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Crew Endurance Management Newsletter

This Issue

Long work hours can equate to Blood Alcohol Concentrations up to 0.10% !

Crew Endurance Resources Online

http://www.uscg.mil/hq/g-m/cems/index.htm

This is the fifth edition of the Crew Endurance Management Newsletter. The newsletter provides basic information about the Crew Endurance Management System (CEMS) to CEMS practitioners and those interested in learning about CEMS. It also provides a forum for stories about the application of CEMS in the marine industry.

Please be sure to pass this information along to others so that those interested in subscribing can register with us.

The Coast Guard CEMS Web site continues to be updated with additional CEM information and resources. Thoughts and suggestions are always welcome regarding content and information. Please forward them to fldr-G-MSE@comdt.uscg.mil or call us at 202-267-2997.

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Crew Endurance Risk Factors

In our last issue, we discussed the Crew Endurance Risk Factors of "Scheduling Main Sleep During the Day" and "Changing Work/Rest Schedules." In this issue we discuss "Long Work Hours" and "No Opportunities to Make Up Lost Sleep." For a review of all 15 Crew Endurance Risk Factors, see the following link to the Decision Support System Worksheet:

Crew Endurance Risk Factors 

Long Work Hours

We've all worked long days, or "burned the midnight oil," but generally the human body can only last a finite amount of time doing this. We noted in the last issue that work schedules imposing frequent changes from daytime to nighttime duty hours tend to disrupt energy restorative processes and degrade endurance. What was not mentioned is that **the same is true of work shifts greater than 12 hours within a 24-hour period.** In fact, studies have shown that after 12 hours of sustained wakefulness, mental performance and energy

begins to decline. As one approaches 20 continuous hours awake, that person's cognitive performance mirrors that of an individual with a blood alcohol concentration of 0.10%. Read more about this study here:

Measures of Fatigue 

Nurses working over 12 hours were three times more likely to make a mistake.

In the July 2004 issue of Health Affairs, it was reported that hospital staff nurses are more likely to make medical errors when they work 12 or more hours at a stretch. University of Pennsylvania researchers tracked 393 hospital nurses over a four-week period. They found that the length of the nurses' shifts, amount of overtime, and number of hours worked per week had significant effects on their performance. Nurses who worked longer hours were more likely to make errors -- **nurses who worked shifts of 12.5 hours or longer were three times more likely to err.** During the course of the study, the longest shift the researchers recorded was 23 hours, 40 minutes.

For more information on these studies, go to the National Academies link provided here:

Nurses' Long Work Hours Study 

No Opportunities to Make Up Lost Sleep

Benefits of napping

This risk factor goes hand-in-hand with the previous one. On those occasions when your operation requires you to work a longer day and miss out on some of your sleep (and they obviously do occur!), daily naps are an important strategy for minimizing the long-term sleep loss that can build up over time. The best time to nap is before significant sleep loss has occurred because these preventive naps help ward off subsequent performance impairments during heavy work schedules. Personnel who nap for one to four hours prior to a nighttime work period will also show better early-morning performance and alertness than personnel who do not nap. In fact, **preventive napping** may be better than napping during a sleep deprivation period. More on napping is available within the Guide for Maritime Operations and listed here:

Napping Guidelines 

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Real World Fatigue Issues

Nicotine and Sleep Don't Mix!

According to the Associated Professional Sleep Societies, cigarette smoking has

Smoking and sleep - bad mix!

detrimental effects on sleep. Researchers found that cigarette smoking causes difficulty initiating and maintaining sleep and is linked to daytime sleepiness. Some of these effects are the result of nicotine withdrawal. Overall, sleep disruption is one more excellent reason to protect your health by not smoking and why Sleep Tip # 9 of NSF's Healthy Tips for Better Sleep is "Avoid Nicotine!"

