



# Crew Endurance Management Newsletter

an information resource about the Crew Endurance Management System (CEMS) for its practitioners and those interested in learning more about it

## Crew Endurance Resources

Welcome to the Crew Endurance Management Newsletter, where we continue to bring you the latest in sleep and endurance-related information to support your personal knowledge of Crew Endurance Management and implementation.

### READER INTERFACE NOTE:

When reading on the Internet, the symbol to the right indicates a hyperlink for the subject matter indicated in blue, underlined text. Readers with printed copies can visit our website for more information:



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



Much of the information in this issue was originally printed in the National Sleep Foundation's weekly *Alert* – if you'd like to receive this information regularly, sign up with them [here](#) – it's free!

Please be sure to pass this information along to others so that they can [register](#) with us.

## This Issue:

<b>Risk Factor Spotlight</b>	1	<b>Sleep, Schedules, &amp; Circadian Rhythm</b>	3
<b>Physical Stressors</b>	5	<b>NEW FEATURE "Sam Says"</b>	5
<b>Environmental Stressors</b>	6	<b>CEMS Updates</b>	7

## Risk Factor Spotlight: Sleep, Schedules, and Circadian Rhythm

by LCDR Vivianne Louie

Believe it or not, this newsletter has been sharing CEMS-related content and advice for over three years now! Since it's been so long since we first explored each risk factor, it's time to revisit them and suggest old and new tips and resources for each of four categories (as listed in the [CEMS Addendum](#)): *Sleep, Schedules, and Circadian Rhythm*; *Physical Stressors*; *Environmental Stressors*; and *Personal Stressors*.

For a review of all 15 Crew Endurance Risk Factors, please click on the following link to the Decision Support Worksheet:

[Crew Endurance Risk Factors](#)

There are many similarities among the seven endurance risk factors in our first category—**Sleep, Schedules, and Circadian Rhythm**—but each negatively affects endurance in its own way.

### Insufficient Daily Sleep Duration

*(less than 7-8 hours of uninterrupted sleep)*  
In order to make energy (called adenosine triphosphate, or ATP), our bodies need good nutrition, water, oxygen, and sufficient sleep. Scientific studies have shown that seven to eight hours of continuous sleep are necessary to restore these energy supplies.

When we don't get enough sleep, the brain, nervous system, and all our body systems cannot function efficiently. This can make people irritable, withdrawn, less willing to resolve issues and problems, fatigued, and more susceptible to disease. They also may not think clearly and be able to communicate well with

others.

### Poor Sleep Quality

*(waking during the night due to work-related disruptions, vessel motion, or noisy environment)*

Because our bodies cycle in and out of various stages of sleep, ranging from deep sleep to REM sleep, the sleep period must be continuous and uninterrupted. Seemingly minor irritations like noise, temperature, and light can keep us from reaching the critical stages of sleep that replenish the energy stores of both the body and brain. Since we can't compensate for our lack of energy, our ability to carry out physical and mental tasks is compromised, leading to reduced safety conditions.

### Sleep Fragmentation

*(dividing sleep into multiple naps because 7-8 continuous hours are not possible)*

This is one of the only lessons in which 4 + 4 does NOT EQUAL 8! The problem with obtaining two 3- or 4-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. Chronically shortchanging your full sleep cycle results in endurance degradation.

### Scheduling Main Sleep Period During the Day

*(changing watch schedules, rotating between day and night work)*

Since our biological clocks use light as a marker of what we're supposed to be doing (sleeping when it's dark and wak-

ing up when it's light), trying to go to sleep when the sun is up, or in bright lights, is in direct conflict with the body's signal to stay up.

Sleeping during daylight hours is also greatly affected by the environment you sleep in. It should be as dark as possible. In addition to light levels, other environmental considerations affecting sleep quality include courtesy policies to reduce noise and chatter, comfortable mattresses to sleep on, air purifiers, and cooler temperatures.

Finally, sleeping during the day conflicts with your body's natural circadian rhythm. Your internal clock tells you that it's time to be up while you try to tell it to settle down and go to sleep. The only way to do this is through proper light management techniques that delay your Red Zone into later morning, allowing you to sleep.

