, **the inescapable conclusion is excessive levels of overtime can make understaffing a losing proposition.**

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Addressing Staffing and Scheduling Imbalances

The workload-staffing imbalance is thus one of the first issues that must be addressed in reducing safety incidents, in improving employee health and in increasing operational efficiency. The key issues to be aware of are:

1. The causal chain of employee fatigue risk starts with workload staffing and scheduling imbalances, as shift schedules and duty-rest rosters cannot be optimized unless the staffing levels are properly determined and unless they are sufficient to support the integrity of the schedule.
2. The predictability of the established work schedules, and thus the consistency of the employee work/rest/sleep cycles, cannot be maintained without proper staffing.
3. Shiftworkers build their lives, their family and social relationships, and their sleep/wake/activity cycles around their shift schedules. Unscheduled overtime due to understaffing severely disrupts this work/life balance.
4. Shiftworkers can become dependent on overtime, creating a "habit" or overtime culture that is difficult to change.

Determining the necessary staffing levels may be less challenging if Hours of Service regulations, Industrial standards such as API/ANSI RP-755, or union agreements exist which set hours of work and hours of rest. However, consistently operating up against the outer boundaries of these rules may actually be counterproductive by contributing to excessive fatigue, since it is difficult to write simple rules to cover all combinations of the complex possibilities, particularly with regard to circadian time of day risks. Indeed, the API-ANSI RP-755 Standard for the petrochemical industry specifically cautions against staffing and scheduling to the outer boundaries of the Standard.

Before hiring additional employees it is always advisable to conduct a detailed analysis of the workload-staffing imbalances and the various options for addressing them. For example, this may include:

1. Re-examining and re-engineering processes designed to reduce the number of positions or the types of jobs that are needed to be filled per each shift.
2. Cross-training and qualifying employees to fill multiple positions, effectively increasing the available staff for relief coverage, for providing scheduling flexibility, and for improving the distribution of overtime across the workforce to minimize the risk of fatigue related human-error due to excessive individual overtime.
3. Increasing use of temporary labor, where appropriate.
4. Where applicable, evaluating the fluctuations in workload to determine predictable patterns, and building a proportional staffing system that better aligns with those fluctuations.

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5. Adjusting staffing levels to maintain a maximum overtime budget of 12%.
6. Initiating your recruiting and training process in advance of the time you will need fully trained personnel at their positions.

To ensure that all these options have been explored, a scheduling factor analysis is needed to periodically assess and confirm that the proper accounting of vacations, training time, and other scheduled and unscheduled absences (which create open positions) have been properly conducted. Once all of these factors have been determined, and the staffing levels optimized accordingly, then the optimal shift schedule can be determined and implemented. This relief factor analysis should be conducted annually to monitor and address any changes that occur in overtime levels.

Addressing Workload and Staffing Imbalances

There are different levels of complexity involved in calculating staffing and crewing requirements including the following factors:

1. Small work groups
2. Larger work groups
3. Few job classifications
4. Multiple job classifications
5. Cross training levels
6. Variability of workload/service demand
7. Complexity of benefits and pay practices
8. Budgeted amounts of overtime
9. Attrition rates
10. Collective Bargaining Agreements

Regardless of these scenarios, **every staffing analysis needs to begin by determining the base manpower loading.** For the vast majority of companies, decades of industrial engineering studies and continuous improvement processes have established these parameters by both department and by job classification to a high degree of operational effectiveness. Thus, the base manpower load in terms of hourly and daily positions to be filled by job classification are generally considered a "given" for most operations. Yet further opportunities certainly exist for **determining the minimum number of positions that need to be filled by hour of each day and day of each week**, and these can be routinely addressed over time.

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The next step is to determine the “not at work days” for each individual employee, in terms of **scheduled benefit days** available for that person to be off work. This includes vacation time, floating holidays, training time, special assignments, and other assigned activities that take employees away from their regular jobs, thus creating open shifts.

Next comes an evaluation of the **unscheduled absences** for each individual...sick days, FMLA, bereavement, jury duty, etc. The combination of the scheduled and unscheduled absences, then, represents the amount of relief coverage required to keep all of the positions filled each and every day. Unless a department can run short-staffed when periodically required, somebody (who is qualified) has to fill the vacant position. This can only be done in one of two ways:

1. There are qualified and fit-for-duty relief personnel available to fill those positions.
2. The positions (i.e. open shifts) are filled with overtime.

