Greetings

DEMA came and went. It seemed, again, like the show was slightly smaller. The majority of the exhibitors I talked with at the show seemed to agree.

The past few years, this slow reduction in size affected the attitude of those participating in the show. The big flashy displays are diminished or nonexistent. The scantily clad girls are few and far between. The promotional goodies that no one wants to admit they like and collect are mostly gone. The last few shows have been a wakeup call for some companies. Some companies have disappeared. Some still exist but no longer afford to participate at DEMA or choose not to.

The business attitude at the last few shows has been rather bleak. Companies had to downsize everything in order to maintain in a continually worsening economy. And when you consider that the scuba business is mainly a recreational sport that is relatively expensive, a bad economy means less money is available for recreational activity.

This year, DEMA was different. The show was smaller but it was better. The exhibitors who had to consolidate and downsize the previous year are more efficient. Costs of exhibiting, and they are large expenses, have lowered for them and it is not as stressful. They are better at exhibiting with a smaller profile and it showed.

More importantly, the attendees seemed to be more business oriented. For those of you who do not know, in order to attend DEMA you have to have dive professional credentials, work for or own a dive shop and show proof of business over the previous 12 months. It is not a show for the general public.

In the past I have met attendees who only went to the DEMA in Las Vegas because it was their excuse to get away from home and party. They were more inclined to look at the show and play all night. When these folks come to the show, they usually already know who they are going to see, what they are going to buy and what updates they may or may not need to attend. The rest of their time is spent playing.

The exhibitors at DEMA come to conduct business. They bring new products to show off and display. They meet with their dealers to help them maximize their business and keep them up to date on product lines. They are also there to attract new business to them.

This year DEMA was different. The show was smaller, the exhibitors were better at exhibiting. The attendees were more focused on business and it showed. The traffic flow was diminished a bit but the quality of the attendees and their buying power seemed to be elevated this year. From the large to the small exhibitor, everyone I talked to had a positive and productive show. Even I placed multiple orders!

At the show we picked up some new PSDiver Monthly Sponsors and had an old friend come back to the family. I expect a few more of the companies I talked with to join us soon as well. This month we welcome back Subsalve and introduce you to Seahorse - protective equipment cases, Environguard 64 – decon solutions and Insurance Management Services. Be sure to check them out!

Dive Safe!
Mark Phillips
Editor / Publisher
SAFETY ALERT!!

THE AMERICAN BOAT AND YACHT COUNCIL RESPONDS TO ELECTRIC SHOCK DROWNING INCIDENTS

July 10, 2012, Annapolis, MD: The American Boat and Yacht Council (ABYC) is offering information regarding safety, standards and legislation in response to the recent electric shock drowning incidents.

The ABYC has been aware of and taken steps to mitigate electric shock drowning incidents since 2008. The United States Coast Guard sponsored grants to ensure ABYC’s electrical document “E-11 AC & DC Electrical Systems On-Board Boats – 2008” included an “Equipment Leakage Circuit Interrupter” device. This “interrupter” is similar in function to ground-fault outlets installed in homes. It responds to a potential fault by tripping the main circuit breaker and cutting power to the boat. The device will be mandatory for boats with alternating current systems beginning December 31, 2012.

Electric shock drowning is the result of a typically low level alternating current passing through the body while immersed in fresh water. The force is sufficient enough to cause skeletal muscular paralysis, rendering the victim helpless and drowning. This type of fault can happen in any natural water but becomes fatal in fresh water due to lower water conductivity. Salt water has a higher conductivity.

“An electrical fault looks for a path back to its source and in fresh water, that path can become the human body,” said John Adey, ABYC president.

Kevin Ritz, an ABYC certification instructor who lost his 8-year old son Lucas in 1999 to electric shock drowning, serves as an education advocate. Ritz created “Hot Docks, Hot Boats, and Electric Shock Drowning” webinar in 2011.
Many companies use Ritz’s webinar to educate employees who work in the water. “Education is the number one defense until we can get ground-fault protection devices in all marinas,” said Ritz.

This is a training video that I found through one of the Water Response Team’s discussion groups I belong to. I believe that it is one of the most relative videos I have seen concerning electric shock drowning – ever. This SHOULD be required training for EVERY water response and public safety dive team.

Do not take this lightly; the information presented here could save your life!

Mark Phillips – Editor / Publisher of PSDiver Monthly.