### **Changing Work/Rest Schedules** (rotating between day and night work/ changing watch schedule)

Some schedules alternate weeks in which one is spent working nights and the next is spent working days. From an endurance perspective, this is not a good idea in terms of your circadian rhythm. Changing schedules on a daily basis is even worse. Inconsistent light input can cause the body's clock to become disorganized in such a way that the physiological rhythms under its control are no longer expressed in predictable patterns. This can result in sleepiness, insomnia, and deterioration of performance in mental and motor tasks.

Therefore, from a crew endurance perspective, it's best to maintain the same work schedule for as long as possible, using light management techniques to adapt the body to the schedule being worked.

### **Long Work Hours**

(working more than 12 hours at a time)

The amount of time that a human body can continue to maintain a 12-hour (or longer) work schedule is finite. Just like those with constantly changing work schedules, people who work shifts of more than 12 hours within a 24-hour period disrupt their energy restorative processes and degrade their endurance. 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 .10%.

### **No Opportunities to Make Up Lost Sleep**

(napping is not possible)

On the occasions when your operation requires you to work a longer day and miss out on some of your sleep, 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 preventative 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.

### **Recommended Follow-Up**

If your operation identifies any of these seven sleep, schedule, or circadian rhythm factors as a significant problem, you may want to take the following into consideration when devising a Crew Endurance Plan. The numbers after the recommendations indicate where each can be found in the original [Guide for Maritime Operations](#) , where they are described in more detail.

### **Sleep Recommendations—Night Schedule Workers:**

Environmental light management techniques should be used to adapt crewmembers to night watch. (43)

For crewmembers working at night, maintain the same work-rest schedule for at least two continuous weeks. (43)

Provide bright-light exposure during the work period in environments where night vision is not required. (45)

Avoid bright light for three hours before sleep by avoiding light or wearing wraparound sunglasses (38), or by allowing crewmembers on any watch ending in the morning hours to retire prior to sunrise. (46)

Overtime should be scheduled to occur after wake-up time. Leisure activities should be scheduled in the evening hours. (46)

### **Further References:**

In the original [Guide for Maritime Operations](#) :

"Managing the Red Zone," pages 4-6 and 31-46.

Appendix A, "Sleep Management and Circadian Rhythms," pages A1-A19.

In the Guide's [Addendum](#) :

"Sleep, Schedules, and Circadian Rhythm," pages A-3-A-12.

### **General Sleep Recommendations:**

Crewmembers should have enough time off to obtain 7-8 hours of uninterrupted sleep per 24-hour period. Strive to sleep at least six hours per day. (35, 42, 43, A-10)

When 7-8 hours of sleep is not possible, compensate for any sleep loss with daily naps of up to 90 minutes in length. Allow 15 minutes between a nap and returning to work to avoid grogginess/disorientation, or sleep inertia. (42)

Do not nap during the day if you have difficulty sleeping during your normal sleep period. (A-6)

Provide a comfortable sleeping surface. (36)

Provide a dark sleeping atmosphere. This may involve tinting windows, installing shutters, or any other method that will prevent sunlight and bright artificial light from penetrating into sleeping quarters. (36)

Provide and maintain a quiet atmosphere for sleep. If possible, wear earplugs or use a white-noise generator, such as a fan. (36, A-5, A-11)

Maintain a comfortable temperature of 65-70° F and 60-70% humidity in the sleeping quarters. (36)

Avoid sudden ship movements that may wake sleeping crewmembers. No matter when you sleep, try to wear usual sleep clothes. Use the bed only as a place to sleep. Associating these habits with sleep will allow it to come more easily. (A-5)

If you cannot fall asleep after 30 minutes in bed, get up for awhile before trying to sleep again. (A-6)

Work periods should be no longer than eight continuous hours, particularly when prolonged exposure to extreme temperature or humidity levels is involved. In particular, avoid allowing personnel to work more than 12 hours in a 24-hour period. (38, 43, 45)