Based on extensive field experience, a 10-12% overtime budget (based on actual hours worked over and above regularly scheduled) is usually safe, healthy and productive...provided there is a reasonable distribution of those overtime hours across the workforce. At 15% average overtime levels, it is advisable to start hiring additional people, and at 20% it is arguably unsafe to operate because of the significantly increased risk of human error. This is particularly true with night shifts, rotating schedules and/or long, irregular hours.

For small departments of say less than 40 or 50 people and with only 1 or 2 job classifications, and few progressions, staffing levels can be readily calculated with paper and pencil. Simply convert the total hours of scheduled and unscheduled absences into full time equivalents (for each job classification) to determine the total number of relief personnel required. Then subtract 10-12% overtime (again in full time equivalents) to determine the required number of relief coverage personnel. Add this to the base manpower load (i.e. the number of positions to be filled) to identify the optimal staffing levels for a given unit, department and job classification.

However, when the size of the workforce numbers in the hundreds, and/or includes a large number of job classifications with different qualification levels and seniority rules and bidding progressions, etc., the mathematical complexity requires the use of staffing algorithms for achieving efficiency and accuracy. These can be home grown, or outsourced to subject matter experts for objective processing.

Proportional Staffing

Thus far we only have considered the simplest staffing model for 24/7 operations whereby the workload is consistent and the shifts equally staffed every day of the year. But many shiftwork operations are not like this. **Workload in some businesses inherently fluctuates by the nature of their production or service demands** (think police departments, emergency response teams, overhead linemen, food processors, etc.). Production and/or service demand in such operations can fluctuate by:

1. Hour of day
2. Day of week
3. Seasonally
4. Cyclically
5. Randomly (customer demand, sales promotions, weather, unpredictable events, etc.)

If such operations are staffed at similar levels across all shifts (by establishing an average staffing level), the net result is an oscillation between **being overstaffed (with unproductive increase in cost) and being understaffed (with the excessive costs of overtime and increased employee stress and fatigue)**. An example of this is a large city police force which until recently was staffed with a similar number of patrol officers for every shift of the week despite the fact that the number of emergency calls on Friday and Saturday nights was many times higher than those on Tuesday and Wednesday mornings at 3 a.m. Even in less extreme examples, in which efforts are made to try to predict the necessary staffing level hour by hour, day by day or month by month, the mathematical algorithms required are generally too complex to enable efficient alignment of manpower to service demand (Figure 7). This capability simply does not exist internally in most companies, and is best left to subject matter experts.

Proportional staffing determinations require a minimum 3-4 year retro analysis of hourly and daily production or service demand to determine the time of day and day of week algorithms. Staffing levels and schedule relief factors can then be matched to those algorithms (for each and every employee) to achieve the optimal alignment of manpower requirement for servicing the variable demand. This then serves as the basis for calculating the most efficient shift patterns, shift starting times, and manpower utilization rates. In this fashion, both overtime and "undertime" are significantly reduced and employee utilization rates thus increase.

Other Considerations

As mentioned earlier, one overlooked factor that has recently become an important consideration in staffing analyses is the **increasing rates of employee attrition due to retirements**. It is a statistical fact that businesses in the industrialized world will have to replace 40% of their skilled workforces represented by the aging "baby boom" generation. This bubble exists not only because of the size of the post-war generation, but also because of the large scale reductions in new employee hiring rates over the past twenty years that were made to achieve (through attrition) the headcount reductions needed to meet corporate productivity goals. This means more than just a simple replacement of existing personnel in the workforce. With the sophistication and complexity of today's high tech equipment, systems and processes has come longer training and orientation time for new hires. For example, control room operators in refineries, chemical plants and power generation stations require upwards of 2 years of training to fully qualify as operators. So, for staffing calculations, this means hiring replacement operators 2 years in advance of a pending retirement to ensure a seamless transition and continuity of safety and operational efficiency. Another frequently overlooked staffing factor is the **annual increase in vacation time** being accrued by each employee. Additional relief coverage needs to be provided just to maintain the status quo, but very few companies are making this adjustment. The net result is annual overtime creep, along with increasing risk of fatigue-related human error.