National Sleep Foundation's Sleeptips 

Sleeping and Eating: Effects on Each Other

David Neubauer, MD, of Johns Hopkins University notes that, "There has been increasing interest in physiological aspects of the complex relationship of sleeping and eating." He states that disruptions of sleep, whether due to one's schedule or from a disorder like sleep apnea, can have metabolic consequences, such as impaired glucose utilization. It has even been argued that this can contribute to obesity. Read more at the link below:

Sleep Medicine Reviews Vol. 8, Iss. 2 

Too little sleep associated with obesity

Short Sleep Periods and Obesity

New research indicates that short sleep periods are correlated with increased risk of obesity. Since sleep is a modifiable behavior, this information might have important implications for the prevention of and treatment of obesity. The details of the study are included here:

Journal Sleep, Volume 27, Issue 04 

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Fatigue in Other Transportation Modes

NTSB Says Fatigue is Linked With Two Accidents

It's not often that fatigue is directly cited in major transportation- related accidents. Recently, the National Transportation Safety Board concluded that fatigue played a role in two accidents in 2002. The first one occurred on July 26, when a FedEx Boeing 727 crashed on landing in Tallahassee, FL, because of flight crew performance failures. The captain, first officer, and flight engineer were seriously injured, and the airplane was destroyed by the impact and

Fatigue related to two transportation accidents

resulting fire. "Contributing to the accident was a combination of the captain's and first officer's fatigue and failure," the NTSB report concluded.

The other event took place on June 23, when the driver of an Arrow Line, Inc. motorcoach fell asleep while driving "due to his deliberate failure to get adequate rest during his off-duty hours," the Board said. The accident occurred near Victor, NY, when the severely fatigued driver fell asleep and the bus ran off the road, vaulted over an entrance ramp, landed, and rolled onto its side. Five passengers on the bus were killed.

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CEMS and Your Health

More on melatonin

More on Melatonin

Seems like there is never enough information about this hormone that controls our sleep/wake cycles! Our last issue referred you to the National Sleep Foundation's online brochure about melatonin, and this time, we're referring you to a recent press release describing this hormone:

NSF Melatonin Press Release 

Get your sleep - you may be more insightful!

Sleep Inspires Insight

A recent study published in Nature magazine suggests that pivotal insights can be obtained through sleep. Upon testing, more than twice as many subjects gained insight into a hidden rule after sleep as after wakefulness. What does this mean for you? Perhaps the problem you've been struggling with the past couple days could be solved with a good night's sleep! Read more from the article below:

Nature 2004 Jan 22 

Watch what you eat before going to bed.

Eating Before Going to Bed

It's something we all do, especially after you've stood your full watch. You might want to think twice about how and what you eat right before going to bed in order to get the best possible sleep you can. A sleep tip from the National Sleep Foundation recommends that you finish eating at least 2-3 hours before your regular bedtime. Eating or drinking too much may make you less comfortable when settling down for bed. Also, spicy foods may cause heartburn, which leads to difficulty falling asleep and discomfort during the

night. Finally, try to restrict fluids close to bedtime to prevent nighttime bathroom awakenings, though some people find milk or herbal, non-caffeinated teas to be soothing and a helpful part of a bedtime routine. Read more NSF sleep tips below.

NSF Sleep Tips 

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Industry News

This portion of the newsletter is intended to highlight industry perspectives and progress toward CEMS implementation. As organizations continue to implement CEMS, it is to everyone's benefit to share their personal experiences with implementation so that others may learn. Please feel free to send your individual experiences to us at CG Headquarters so that we can share them via this newsletter.

The following article was provided by Captain Mike Bowman, M/V Dixie Vandal, Kirby Inland Marine:

8-8-4-4 schedule change? Read about it from a captain who's done it.

