



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 originally appeared 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!

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This Issue:

CEMS: A systematic approach	1	News in Other Transportation Modes	4
Getting Enough Sleep?	5	Physical Stressors	6
Environmental Stressors	6	CEMS Updates	8

CREW ENDURANCE MANAGEMENT SYSTEM

A systematic approach to manage the risk factors that lead to fatigue and degrade performance, an international perspective.

By LCDR Vivianne Louie

It all began one day in a little room during an experiment at Florida State University. Rats were kept in complete darkness for days, then given little bursts of light exposure. Students measured circadian rhythms and argued about the role of melatonin in human physiology. Eventually, human volunteers were also kept in dark rooms and given doses of light to capture and study melatonin levels. More than 30 years of research now supports how light affects endurance levels.

In 1999, Dr. Carlos Comperatore brought this base of knowledge to the Coast Guard Research and Development Center in Groton, CT. With nearly a decade of research and numerous studies on board a wide variety of vessels, Crew Endurance Management was created specifically for the commercial maritime industry and the United States Coast Guard. Numerous studies and interviews were conducted on board deep draft vessels, towboats, ferry boats, cutters, small boats, and aircraft to identify the 15 specific crew endurance risk factors common in maritime operations. These risk factors address the quantity and quality of sleep, work and rest schedules, the work and living environment, and individual physical and personal stressors.

In order to manage these risk factors, Crew Endurance Management System (CEMS) uses a systematic, continuous improvement approach. From an organizational implementation perspective, there are five basic steps in the CEMS process:

- Set up a Crew Endurance Working Group.
- Analyze the current situation by identifying the endurance risk factors on board.
- Develop a Crew Endurance Plan to address the specific risk factors.
- Implement the Crew Endurance Plan.
- Evaluate the results periodically and then repeat Step 2.

From a vessel implementation perspective, there are also five basic steps that occur during the development and implementation of the Crew Endurance Plan:

- Educate crew and shoreside personnel.
- Make environmental improvements to work and living areas.
- Use light management techniques particularly to adapt crews to night watches.
- Make coaches available to support crewmembers and the working group.
- Change watch schedules to maximize sleep quantity, quality, and consistency.

Education is the cornerstone to the ongoing success of crew endurance. Through a Coast Guard-sponsored training and certification program, a cadre of more than 1,200 certified coaches (from industry and government agencies) are spread

CEMS APPROACH, From Page 1

across the country from Puget Sound to California, Maine to the Gulf of Mexico, and along the Mississippi River and its tributaries. Interest in CEMS is not limited to only the United States, where the primary network of coaches is based, but extends to the international maritime community in countries such as Argentina, Australia, Brazil, Canada, France, and Norway, where the program has been implemented.

In the far reaches of the Norwegian and Barents Seas, where the days and nights are long and temperature lows are extreme, the Norwegian shipping company, Eidesvik Offshore, understands the value CEMS contributes to safety. The company operates a fleet of 20 vessels comprised of platform supply vessels, seismic survey vessels and fiber optic cable-laying vessels. With a focus on health, safety and quality, Eidesvik Offshore employs a full-time medical doctor that specializes in maritime occupational medicine, Dr. Knut Omdal.



Dr. Knut Omdal

Recognizing that fatigue is a major maritime safety risk, Dr. Omdal was determined to help, but wanted to use a tried and true method.

“As an MD, I deal with evidence-based medicine. That’s the basis of our work. I had done quite a lot of searches for medical articles on this subject until I found that the U.S. Coast Guard had developed a tool – CEMS – based on science, for dealing with this problem,” he said.

In May of 2006, Dr. Omdal travelled to New Orleans for the sole purpose of obtaining CEMS coaches training and certification. Shortly after returning to Norway, he translated the reference materials to Norwegian while the information was still fresh in his mind. The concept of CEMS was introduced to management and following textbook procedure, the group developed a plan and decided to start with small steps.



Photo Courtesy of Eidesvik Offshore

The M/V Viking Avant (above), a Norwegian platform supply vessel owned by Eidesvik Offshore, has implemented the Crew Endurance Management System as part of its safety regime.

“We agreed on a project using one vessel (*M/V VIKING AVANT*), and if this was successful, the system would be implemented to the rest of the fleet,” Dr. Omdal said.

The *M/V VIKING AVANT*, a platform supply vessel designed to operate north of the polar circle, has a crew complement of 12 licensed and unlicensed personnel. The crew remains on the vessel for four weeks at a time.