Encourage crewmembers to sleep and wake at the same times each day or night to maintain a well-functioning biological clock. (37, A-5)

Finish physical training no later than one hour before bedtime. (A-5)

Avoid work schedules that impose frequent changes from daytime to nighttime duty hours. (37)

When changing to a new work shift, gradually adjust times over a period of days for better performance. (38)

## Sleep, Schedules, and Circadian Rhythm

### Fatigue to Blame in Macdona Railway Accident

(Source: NTSB Press Release, July 6, 2006)

The Acting Chairman of the National Transportation Safety Board (NTSB), Mark V. Rosenker, put it succinctly: "Get enough sleep. It sounds so simple and yet we continue to see accidents caused by fatigue. How many more tragedies have to occur before employers and employees get the message that being well-rested is critical to job performance?"

The Chairman's statement is in response to an incident that occurred two years ago in which two freight trains collided just outside of Macdona, Texas, killing three. The cause? A lack of adequate sleep.

In the early morning hours of June 28, 2004, a Union Pacific Railroad (UP) train traveling west struck an east-bound BNSF Railway Company (BNSF) train at its midpoint as the latter was leaving the main rail line to enter a parallel siding. The crash derailed four locomotive units of the UP train and a combined 36 freight cars, puncturing a pressurized tank car containing liquefied chlorine in the process. The chlorine liquid quickly vaporized into a deadly gas cloud that spread throughout the immediate area, killing the conductor of the UP train and three local residents. In all, more than 40 people were treated for gas inhalation or injuries related to the crash, among them the UP train engineer and six emergency responders. Total damages, including environmental cleanup, approached \$6 million.

A subsequent investigation determined that fatigue—brought on by sleep debt, disrupted circadian processes, long duty tours, and limited sleep in the days leading up to the

accident—was a key factor in causing the collision. According to an NTSB report released in July of this year, the UP engineer and conductor failed to "obtain sufficient restorative rest prior to reporting for duty because of their ineffective use of off-duty time, and UP train crew scheduling practices...created inverted crewmembers' work/rest patterns."

As a result, the NTSB recommended that railway companies and organizations use the Macdona accident as "a case study in fatigue awareness training to illustrate the shared responsibility of rail carriers to provide opportunity for adequate rest and employees to understand the importance

and obtain sufficient rest to perform at a safe level of alertness."

The NTSB's recommendations underscore the importance of two CEMS practices: using off-duty time to get an adequate amount of sleep, and managing schedules so that work and rest patterns remain as consistent as possible among crewmembers. An effective CEMS program is one where all members at all levels of an organization understand their responsibilities in successfully implementing a Crew Endurance Plan and act accordingly.

#### Learn more:

- Read the related [press release](#) 

### Challenge Yourself to a Good Night's Sleep with NSF

(Source: NSF Alert, Nov. 30, 2006)

So by now regular readers have gotten our point—get 7-8 hours of sleep EVERY night! We also understand that it's often easier said than done ... and that's why this newsletter will never have a shortage of advice to recommend!

Now the National Sleep Foundation (NSF) is offering something new to motivate and help you in your efforts to improve your sleep habits. The NSF Great American Sleep Challenge™ is a national online program designed to make it easy for you – and everyone you know – to make a commitment to finally start getting the sleep you need.



Though the Challenge will take place for six weeks (Feb. 5 – Mar. 19, 2007), you need only choose one week during this period to take it. During the week of your choice, you'll be given all the tools you need to set goals for healthy sleep with the click of a button. You'll also have the opportunity to win prizes!

The Sleep Challenge doesn't begin until February, but you can start preparing today! Click on the link below to learn more about how the Sleep Challenge works and sign up with your e-mail address so NSF can send you a reminder when it begins.

[www.sleepfoundation.org/challenge](http://www.sleepfoundation.org/challenge) 

## Sleep, Schedules, and Circadian Rhythm

### The Numbers Game: How Much Sleep is Enough?

(Source: *sleepmatters*, NSF, Fall 2006)

Do you know how many hours of sleep you need to be at your best? If you're like most people, you'll probably answer "eight." After all, we've been hearing for years that we should strive to get a minimum of eight hours of rest each night. But is this the ideal amount that will fully recharge our batteries and put us at the top of our game, both physically and mentally?