I realize working an 8-4 schedule is a big change from the 6-6 we've all worked for years. I really believe it is the watch of the future due to the fact that you are able to get a lot closer to the recommended 7-8 hrs. straight sleep most adults need. While there is no perfect solution to our unique situation out here on the water, I strongly believe it's as close as we will be able to get and still have something acceptable to the Coast Guard. The Coast Guard has put a lot of time and money into crew endurance studies, and they have determined 6-6 watches are very unhealthy due to our lack of rest. Working a 6-6 watch, we can only get 4 hrs. straight sleep at best. This causes us to miss out on our much needed r.e.m. (dream sleep) sleep. Every sleep study ever done shows that between 6 and 8 hours is where our brain replenishes the chemicals we need in our brain to keep our bodies working properly and maintain proper health.

I have been working the 8-4 watches for 2 years now & I notice a major difference in my overall health. I feel my thinking is more clear & I'm able to concentrate better than ever. Also I have a lot more energy than before. Also this watch gives me more time to do the stuff I need to get done because I'm getting good nights' sleep on my 8-hour off watch. This allows me to use my 4 hour off watch to get paper work done and gives me plenty of time to exercise. We have a good bit of exercise equipment on board, and now everybody has the time and energy to use it. Because we work out, this makes us more conscious of our eating habits. Now we have started eating a lot healthier. You develop the attitude that it's not worth eating all the unhealthy stuff if you are going to put forth the effort to work out. And this helps to improve your health. Also once you start getting in shape and feeling better about yourself you will feel a lot better mentally and physically.

Benefits of light management

Another key element to making the 8-4 watch work is light management. It is very important to make sure your back watch gets in bed before daylight, because seeing sunlight can make your melatonin levels drop causing you to sleep less. If you make sure they get in bed while it is still dark they will sleep more soundly and feel better rested.

Also I used to push for boats to switch to the 8-4 right away, but over time I've come to

Importance of coaches

realize that was a major mistake. It is just too much of a change all at once and most boats will not like it, and will go back to a 6-6 watch, defeating our whole purpose of switching. I now recommend a slower adjustment. You can start out working a 6.5-5.5 watch for a couple of months, then switch to a 7-5 watch. Work that until everybody adjusts. After that, switch to a 7.5- 4.5 watch for a couple of trips. Then switch to an 8-4 watch.

You will never regret switching to a 8-4 watch once you get used to it, and you will wonder why they didn't suggest this years ago. I know it works because I have been doing it for over 2 years.

The most important element to making it work is the coach, because if you believe it will work, being the leaders you are, you will have no trouble convincing your crew of the same thing.

Our work schedule is front watch works from 0500-1300 & 1700-2100 back watch works from 1300-1700 & 2100-0500.

We used to change at 0600, but that was cutting it to close to daylight, especially on the east end. This would interfere with the back watch getting in bed before daylight & you have to remember light management is one of the key elements to making crew endurance work.

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Recent Events

Experts and Coaches Training

Since the publication of our last newsletter in July, Crew Endurance Coaches Training has been held in:

Baton Rouge, LA and Houston, TX (John Baker of Kirby Corporation)

Tampa, FL (Jeff King of Maritrans)

New York, NY (Eric Larsson & Greg Menke of Seamen's Church Institute)

New Orleans, LA (7 sessions conducted by Mike Sanders of ACBL)

New Orleans, LA (Jo Ann Salyers of Blessey Inland Marine)

For a listing of available training resources see our Training Page.

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Got Comments?

E-mail us at

fldr-G-MSE@comdt.uscg.mil

Upcoming Events

Coaches Training:

The **Seamen's Church Institute** Center for Maritime Education in Paducah, KY will be holding a Crew Endurance Coaches Training **December 7-8, 2004**. Interested mariners are encouraged to contact Captain Greg Menke (270-575-1005) or LT Samson Stevens (202-267-0173) for more information.

Maine Maritime Academy will be holding a Coaches Training **January 4-5, 2005** in Castine, ME. Please contact Captain Larry Wade at 207-326-2425.

Experts Training:

American Electric Power will be hosting an Experts Training **November 10-12, 2004** at their corporate office in St. Louis, MO. At this time the class has been filled, and we will consider scheduling another sometime in the new year. Direct questions to LT Samson Stevens (202-267-0173).

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