Conclusions

There is now an extensive global body of scientific evidence and operational experience confirming that shiftwork and fatigue in the 24/7 workplace represents a high risk occupational health and safety exposure. Fatigue Risk Management Systems (FRMS) have emerged as the internationally accepted standard for managing these inherent costs, risks and liabilities of shiftwork (Moore-Ede, 2010). The enormous assets at risk per employee today have exceeded traditional methods for managing shiftwork-related fatigue, and the high levels of overtime have bred increasing amounts of human error. **The consequences of that human error today are unprecedented, such that a 10 second microsleep is increasingly likely to cause a major incident or production loss...if not a catastrophic failure.**

This white paper has shown that understaffing is a major contributor to not only fatigue and human error, but also to the health, safety, performance, and quality of life of our employees. Just as annual health check ups are important for each individual's well being, so is a comprehensive, annual examination and re-calculation of staffing levels critical for every business operation. Equally important is that we recognize the cost/benefits of "optimal" staffing vs. understaffing.

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and the impact of high levels of overtime created by that understaffing. When we do the math, short staffing just doesn't add up.

We often hear that it is just not financially possible to make the significant increases in staff needed to reduce overtime to safer levels, that it would be cost prohibitive. In fact, there is plenty of money available! There is an enormous reservoir of cash currently being spent on overtime that could be readily tapped to pay for the extra staff on essentially a cost neutral basis. This conversion could be done gradually over time to help current overtime beneficiaries adjust their personal finances, and to begin to enjoy an increased quality of life and a higher level of performance.

Since overtime levels are the telltale metric for understaffing in 24/7 operations, it's advisable to not only set budgets for overtime, but also to monitor and report overtime levels monthly by department and by individual employee. An additional monthly chart or column should also track the distribution of overtime in hourly buckets (e.g. 0-99 hours/year, 100-199, 200-299, etc.). In the final analysis, it's the distribution of overtime across the workforce and the calendar year that will maintain the integrity, safety and performance of a properly staffed workforce. This may require updating overtime policies and/or Collective Bargaining Agreements, but this effort will produce long term win-win benefits for the company its employees. Moreover, you will now be better positioned to develop a successful Fatigue Risk Management System (FRMS), and to achieve the next major step change in employee health, safety, and quality of life on the one hand, with increased operating efficiency and productivity on the other.

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DR. MARTIN MOORE-EDE has been a leading pioneer and expert on managing the risks of human fatigue in transportation and industrial businesses that operate 24/7. After experiencing the challenges of fatigue as a surgeon-in-training required to work 36-hour shifts, Dr. Moore-Ede was one of the first to define the challenges of living, working and sleeping in a 24 hour a day, 7-day a week world. As a professor at Harvard Medical School (1975 - 1998), he led the team that located the biological clock in the human brain that controls the timing of sleep and wake, and pioneered research on how the human body can safely adapt to working around the clock and sustain optimum physical and mental performance.

In 1983 Dr. Moore-Ede founded Circadian Technologies, Inc. As Chairman and CEO, he has guided the growth of the international network of Circadian companies, "CIRCADIAN®", which now advises over half of the Fortune 500 companies on 24/7 work schedules and fatigue risk management.

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ABOUT CIRCADIANTM

CIRCADIANTM is the global leader in providing 24/7 workforce performance and safety solutions for businesses that operate around the clock. Through a unique combination of consulting expertise, research, software tools and informative publications, CIRCADIANTM serves as a subject matter expert to help organizations in the 24-hour economy to optimize employee performance and reduce the inherent costs, risks and liabilities of their extended-hours operations.

With established offices in North and South America, Europe, Australia and Asia, CIRCADIANTM experts have interfaced with over half the Fortune 500, and other leading international companies, to help improve their competitiveness in the global 24/7 economy. CIRCADIANTM's core expertise is the staffing, scheduling, training and risk management of their most vital asset: the 24/7 workforce.