To answer this question, it's important to look at two sleep-related factors. The first is called the *basal sleep need*, which is the amount of sleep you need daily to perform your best. In a perfect world, the much-ballyhooed eight hours mentioned above would be a typical basal sleep need. But basal sleep need is often negatively influenced by a second factor, an insidious little thing called *sleep debt*.

Sleep debt, as the name implies, is simply lost sleep. It's the hours of rest we willingly or unwillingly surrender when we stay up to watch *The Tonight Show*, when we can't fall asleep because job issues have our minds racing, or when a cup of coffee in the evening has us tossing and turning in the middle of the night. Like financial debt, sleep debt can accumulate and wreak havoc in our lives. And as sleep debt accumulates, the basal sleep need required to top off our energy reserves goes up. It's a one-to-one relationship; for every hour of sleep lost, the basal sleep need increases by an hour.

But the relationship isn't quite that simple, because sleep debts can linger until they're repaid. For example, we may accumulate a sleep debt that makes us feel tired and sluggish in our

waking hours even if we subsequently meet our basal sleep needs in the ensuing days. Such periods of lethargy are particularly apparent during circadian dips, those times in the day when we naturally feel sleepy and less alert. It isn't until we pay back the debt, so to speak, that our minds and bodies will be alert and energetic.

So what's wrong with carrying a little sleep debt? Just as financial debt has negative consequences to our wealth,

How Much Sleep Do You Need?	
Newborns (1-2 months)	10.5-18 hours
Infants (3-11 months)	9-12 hours during the night and 30-minute to 2-hour naps, 1 to 4 times a day
Toddlers (1-3 years)	12-14 hours
Preschoolers (3-5 years)	11-13 hours
School-Aged Children (5-12 years)	10-11 hours
Teens (11-17)	8.5-9.25 hours
Adults	7-9 hours
Older Adults	7-9 hours

sleep debt can pose serious risks to our health and well-being. These include obesity, diabetes, heart problems, depression, substance abuse, memory impairment, and an increase in risky behavior, to name a few.

To avoid sleep debt and its unhealthy consequences, the simple solution is to get more sleep. Which begs the question: If sleep debt is harmful, are longer sleep durations—those that exceed our basal sleep needs—beneficial? That is, can deposits to our basal sleep accounts forestall future sleep debts? The evidence does

not look promising. In fact, the contrary may be true. Some research indicates that sleep durations of nine hours or more are, like sleep debt, somehow associated with increased rates of sickness and death. And the risk may be higher for longer sleepers.

Sleep need appears to be a catch-22 situation: getting too little or too much may put us at risk. So, how much sleep is enough? Recent data indicates that the average ideal amount is about seven hours. A six-year study of more than one million adults, conducted by researchers from the University of California, San Diego (UCSD) School of Medicine and the American Cancer Society, concluded that the lowest mortality risks were associated with subjects who slept about six or seven hours each night. Subjects who slept less than four or more than eight hours a night had higher mortality risks, with longer sleepers having the highest. However, the researchers were quick to point out that they could not identify the exact causal relationship between sleep duration and risk of mortality, only that one appears to exist.

Sleep researcher Daniel F. Kripke, M.D., an author of the study, summed up the results by saying, "individuals who now average six and a half hours of sleep a night can be reassured that this is a safe amount of sleep. From a health standpoint, there is no reason to sleep longer."

There you have it, some very good news for those of us who, for one reason or another, often find ourselves burning the midnight oil.