Crews were brought in for a full day of training, and shortly thereafter, a complete risk assessment was conducted. With the exception of crew schedules, no major adjustments were made. The wheelhouse and accommodation spaces were evaluated for noise, light and motion disruptions, but because the house and sleeping areas are located near the stern of the vessel the environment was found to be quiet and fairly conducive to sleeping. As for diet, the company had focused on proper nutrition with highly-trained cooks long before CEMS and, once again, there was no need for changing the content of the meals. Breakfast, lunch, and dinner times, however, were adjusted to accommodate watch changes.

Prior to implementing CEMS, the crew worked a two-watch system using the traditional six-on/six-off watch schedule (except for the engineers who worked 12-on/12-off). After learning more about CEMS, the crew decided to take a big leap forward with regard to watch schedules and transitioned to the 8/8/4/4 watch (only after the first four

steps were completed). Although the new watch is a big adjustment, the *VIKING AVANT*'s crews are pleased with the results. In complying with the CEMS process, the crews are continually assessing the crew endurance plan and making changes as practicable. Although most of the changes have been subtle, the changes have significantly improved performance and morale.

On the other side of the hemisphere, one of our maritime neighbors to the south has also implemented CEMS but has taken risk analysis to another level.

Antares Naviera, based in Buenos Aires, Argentina, conducts business in Argentina, Brazil, Chile, Peru, the United States, and Europe. The organization is part of the Ultragas Group that manages up to 50 vessels that include tankers, tugboats, supply vessels, and containerships.

Javier Maradei of Ultragas' safety, quality, and environmental department came to Houston, Texas, in August of 2004 to complete the coaches training course. After successfully completing the class, he went on to finish the train-the-trainer Expert's course in Baltimore, Maryland, in the summer of 2005. As a fully qualified crew endurance coach and expert, Maradei translated the CEMS guide and addendum to his native language of Spanish and began implementing CEMS onboard company vessels.

With a small staff and large fleet of vessels and crews to manage, Maradei

CEMS APPROACH, From Page 2

developed a powerful visual tool, a “control panel,” which gives a quick synopsis of the current levels of risk.

This “control panel” view is a color-coded picture that enables managers to focus on risk factors that are specific to a department within a vessel or several vessels, or expand out to the entire fleet or trade pattern. “The usefulness of this tool is that I can evaluate the whole fleet for one specific risk group,” Maradei said.

As illustrated in the table (above right), Maradei organized the tool by categorizing the 15 crew endurance risk factors for each vessel into four groups: sleep, work, fitness, and family. The severity of the risk is color-coded and ranges from low to severe and green to red, respectively. The level of risk is determined by the frequency of the risk occurring within a set timeframe, such as a week, but can be extended or shortened to the duration of the voyage. Risks that occur 6-7 times per week are in the red and, conversely, risks that occur zero to one time per week are coded in green.

After conducting an initial survey of more than 170 crewmembers, a baseline was developed to measure progress in terms of reducing the incidence of endurance risk. The results were entered into a database and analyzed by different categories – the entire crew, masters, deck officers, engineering officers, deck ratings, engineering ratings, and stewards department.

Over time, the company can easily track the progress of their efforts in reducing endurance risk. “In my opinion, a valuable use of this tool is that I can show the improvements made for the different groups or factors to the ‘ones who allow expending funds,’” Maradei said.

In addition to finding common problems between vessels and certain groupings on board, the tool enables managers to focus on problem areas

ADDING SQUARES MODEL									
Control Panel : Engine Officers									
M/T "Antares I"				M/T "Toba Pegaso"					
Crew Member	Sleep		Fitness		Crew Member	Sleep		Fitness	
	1S	4S	8F	13F		1S	4S	8F	13F
	2S	5S	12F			2S	5S	12F	
Social Environment	3S	7S			3S	7S			
	6W	10W	14RF	15RF	6W	10W	14RF	15RF	
	9W	11W			9W	11W			
Work				Family Ties					

Code	Risk	N°Days per week	
			1S.- Insufficient daily sleep duration
Red	Severe	6 or 7	2S.- Poor Sleep Quality
Orange	High	5	3S.- Sleep Fragmentation
Yellow	Elevated	4	4S.- Scheduling main sleep during the day
Blue	Guarded	2 or 3	5S.- Changing work / rest schedules
Green	Low	1	6W.- Long work hours
TRADE PATTERNS			7S.- No opportunities to make up lost sleep
M/T "Antares I": River trade / Toff-Lighting			8F.- Poor diet
M/T "Toba Pegaso": River trade / Toff-Lighting			9W.- High workload
			10W.- High Stress
			11W.— Lack of control over work environment or deci-
			12F.— Excess exposure to extreme environmental conditions
			13F.— No opportunity for exercise
			14RF.— Family Stress
			15RF.— Isolation from Family

and link common risk factors for individual crewmembers or the work environment.