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STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
BEFORE THE RHODE ISLAND STATE LABOR RELATIONS BOARD

IN THE MATTER OF	:	
RHODE ISLAND STATE LABOR	:	
RELATIONS BOARD	:	
-AND-	:	CASE NO: ULP-6088
THE TOWN OF NORTH KINGSTOWN	:	

DECISION AND ORDER

TRAVEL OF CASE

The above entitled matter comes before the Rhode Island State Labor Relations Board (hereinafter "Board"), as an Unfair Labor Practice Complaint (hereinafter "Complaint"), issued by the Board against the Town of North Kingstown (hereinafter "Employer"), based upon an Unfair Labor Practice Charge (hereinafter "Charge") dated June 13, 2012 and filed on June 14, 2012 by the International Association of Firefighters, Local 1651 (hereinafter "Union").

The Charge alleged violations of R.I.G.L. § 28-7-13 (6) and (10) and (11) as follows:

SUMMARY OF BASIS OF CHARGE

1. The Union and the Town are parties to a Collective Bargaining Agreement ("CBA") governing the period of July 1, 2007-June 30, 2010.
2. The most recent CBA between the parties is the result of interest arbitration award dated August 9, 2011, governing the period of July 1, 2010 through June 30, 2011.
3. By operation of law, the 2007-2010 CBA remains in effect, as amended by the interest arbitration award.
4. Starting in or about October, 2011, the parties met to bargain over the terms of a successor Collective Bargaining Agreement.
5. The Town, however, did not bargain in good faith, and threatened to pass an ordinance unilaterally changing the terms and conditions of employment if the Union did not accede to demands. *See Rhode Island State Labor Relations Board and Town of North Kingstown, Case No ULP 6071.*
6. On or about January 30, 2012, while the parties were still engaged in negotiations, (albeit, not "good faith" negotiations as required by State law) the Town adopted Ordinance 12-02 ("the Ordinance") which unilaterally changed the terms and conditions of employment as set forth in the parties' most recent CBA.
7. On February 28, 2012, the Union filed a Complaint in the Superior Court against the Town of North Kingstown, through its Town Manager and Town Council, seeking a declaration that (1) the Ordinance is invalid because it is in violation of the Town Charter and the Fire Fighters' Arbitration Act ("FFAA") and (2) that the Town's failure to maintain the status quo constitutes a violation of the FFAA and the State Labor Relations Act ("SLRA"). The Union also sought to enjoin implementation of the Ordinance and to enjoin the Town from unilaterally changing the terms and conditions of employment.

been awarded the change in platoon schedules and hours that it was again seeking in the 2011-2012 contract. At that initial meeting, the Employer announced that it had to secure 1.2 million dollars in structural savings and that in the absence of the same, it would implement the changes that it was proposing. Indeed, less than two months later, the Employer published its proposed ordinance and set a time frame by which it would be implementing the same, all while collective bargaining, supposedly in good faith, was taking place. This arbitrary date, selected by the Employer, is evidence of its bad faith, by selecting a date at which it says definitely that "impasse" will occur. In essence, the Employer is saying, "cave to us by then, or else." This is bad faith bargaining.

In addition, the Employer did not introduce any evidence in the record as to why 1.2 million was the amount it "needed" to save per year in the upcoming contract. The Union President testified at the first hearing on September 11, 2012 that at the first meeting, the Employer's representatives indicated that it had determined that if the firefighters went to a fifty-six hour work-week, the Employer would save 1.2 million dollars, so that was the amount of concessions they would have to have from the Union if the Union did not want a fifty-six hour work-week. (TR. pgs. 59-60.) So, the "need" to save money is driven solely by its desire to secure a fifty-six hour work-week. Indeed, the Town Manager testified as follows concerning the first bargaining session:

"The message was that long-term structural change, attaining that by moving to the three platoon system for a savings of 1.2 million dollars, and it was also related to the Union that, if there was another alternative or alternative means of attaining that type of savings and long-term structural change, that the Town would be open to considering them." (TR. p. 581)