- Read the related [article](#) 

## Physical Stressors

### “SAM SAYS”

by CEMS Subject Matter Expert LCDR Samson Stevens

If you're reading this column, you have at least *some* interest in physical fitness and good nutrition. I've often been accused of being an extremist by many of my colleagues and co-workers (even my wife!) – especially when they are privy to my eating habits and observe my dedication to exercise. This column will be an opportunity to “tell it like it is” and address many of the fitness myths that hamstring so many people's efforts. I feel there is far too much pandering and sugar-coating in the fitness and health industry, so here goes:

#### You can't out-train a poor diet:

I see this time and time again – motivated folks attempting to make up for their horrible diet by working out “extra hard.” It doesn't work that way – if there is one thing the CEMS Coaches have learned, it's that the human body works as a *system*. Trying to outsmart it by training hard and eating poorly is just not going to work! What you will find, however (and something many coaches have relayed to me) is that the more fit you become, the less apt you'll be to stray from a healthy diet. As one crewmember put it to me, “After you just get done with an invigorating 30-minute run, or a good weight training session, the last thing you want to do is pump your body full of junk food!”

#### Spot reducing and toning:

I get asked all the time how to trim unsightly problem areas of unwanted fat – the back of the arms, the infamous love handles, hips, upper thighs, etc. It surprises me to know that many people still believe you can exercise with lots of reps and sets for that particular area and “burn” the fat off. Everyone – all you're doing is working the muscle to death *underneath* the fat, with no appreciable effect on the fat itself. The only way to lose body fat is through a complete integration of cardiovascular exercise, resistance exercise, and good diet. And remember, the first place fat is stored (waist for men,

hips/thighs for women), is the last place it will be lost!

#### “I don't have time to exercise”:

I hate to bring up sea-stories here, but I have experience sailing an oceangoing buoy tender and standing a 1 in 3 watch (4 hours on, 8 hours off. on top of any required day work). I vividly remember making it a priority to get up prior to watch if necessary to get in 30 minutes on a rowing machine and several

*We've decided to take advantage of our long-time resident CEMS subject matter expert. LCDR Samson Stevens was part of the initial CEMS implementation team formed in 2001. Not only does Sam have extensive knowledge of the CEMS implementation process and system, but he is a self-professed fitness enthusiast. He's earned his Master of Science degree in Kinesiology from the University of Michigan, is a Certified Strength and Conditioning Specialist (CSCS) through the National Strength and Conditioning Association, teaches four group exercise classes per week (weightlifting and indoor cycling), and has competed in six natural bodybuilding contests in Michigan and Maryland between 1999 and 2002. Sam's passion for attaining a sound body and a sound mind is reflected in all that he does, so we thought we'd tap into his expertise to bring a quarterly column and Q&A to the CEMS newsletter.*

sets of pushups and pull-ups. During chow-time, I'd also ask the galley to save me a plate of food while I worked out with a jump rope and more bodyweight calisthenics. **It's all about priorities, and if your health is not your priority, you're not going to find time to exercise. It's as simple as that.** For the shoreside personnel, try getting up a little earlier, trimming some of the TV you watch, or finding time during your workday when you have less work. Sure, these sound like radical suggestions, but then

again, CEMS is about re-thinking the way we all do business in an effort to ensure that the *human system* is as fully functional as it can be – without our health, we are nothing!

**Training intensity:** To all those people who like to read books, magazines, or even work papers while riding a bike, walking on a treadmill, or in between weight sets: put the reading material down, pick up the pace, and sweat a little! Your body has great individualized mechanisms for determining an appropriate intensity level – they're called sweating and breathing. In other words, if you're not sweating and breathing relatively hard, you're basically going through the motions. This may sound extreme, but relatively speaking, an out-of shape person will sweat and breathe hard at a lower absolute training intensity than their fit counterpart. However, as a person's conditioning improves, that same level of sweating and breathing will occur at higher and higher intensity levels. Thus, conditioning improves as long as you continue to work hard!

That's it for this issue. I have several more pieces of *misinformation* to address in forthcoming issues. I also look forward to addressing any related questions or concerns you may have. Please submit your questions by clicking the link below, and be sure to look for them in a future issue!

[“Sam Says” Questions/Comments](#) 

Train hard, eat right, and sleep well!

