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Crew Endurance Resources Now Online

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

Welcome to the third issue of the Crew Endurance Management Newsletter. This newsletter is provided for basic information and applications of the Crew Endurance Management (CEM). We continue to send out issues via email, so remember, if you are interested in subscribing, please [register](#) with us.

Check out the [CEM Web site](#) where we continue to update you with CEM information and resources. Your thoughts and suggestions on what you would like to see on either the newsletter or the Web site are always welcome. Please forward them to fldr-G-MSE@comdt.uscg.mil or call us at 202-267-2997.

Coaches Training Course--to be accepted by the NMC.

The Crew Endurance Coaches Training Course is in the process of being accepted by the National Maritime Center (NMC). What does this mean for you?

- 1.) Companies that have a certified Crew Endurance Expert on staff may hold their own Coach Training courses. For the course to be recognized by the Coast Guard, it must be taught in accordance with the lesson plan from the Coast Guard accepted course submitted by G-MSE-1.
- 2.) Those wishing to customize their own CEMS course will be required to submit their proposal to NMC for acceptance. G-MSE-1 will assist in developing and processing all new CEMS courses submitted for acceptance.

Crew Endurance Risk Factors

In our [last issue](#), we discussed the Crew Endurance Risk Factor of "Sleep Quality." In this issue we discuss "Sleep Fragmentation."

Sleep Fragmentation

We've all learned basic addition, right?

4+4 = 8 Correct?

Wrong!

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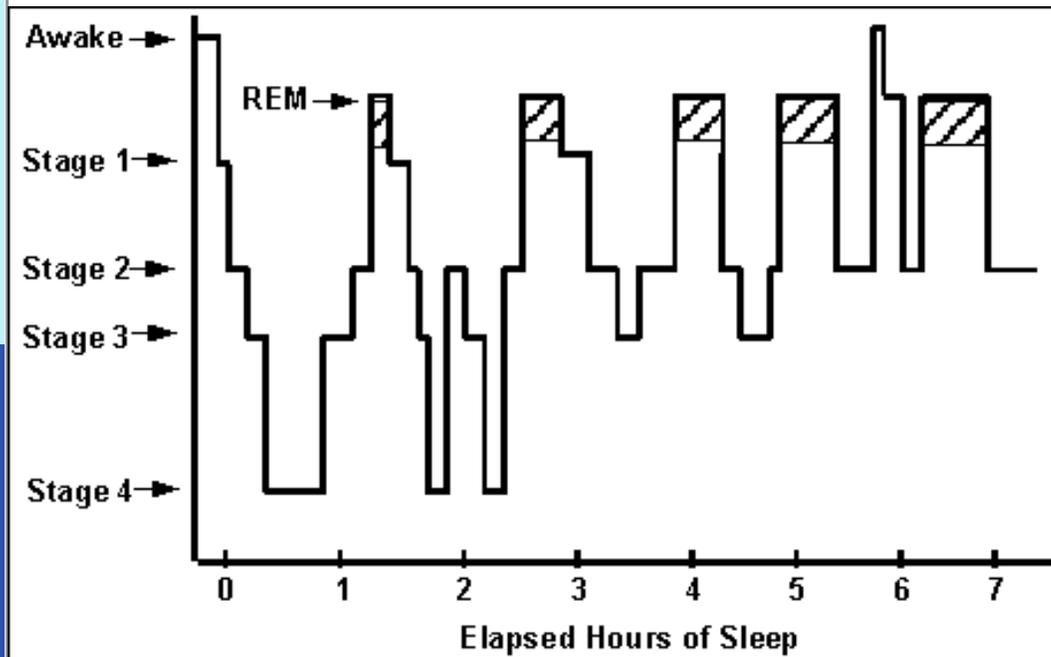


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When it comes to hours of sleep, traditional math no longer applies. This is the underlying concept of **sleep fragmentation**.

If you reviewed our last issue, you'll remember that sleep "architecture" looks something like this:



In other words we cycle through the various stages of sleep throughout the night (or day depending on when you're sleeping). The problem with obtaining two three- or four-hour blocks of sleep as opposed to one long block is that a full cycle is never completed.

REM and deep sleep are imperative to physical and mental recovery and restoration, and chronically shortchanging your full sleep cycle results in endurance degradation. Additionally, disruptions such as schedule changes, frequent awakenings, and medications that wake you up cause the brain to start the sleep cycle from the beginning. This means an incomplete sleep cycle.

$4 + 4 \neq 8 !?$

What's the lesson here? When at all possible, target one period (off-watch) of the day to get your "long" sleep. In other words, make plans to get as much sleep possible during one "off" period, and use the other time for a short 1-2 hour nap if needed. In this way, you'll be getting close to a full sleep cycle, while at the same time, not interfering with your long sleep by too long of a "nap" during your other off -watch.

Chronically shortchanging your full sleep cycle results in endurance degradation.

Our next issue will discuss the dangers of scheduling your main sleep during the day and changing work/rest schedules.

Real World Fatigue Issues

Endurance issues are not unique to the United States. Last summer the small

bulker, JAMBO, sank after running aground off the U.K. because the watchkeeper fell asleep and missed a course change.

Only the master and mate were available for watchkeeping duties on board. An excerpt from a December 19, 2003, issue of Lloyd's List reports:

The inspectors concluded that the mate had fallen asleep as a result of "very high levels of fatigue," caused by the cumulative effect of an irregular working pattern in which the six-on, six-off watches were compounded by regular port visits where the mate was required to oversee cargo operations.

During the month before the ship was lost the mate routinely worked 12 or more hours a day for 23 out of 31 days. Manning of the bulker complied with the minimum safe manning document issued to the ship by its flag state.