There has never been any explanation by the Employer as to where this 1.2 million dollar figure came from. There were no documents submitted into the record documenting any financial stress on the Employer. There were no documents that supported why the Employer "needed" 1.2 million dollars in structural savings, as opposed to simply wanting the same. As noted by the Union in its brief, an asserted inability to pay, if important enough to raise, is important enough to require some sort of proof as to its accuracy. citing Nat'l Labor Relations Board v Truitt Mfg. Co., 351 U.S. 149, 152-53, 76 S.Ct. 753, 755-56, 100 L. Ed. 1027 (1959) While the Employer claims that it desired from a management perspective to adopt a new platoon structure, the Town Manager readily acknowledged that unless the hourly wage rate for the firefighters was decreased, there would be no way for the fifty-six hour work-week to achieve savings. In fact, he testified: "If implementing the three-platoon system and keeping the hourly rate the same, in spite of the fact that the employees are salaried employees, it would have been cost prohibitive, absolutely cost-prohibitive." (TR. pgs. 604-605) Thus, what was really being bargained was the

wage rate, without any supporting documentation from the Employer as to why the wage rate must be reduced for the Employer's well-being.

We believe that making an unsubstantiated demand for a *significant wage reduction* is unreasonable and evidences a refusal to enter into good-faith bargaining about wages. Moreover, to claim that the parties were at "impasse" at the meeting at which bargaining proposals were first exchanged, evidences a mind-set that there was no intent to engage in good-faith bargaining. Such a mind-set is more indicative of "surface bargaining" in a pre-determined effort to get to impasse; to claim justification for unilateral implementation of proposals, which, in Rhode Island, has never previously been permitted under the FFAA.

We find, therefore, that since the Employer's "bargaining" was tainted by bad faith, "impasse" could not occur. This finding however does not end our inquiry into the impasse issue. We will now address the issue of "impasse" within the context of the FFAA and whether the same can ever occur and whether an Employer may ever unilaterally implement terms and conditions of employment.

IMPASSE: PRIVATE SECTOR VS PUBLIC SECTOR COLLECTIVE BARGAINING

We begin our discussion by reviewing this Board's long-established position concerning the status of terms and conditions of employment for public sector employees, after the expiration of a prior collective bargaining agreement. Twenty-one years ago, this Board decided Case No ULP-4647, SLRB v Warwick School Committee. That case examined the issue of unilateral implementation of terms and conditions of employment imposed by a school committee, during the negotiations of a successor CBA. ⁸ This Board held: "We conclude that unilateral departure from the terms of an expired contract, prior to the exhaustion of all available statutory dispute resolution procedures, violates the obligation under R.I.G.L. § 28-7-13 to bargain collectively." (ULP-4647 Decision p.10) In that case, the Board discussed the significant differences between private sector disputes and public sector disputes. We noted that the School Committee had urged the Board to adopt the federal model for dealing with private sector disputes which would allow the Employer to unilaterally impose terms upon the reaching of an impasse in negotiations for a successor CBA, without regard to the distinct character of public sector bargaining. We declined to do so and instead joined with other jurisdictions - notably New York, Triborough Bridge & Tunnel Authority, 5 PERB §4505, Aff'd, 5 PERB §3037 (1972); California, Moreno Valley United School District v PERB, 142 Cal. App. 3rd, 1991 Cal. Rptr. 60 (1983); and Oregon, Wasco County v AFSCME Local No 2752, 30 Ore. App. 863, 569

⁸ Prior ULP 4518, which found the Warwick School Committee had committed an unfair labor practice by refusing to execute a negotiated agreement, was overturned by the Superior Court in the basis that the negotiators for the school committee lacked actual authority to bind the committee.

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CHANGE OF STATUS

Please enter the following change(s) as of 03/11/2012

me RAYMOND FURTADO
Employee # 3,001

FROM

Job Code Pay Range/Step
103 24/2.00
FIRE CAPTAIN

Department
FIRE DEPARTMENT

Union Code
T030

Rate of Pay
\$61,706.58
2,373.33
\$28.25

Job Code Pay Range/Step
R03 24/2.00

Department
FIRE DEPARTMENT

Union Code
T030

Rate of Pay
\$67,877.16
\$2,610.66
\$23.51

\$5.00

Reason For Change

Other Reason(s) or explanation(s) REORGANIZATION 3/11/2012 7:30 AM

AUTHORIZED BY

APPROVED BY