As demonstrated in U.S. Coast Guard studies, there is much to gain and very little at risk in implementing CEMS. Organizations practicing CEMS here in the U.S. and abroad have documented improvements in performance, morale, and general health and well being.

John Baker, a CEMS Expert with Kirby Corporation of Houston, Texas,

comments on the versatility and efficacy of CEMS: “Whether you are a one-boat operator or a multiple boat operator, CEMS can and will help you achieve your goals of decreased safety incidents and improved quality of life for you and your employees.”

Progressive, safety-minded shipping companies such as Kirby, Eidesvik, and Antares Naviera have proven that CEMS is a flexible tool that can be tailored to fit just about any operation, anywhere in the world.

News In Other Transportation Modes

Congress asked to give Railroad Administration the authority to revise hours of service rules

Reprinted from Feb. 20, 2007, edition of the National Sleep Foundation's "Alert" newsletter.

Washington, D.C. - On Valentine's Day, National Transportation Safety Board Chairman Mark V. Rosenker asked Congress to give the Federal Railroad Administration (FRA) the statutory authority to revise hours of service rules for railroad workers, noting that current rules are not based on science related to fatigue.

Testifying before the Subcommittee on Railroads, Pipelines and Hazardous Materials of the House of Representatives Committee on Transportation and Infrastructure, Chairman Rosenker said that over the past 23 years the NTSB has investigated 16 major railroad accidents in which it established that the probable cause was crewmember fatigue.

Operator fatigue has been on the Board's Most Wanted List of Safety Improvements since 1990. In 1999, the Board evaluated the Department of Transportation's (DOT) actions on fatigue and found that, although DOT



National Transportation Safety Board Chairman Mark Rosenker has asked Congress to allow the Federal Railroad Administration to change the 100-year-old Federal Hours of Service Act to help address the problem of crewmember fatigue.

supported research and educational programs, the problem continued to be widespread and presented an unnecessary risk to the traveling public.

The FRA is the only DOT modal agency that has hours of service for the employees it regulates set by federal statute. The Federal Hours of Service

Act was enacted 100 years ago.

Chairman Rosenker called the rules archaic and "not adequate to address the problem." The rules allow railroad operating employees to work 11 hours and 59 minutes, and return to work

SEE REVISE, Page 7

FMCSA hopes incentives in proposed rule will increase voluntary installation of on-board recorders

The Federal Motor Carrier Safety Administration is hoping that incentives will get 97 percent of America's motor carriers to voluntarily install electronic on-board recorders in their commercial vehicles if a proposed rule comes to fruition.

The agency published the proposed rule on Jan. 18, 2007, in the *Federal Register*, that may require truck and bus companies with a history of serious hours-of-service (HOS) violations to install electronic on-board recorders (EOBRs) in all of their commercial vehicles for a minimum of two years.

"The goal is to get more trucks and buses using innovative safety technolo-



gies like on-board recorders that will improve safety on our nation's roads," said agency administrator John H. Hill,

in a FMCSA press release.

Using current FMCSA figures only 17,500, or three percent of the estimated 650,000 carriers currently operating on American highways, would be required to install the equipment.

According to the proposed rule, the EOBRs would be required to record basic formation needed to track a driver's duty status including: his or her identity, their duty status, date, time and location of the commercial vehicle, and distance traveled.

Global Positioning System technology or other types of location tracking

SEE INCENTIVES, Page 7

CEMS Perspectives: The Coast Guard Small Boat Community

Got (Enough) Sleep? Trying to Do More With Less Is Dangerous

By Antonio Carvalhais, PhD

It's 0700 and you're driving home, longing for some much needed sleep after standing a 12-hour duty watch at your station. Although you were able to get some shuteye during the duty, you were restless and the opportunities for sleep were disrupted by operational activities. Fortunately, your commute is only 30 minutes long, and you can almost feel that comfortable bed in the near future.