*Yours in fitness,*

*Samson*

## Physical Stressors

### Sleep Debt Tops List of Obesity Causes

(Reference: *NSF Alert*, July 5, 2006)

When you read about widespread obesity, the first things that may pop into your mind are *bad diet* and *lack of exercise*. While these two factors are important in understanding the obesity problem, they only tell part of the story. There are other risk factors that can increase your chances of developing obesity. Chief among these is sleep debt.

Twenty researchers at the University of Alabama at Birmingham have suggested ten new factors which may, to varying degrees, place a person at a higher risk of obesity. They published their findings in the June issue of the *International Journal of Obesity*, with "sleep debt" at the top of their list.

Sleep debt has already been identified in many studies as a contributing cause of obesity. The University of Alabama's review serves as yet another example of the link between

inadequate sleep and weight gain. It also found that, in many cases, the evidence for these ten lesser-known factors, such as sleep debt, was as compelling as the evidence for more commonly discussed obesity risk factors, such as diet and exercise.

#### More Resources:

- Check out [Lynne Lamberg's article in the Journal of the American Medical Association on NSF's sleep and obesity conference and the links between sleep and obesity](#) 

- Learn about the ["Royal Route to Obesity"](#) 

## Environmental Stressors

### Boost Your Endurance Throughout the Winter Season

Remember going outside to play in the snow when you were a kid? Chances are, you either had to dress in layers and layers of clothing or go inside to warm up every hour or so. And after a hard day's snowball fight and other outdoor play, you likely fell asleep much more easily that night (possibly right at the dinner table!).

In the same way, extreme temperature conditions like those looming ahead (if not already in your area) can sap a crew's energy and endurance.

Cold weather lowers one's core body temperature and causes detrimental effects on cognitive ability. Besides feeling cold and miserable, you may be in a bad mood because of decreased exposure to daylight. You may find yourself coping with it by daydreaming of a happier time or a warmer place, distractions that also detract from cognitive ability.

Hypothermia may set in with extended exposure to cold weather. Even mild cases cause impaired judgment, while severe

cases can lead to death. It's very important to stay warm and dry, since people in wet clothes lose body heat 25 to 30 times faster than if they were dry.

Medication use is one more winter weather concern. With colds and flus going around, it's important to know the effects that over-the-counter (OTC) medicines will have on your endurance. Some commonly used decongestants such as Benadryl can make you severely drowsy, so avoid taking them on watch. On the other hand, some decongestants such as Sudafed contain pseudoephedrine, a stimulant that will keep you awake if you take it before bedtime. If you take OTC medications, it's a good idea to consult with your doctor regarding the possible side effects. Captains, department heads, or mates should be notified of crewmembers who are on medication, especially if performance may be degraded as a side effect.



#### Stay Warm This Winter!

Train crewmembers to wear three-layered, warm clothing made of appropriate materials.

Bring a change of clothing on your shift in case it becomes necessary to change.

Keep the hands, feet, and face covered and warm. Fingers and hands can't function properly below 59° F.

Keep the head covered at all times.

Keep feet well-insulated from cold and dampness using layered socks and insulated boots.

Keep clothes clean; soiled clothing loses its insulating properties.

At temperatures below 30° F, provide crewmembers with a heated shelter, local radiant heaters, and thermal insulating material placed over tool handles.

In cold weather, slow the working pace and allow extra breaks, particularly for deck personnel.

Educate crewmembers about frostbite and its symptoms.