The report points out that the majority of vessels in this sector of the shipping industry operate a two-watch system, with any increase to a three-watch system putting the ship owner at a commercial disadvantage.

As a result of this incident, the U.K.'s [Marine Accident Investigation Branch \(MAIB\)](#) initiated an inquiry into similar such events in the past decade. They found an average of six groundings per year between 1993 and 2003. The MAIB is continuing a safety study watchkeeper fatigue .

Any Endurance Risk Factors here? Absolutely!

CEMS and your health

Obesity is quickly becoming the the second leading preventable cause of death, after tobacco. In fact, the Secretary of the US [Department of Health and Human Services](#) announced last week that the federal government is undertaking a major effort to reduce the problem of obesity. According to the Center for Disease Control and Prevention, nearly two-thirds of Americans are overweight or obese. And sleep scientists say there is a connection between **obesity and sleep problems**.

Why are we as a nation getting fatter? Most experts attribute it to our sedentary lifestyle combined with our caloric intake; to

"High levels of fatigue...irregular work pattern...12 or more hour days..."

Got Comments?

E-mail us at

fldr-G-MSE@comdt.uscg.mil

put it simply, we're eating more and exercising less. The result is weight gain. We're also getting less sleep than we used to. And the combination of high calories, little exercise and sleep deprivation is a perfect model for obesity.

Crew Endurance Management is not only an effective method to reduce the risks of accidents and human error, but also focuses on issues such as these to make our lives healthier and more enjoyable.

See more on this at the [National Sleep Foundation's website](#).

CEMS at work

To date, the Newsletter has focused primarily on CEMS related scientific information. 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 scenario was shared by Captain Scott Eddy, of Penn No. 6, Penn Maritime Inc.:

After a long night, you go below to take advantage of the extra hour of sleep you now have under your vessel's new schedule. You've actually been sleeping much better, and several Crew Endurance-related environmental improvements have actually made life at sea a little better!

6 1/2 hours later, you wake up, only to find an emergency situation on hand. The weather has kicked up several notches, and it appears the Penn No. 6 is in danger of losing her tow unless some quick thinking is done.

Fortunately, everyone pulls together and after some time and plenty of of hard work, the situation is brought under control with no damage to property or person.

You realize that this situation could have been avoided if you and the deckhand had been woken up earlier to prepare for the impending storm. But the Captain did not wake either of you up because he learned that [fragmented sleep](#) is a [Crew Endurance Management risk factor](#) that over time will contribute to chronic sleep deprivation. He also realized that exposure to daylight would desynchronize your body clock after all the effort you had put in to shift your [Red Zone](#) to later in the morning.

"The weather has kicked up....and we're in danger of losing the tow!"

Balancing Act

Lesson learned

Captain Eddy graciously shared this story with us so that he could provide a valuable lesson learned. He noted that it was not CEMS that put them in a bad situation. Rather, it was practicing CEMS to the exclusion of other safety considerations. In other words, Crew Endurance Management is a **system** that interacts with all the other systems on board. In order for it, and your operation to succeed, everyone must exercise judgment in balancing Crew Endurance with the operational considerations of your vessel.

There's no doubt this can be a challenge, but that is why the Crew Endurance Coach is so important to your success. They are the ones to help you with this balancing act and help you choose the right decisions based on the training they've had.

Recent Events

Experts Training

On January 9, 2004, seventeen students attended the first Crew Endurance (CE) Experts course, which was held at the Coast Guard Research and Development Center in Groton, CT. As Experts, these individuals are now working to make CE Coaches Training more widely available via their expertise. To obtain the Experts designation, students went through an intensive 2½-day program, which included CEM science and physiology, CE risk factors and how to manage them, and CEM implementation. The course also included several group exercises, a written and oral exam.

This Experts Training Course marked an important milestone towards implementing CEM throughout the commercial maritime industry. Prior to this course, Coaches Training was primarily available only through the Human Element and Ship Design Division (G-MSE-1) at Coast Guard Headquarters or the Coast Guard Research and Development Center. As the new CE Experts come online with their own Coaches Training courses, they will be acknowledged via the Coast Guard's Crew Endurance Web Site so that the increased availability of Coaches Training will be known.

17 individuals attended from a variety of companies and maritime institutions. Currently four individuals have completed the "qualification" process to provide the Coast Guard's CEMS Coaches Training:

Mark Dougherty	ACBL
Mike Sanders	ACBL
Tava Foret	Foret Enterprises

What kind of training can I get?

Coaches: 2-day coaches training courses.

Experts: 3 day courses scheduled as needed.

John Baker Kirby Inland Marine

As others become qualified, future newsletters will publish this information.

Coaches Training

January 21-22, 2004, Maine Maritime Academy: Eleven attendees from Penn Maritime, Maritrans, and Maine Maritime Academy learned CEMS so that they could put it to work in their organizations.

March 18-19, 2004, Channelview, TX: John Baker of Kirby Inland Marine hosted a Coaches Training course for 22 individuals ranging from port captains and shoreside support/management to captains/pilots and training specialists.

Upcoming Events

Experts Training:

April 14-16, 2004: Coast Guard Research and Development Center, Groton, CT.

Current Crew Endurance Coaches who desire to move into a trainer position within their organization will be certified as "Experts" who can train other coaches. Slots are limited - contact LT Samson Stevens for registration and information. (202.267.0173, email: sstevens@comdt.uscg.mil)

Coaches Training:

April 21-22, 2004: Massachusetts Maritime Academy. Contact LT Samson Stevens at above phone/email.