About 20 minutes into the commute, the full weight of the sleepless night collapses on your shoulders and you're having a difficult time keeping your eyes open and your attention on the road. As you've done countless times before in these situations, you open the window for some fresh air and turn up the volume on the radio...only 10 more minutes before you're home and in bed.

The next thing you hear is the sound of the rumble-strip as your car veers right and onto the shoulder of the road. Startled, you swerve left to get back on the road, but overcorrect, and your car crosses the center line. Before you can react, you collide head-on with another car.

Some time later, you awaken in bed, and a tremendous feeling of relief comes over you. But there is something different about this bed, something odd and disconcerting. The air is filled with the pungent odor of antiseptics, and with it, the soft, rhythmic hum of hospital equipment. You long to be home, lying in your own bed, safe and sound.

Unfortunately, this scenario is all too common in, for example, the Coast Guard small boat community, and it underscores just one of the many dangers associated with insufficient sleep time. One of the topics I'm approached about most often when I have the privilege to visit field units involves ways to adapt the body to function on insufficient sleep. Typically the question goes something like "doc, my life is very hectic at the moment (and here the person usually mentions marriage, children, schoolwork and the like) and I cannot get the eight hours of sleep I need...is there a way for me to train or trick my body to get by on less sleep?" Questions like this one truly exemplify the hectic nature of our society. Confronted with demands for our time—everything from longer working hours to epic commutes to increasing family obligations—as

well as constant access to information and entertainment through television and the Internet, we quickly realized that there simply isn't always enough time in the 24-hour day for 8 hours of sleep.

A survey conducted every year since 2002 by the National Sleep Society reveals that the average U.S. citizen sleeps just under 7 hours per day. The consequences of the reduced sleep are well documented and include increased risk of accidents, cardiovascular disease, obesity, Type II diabetes, hypertension and autoimmune deficiency disorders. Sleep is arguably the most misunderstood and abused basic human physiological function. Most people understand that without sleep, performance and alertness suffer. All too often, however, functioning under sleep-deprived conditions is seen as a "rite of passage," a trait associated with top performers, or a sign of ma-

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chismo. The reality is, sleep deprivation is very dangerous and can induce impairment similar to that of alcohol intoxication.

In fact, recent studies show that someone who has been awake for 14 hours performs as well as someone with a blood alcohol concentration (BAC) of .05 percent. After 24 hours of wakefulness, performance is comparable to someone with a BAC of .10 percent. Hospital workers who were awake for 24 hours had increased odds of needle/scalpel stabs (61 percent), motor vehicle accidents (168 percent) and near misses (460 percent). Often, these risks are dismissed because the frequency or probability of being awake for such extended periods is remote. But for hospital workers and other groups, such as, Coast Guard units with 24+ hour duties, these extended periods are a reality.

A scenario that may occur more frequently and has decrements similar to being awake for 24 hours is the fragmented sleep schedule. An example of a fragmented sleep schedule would be if you slept approximately four hours per day for four or five days in a row. If you extend the period to 10 days while maintaining the same sleep hours, you will experience decrements similar to being awake

for 48 hours. Compare the symptoms of intoxication and sleep debt and you see some startling similarities, including slowed reactions to prevent errors, clouded thinking, irrational thoughts, illusions of heightened ability, slurred speech, and disconnected thoughts, to name a few. So strong is the similarity between the effects of sleep debt and intoxication that New Jersey has recently enacted a vehicular homicide law that defines driving after being awake for 24 hours as reckless. Other states have similar laws pending. Recently, much attention has been given to medical interns because of their lengthy workweeks and the frequency that they are awakened at night to render medical assistance.

While some may question a comparison between medical workers on the one hand and the Coast Guard small boat community on the other, the two groups share many operational similarities. These similarities include long workweeks, rotating work schedules, duty periods that extend beyond 24 hours, awakening to render assistance at night, and a less than ideal sleep environment on the job. Given these operational similarities I contend that Coast Guard small boat operations may experience similar increases in the odds of unsafe consequences to those reported above for hospital workers.

Let's get back to the question at hand: can we do more with less (sleep)? The simple answer is no. Human beings require on average eight hours of uninterrupted sleep for every 24 hours to maintain optimal physical and mental performance. Anything less compromises performance, alertness, health, safety and well being. However, sleep need is very much individually based; some people may need more than eight hours while others can function well with less.