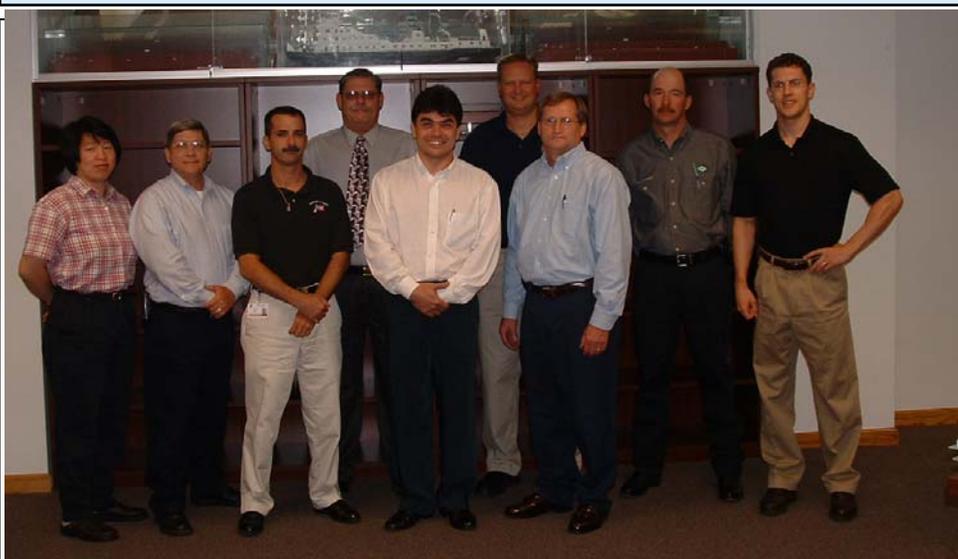
## CEMS Training Update and Upcoming Sessions

### Coaches Training

Crew Endurance Coaches Training continues to expand via our certified Crew Endurance Expert network. There are currently **over 1000** trained coaches in the commercial maritime industry. The list below highlights the efforts of companies who have 10 or more Coaches certified by industry Crew Endurance Management Experts:

Company	Coaches
<b>Kirby</b>	<b>275</b>
<b>Ingram</b>	<b>172</b>
<b>ACBL</b>	<b>160</b>
<b>Canal Barge Co.</b>	<b>53</b>
<b>Blessey Marine Service, Inc.</b>	<b>36</b>
<b>Luhr Brothers Towing</b>	<b>29</b>
<b>Penn Maritime</b>	<b>25</b>
<b>B &amp; H Towing</b>	<b>16</b>
<b>Moran Towing</b>	<b>12</b>
<b>Maritrans</b>	<b>11</b>
<b>AEP MEMCO</b>	<b>10</b>

### Experts Training



CEMS Expert Class from left to right: Vivianne Louie, Jim Clements, Jeff Bell, Ted Meavers, Irio Vaz, Chris Bennett, Ken Davidson, Mike Bowman, and Sam Stevens

#### CEMS Experts Class

Our last CEMS Experts class was held at American River Transportation Company (ARTCO) in St. Louis MO, on August 8-10, 2006.

Thanks to ARTCO, who hosted the class and provided healthy meals and refreshments. And special thanks to the instructors—LCDR Sam Stevens (USCG), Mr. Ken Davidson (ACL Inc.), Captain Mike Bowman (Kirby Corp.), and Mr. Jim Clements (MITAGS)—for their continuous support and expertise, and also to Mr. Chuck McAllister for coordinating all the logistics, both on- and off-site.

## CEMS Training Update and Upcoming Sessions

Please check our [website](#)  for the most current training information and updates.

**The next Experts Training is tentatively scheduled for Spring/Summer of 2007. Location to be determined.**

Please contact [LCDR Vivianne Louie](#) for more details:

**Phone:** 202.372.1358

**E-Mail:** [Vivianne.W.Louie@uscg.mil](mailto:Vivianne.W.Louie@uscg.mil) 

The [Coast Guard CEMS Website](#) continues to be updated with additional CEMS information and resources. Thoughts and suggestions are always welcome regarding content and information.

Please forward them to: [HQS-PF-flidr-G-PSE@uscg.mil](mailto:HQS-PF-flidr-G-PSE@uscg.mil), or call us at 202-372-1358.

## Crew Endurance Management Newsletter

*an information resource about the Crew Endurance Management System (CEMS) for its practitioners and those interested in learning more about it*

**Editor-in-Chief:**  
CDR David Bird

**Content Specialist:**  
LCDR Vivianne Louie

**Editing Team:**  
Diana Forbes  
Steve Spearman

**Website:**

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

**Membership Info:**

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

**E-mail:**

[HQS-PF-flidr-G-PSE@uscg.mil](mailto:HQS-PF-flidr-G-PSE@uscg.mil)