So, how do you know whether you're doing more with less (sleep)? To get an idea, look at the statements in the "Got Enough Sleep" box on the next page. If these situations rarely (once or twice a year) or never happen to you, you're most likely getting the necessary amount of sleep. Congratulations! You are successfully managing your life activities and physiological needs. If, on the other hand, you experience one or, more commonly, several of these situations, you are most likely sleep deprived and

Physical Stressors

Nap to Your Heart's Content

Want to lower your chance of suffering a deadly heart attack and recharge your mind and body, all at the same time? Well, now you can. And it's as easy as taking a siesta.

A recent study involving more than 23,000 participants found that those who regularly took a midday nap lowered their risk of dying from heart disease by a whopping 37 percent as compared with non-nappers! The study, the first of its kind to control for age and health and lifestyle factors, covered six years in the lives of men and women between the ages of 20 and 86 years.

The rejuvenating power of napping isn't a new concept. In Volume 3, Issue 2 of this newsletter, we reported on the ability of a 10-minute nap to reenergize the body when normal sleep requirements weren't met. But until now, solid evidence of the nap's potential for protecting us against heart disease, the number one cause of death in the U.S., has been lacking.

The catch? Those participants in the study who reaped the maximum heart protective benefits napped for 30 minutes or more and at least three times a week.

Thirty minutes or more at least three times per week...who has time for that?

Okay, the reality is that many of us have little time in our daily lives to squeeze in a lunch break, let alone a half-hour nap. But take heart, there's some good news: the study also found that naps of lesser duration and frequency still had a significant protective impact, in some cases reducing the risk of death by heart disease by more

than 30 percent. The point is to try to make nap time a part of your daily routine when possible.

So how does something as simple as getting some supplemental shuteye have such a beneficial effect on our hearts' health? According to Michael Twery, director of the National Heart Lung and Blood Institute's National Center on Sleep Disorders Research,

"Napping may help (us) deal with the stress of daily living...it is part of the normal biological rhythm of daily living. The biological clock that drives sleep and wakefulness has two cycles each day, and one of them dips usually in the early afternoon. It's possible that not engaging in napping for some people might disrupt these processes."

Researchers stop short of recommending naps to prevent heart disease, taking a "wait and see" attitude until additional studies confirm these findings. One of the researchers involved in the groundbreaking study, Dimitrios Trichopoulos of the Harvard School of Public Health in Boston, summed it up: "If you have an opportunity to take a nap, then, yes, do it. If you're accustomed to taking a nap, then don't give it up."

So, the next time you find yourself yawning while waiting in line for that latte at the local coffee shop, you might want to consider a better, more peaceful way to spend your time. Your heart will thank you for it.

References: *NSF Alert*, February 13, 2007, and washingtonpost.com, *Midday Naps Found to Help Fend Off Heart Disease*, Febru-

GOT (ENOUGH) SLEEP?

Signs that you need more sleep:

- You struggle to get up in the morning.
- You feel tired, irritable, stressed during the day.
- You have trouble concentrating or remembering.
- You fall asleep during meetings or lectures, or while watching TV.
- You fall asleep within 5 minutes of going to bed.
- You often feel drowsy while driving
- You often sleep extra hours on week ends.
- You often take naps to get through the day.
- You have dark circles under the eyes.
- You often fall asleep relaxing after lunch or dinner.
- You fall asleep sitting and talking to someone.
- You fall asleep at a traffic light.

LESS, from Page 5

trying to do more with less (sleep). Rest assured (no pun intended), you are not alone. In fact, 70 percent of Coast Guard personnel are in a state of compromised alertness. These statistics come from studies of Coast Guard personnel (afloat, aviation, shore, and small boat) where brain and body activity monitors were used to record members during actual operations.

While we might like to believe that we can be *semper paratus* under any condition, this simply is not the case. Erratic work/watch schedules, long work hours, insufficient sleep and extreme environmental conditions do not allow the human body to restore physical and mental resources, and leave even the most experienced and dedicated Coast Guard member ill-prepared to meet operational challenges and to maintain personal health and well-being.

To address these concerns, the Coast Guard has developed innovative tools to identify and control factors in operational and personal environments that can compromise health, safety, and operational readiness. In March 2006, a Commandant Instruction (COMDTINST 3500.2, Crew Endurance Management) was released requiring all Coast Guard operational units to implement these

tools to manage risk associated with sleep, fatigue, and general human endurance issues.

Fortunately, sleep and crew endurance can be managed, and CEM tools can provide you with the guidance and assessments to identify and control endurance risk factors. The CEM tools were developed, implemented, tested and proven in Coast Guard operational environments. In short: CEM works!

ABOUT THE AUTHOR

Dr. Antonio Carvalhais is a human factors program analyst for the U.S. Coast Guard Office of Safety and Environmental Health in Washington, DC. He serves as the primary human factors resource to major system acquisitions, sponsors and conducts research to explore how operational policies and procedures impact human alertness and performance, and develops policy and support guidance for human factors-related issues in Coast Guard activities.

Tony has authored numerous scientific papers and book chapters on human factors, ergonomics, shiftwork, fatigue, and human alertness issues.

REVISE, From Page 4

after only 8 hours off duty. However, if the employee works one more minute - a full 12 hours - the worker is required to have 10 hours off duty before returning to work. Rosenker said "workers

are permitted to repeat that arduous work-rest cycle an unlimited number of times."

Fatigue related railroad accidents continue to occur. The latest to be documented by the NTSB was in Mac-

dona, Texas, in 2004. "The FRA needs authority to regulate crewmember work scheduling practices and work limits," Chairman Rosenker said. "The Safety Board continues to support the need for change that would provide the FRA the authority."

Combined fatigue and health-related illnesses cost U.S. businesses \$136 billion annually in lost productivity time

A new study from the National Institute of Health shows businesses in the United States are losing \$136.4 billion annually in lost production time from combined fatigue and health-related illnesses.

The two-week national telephone survey indicated that fatigue is prevalent in 37.9 percent of workers across the country. Of that percentage, nearly two-thirds (65.7 percent) reported health-related lost production time.

That is a staggering number when compared to employees who do not suffer from fatigue. Those workers reported lost production time of only 26.4 percent.

Although it's still an unheard cost, businesses whose workers do not suffer from fatigue and related illnesses, lose only \$101 billion per year.

The study coincides with the National Sleep Foundation's 2005 *Sleep in America* poll which showed that 60 percent of participants who are licensed to drive have driven while they were still drowsy.

Meanwhile, four percent of those surveyed said they had an accident or a near-accident because they were tired

or had dozed while they were driving.

In addition, another three percent said they had missed work or made errors at work because of sleep-related issues in the past four months.

The survey also showed that sleep problems were the most common reason Americans gave for being late for work.

With the increase in fatigue and sleep-

related illnesses escalating among American workers, companies across the country are working on ways to keep their employees informed and educated on the variety of sleep disorders that affect millions of Americans.

Union Pacific, the largest railroad company in North America, has started "Alertness Management." The program is designed to train UP's operating managers to recognize signs and symptoms of employees who are suffering from fatigue.

Signs include heavy eyelids or rubbing of the eyes, chronically falling asleep in inappropriate places, lack of

focus and concentration, being withdrawn or quiet, and lacking motivation.

"If symptoms are persistent, it may be a sign that something deeper is going on," said Dr. Dennis W. Holland, director of UP's Health Services department.

Union Pacific employees are tested for depression and the company has a toll-free phone number employees can use to get assistance, assessments, information, and counseling on compliance

and treatment.

The company has also come up with several solutions to combat the fatigue issues some of their employees face.

One such program is the "Planned Nap Program", which encourages employees to take naps of up to 45 minutes when necessary and/or possible.

Information was gathered from the National Institute of Health's study as well as the Jan. 30, 2007, issue of the National Science Foundation's Alert! Newsletter.

A telephone survey showed that nearly 38 percent of American workers are plagued by fatigue.

INCENTIVES, From Page 4

systems would be added to automatically identify the location of the vehicle, which further reduces the likelihood of falsification of HOS information.

On-board HOS recording devices that are installed in commercial vehicles

manufactured on or after two years from the effective date of a final rule would have to meet these new technical requirements, but EOBRs that are voluntarily installed before that time would be allowed to continue for the life of the vehicle.

Some of the other incentives for

carriers voluntarily installing the recorders include using an examination of a random sample of drivers' records of duty status as part of a company compliance review and partial relief from HOS supporting documents requirements.

CEMS Training Update and Upcoming Sessions

Upcoming Coaches Training Classes

March 22-23, 2007: Baton Rouge, LA

Contact Kelly Parker for more details:

Email: kelly.parker@kirbycorp.com

Phone: 713-435-1175

Upcoming Experts Training Classes

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

Please contact LCDR Vivianne Louie for more details:

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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 these to: HQS-PF-fldr-G-PSE@uscg.mil, or call us at 202-372-1358.