WATCH IT – SHARE IT!

http://www.youtube.com/watch?v=O7-s_mdEPb0&feature=youtu.be

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Special to PSDiver
Diving and Carbon Dioxide
By Eric Hexdall, RN, CHRN
Clinical Director, Duke Dive Medicine


A healthy 44-year-old female with 21 logged dives prepares for a guided drift dive to a depth of 95 feet/29 meters. She doesn’t exercise regularly and so is feeling a little apprehensive about diving in a current. As she begins her descent, the diver notices that her rental regulator doesn’t deliver air quite as easily as others she’s used. She thinks that it may not be adjusted properly, but doesn’t have much experience with different regulators so she isn’t sure. The diver continues her descent and enjoys the dive despite feeling mildly uncomfortable about her regulator. Toward the end of the dive, she becomes separated from the group. She has to kick against the current for several yards, and by the time she rejoins the group, she is fatigued, having a difficult time catching her breath, and feels the beginnings of a headache. She signals an ascent to the divemaster, who decides to bring the group up together. The group ascends normally and re-boards the boat, where the diver’s headache worsens to the point that she is nearly incapacitated. She becomes nauseous and vomits over the side of the boat. The divemaster questions her and diagnoses CO₂ toxicity. The diver’s headache resolves over the next six hours, and after a good breakfast the next morning, she reports that she feels fine.

Most of us are aware that our bodies produce carbon dioxide (CO₂) as a byproduct of metabolism, and that this
CO₂ is eliminated via the lungs. At rest, the human body produces CO₂ at a rate of about 0.15-0.35 liters per minute (l/min) – in terms of volume, roughly anywhere from half of a small coffee cup to a 12 ounce drink cup at standard temperature and pressure. This can increase to about 4.5 l/m with aerobic exercise.

CO₂ level in the arteries is sensed by specialized nerve centers in the brain called central chemoreceptors. Our brains interpret this information and trigger our respiratory muscles when the CO₂ level reaches a certain point. At atmospheric pressure, healthy lungs will provide enough ventilation to allow the CO₂ level in the bloodstream to remain relatively constant.

Oxygen is carried almost exclusively on hemoglobin molecules in the red blood cells, with a small amount dissolved in the blood plasma. Carbon dioxide, on the other hand, is a little more complex. It is carried in the bloodstream in three ways: as bicarbonate (HCO₃⁻); dissolved in the blood plasma; and, combined with chemicals called amines, bound to hemoglobin (West 2005). Even though only about 10% of the body’s CO₂ is dissolved in the plasma, the amount of dissolved CO₂ is considered to be an accurate representation of the overall CO₂ level in the bloodstream. We can measure dissolved CO₂ directly by drawing blood from either a vein or an artery and analyzing it. The level is expressed as a partial pressure, called pCO₂ (partial pressure of CO₂). Normal venous pCO₂ is between 40 and 55 millimeters of mercury (mmHg), and normal arterial pCO₂ is between 35 and 45 mmHg. Arterial pCO₂ is one of the parameters commonly used to assess ventilatory status.

Diving can significantly alter the body’s ability to eliminate CO₂. A study conducted at the Duke Center for Hyperbaric Medicine and Environmental Physiology found four variables that can influence arterial pCO₂ during immersed exercise (Cherry, Forkner et al. 2009): depth, which corresponds to gas density; external breathing resistance; individual maximal oxygen consumption (VO₂ max); and individual hypercapnic ventilatory response. Let’s look at some of these variables in the context of the fictional case study above.

Our diver spent the majority of her dive at about 95 feet/29 meters. This corresponds to a pressure of about 3.88 atmospheres absolute (ATA), or nearly four times atmospheric pressure. Her breathing gas, then, was almost four times as dense as it was on the surface.
Because of the flow characteristics of the bronchial tree, this is not readily apparent to a diver who is at rest or swimming slowly. However, when the diver increased her level of exertion by swimming against the current, her respiratory rate increased, along with the velocity of the gas in her airways. Under these conditions, gas density becomes a significant factor and will limit the diver’s maximum voluntary ventilation, or MVV (West 2005) (Hickey, Lundgren et al. 1983). This means, in essence, that the diver may not have been able to breathe quickly enough to eliminate the CO$_2$ that was building up in her bloodstream.

The diver noticed that she was having some difficulty drawing a breath from her regulator but because of her inexperience, failed to recognize this as an equipment malfunction. She chose to continue the dive rather than abort, and it’s likely that her poorly-functioning regulator contributed to her incident. Using a specially-constructed underwater breathing apparatus, Cherry and colleagues demonstrated that increases in breathing resistance sometimes resulted in increased arterial pCO$_2$ in their test subjects, as measured by the partial pressure of CO$_2$ in the arteries (Cherry, Forkner et al. 2009).

When we assess a patient or test subject’s capacity for exercise in the lab, we often perform an individual maximal oxygen consumption test, also called a VO$_2$ max test. This test directly measures the amount of oxygen consumed by the body at maximal exercise. VO$_2$ max is expressed in liters per minute (l/min), and is a good indicator of aerobic fitness. The higher an individual’s VO2 max, the greater his or her exercise capacity. Though there is no reason for a healthy diver to undergo a VO$_2$ max test, all divers should be aware of their own levels of physical fitness and use that knowledge in planning their dives. A typical drift dive does not involve swimming against the current, but our diver from the case study above found herself in a situation where she had to exert herself. Her relatively poor physical condition became a detriment and a possible contributing factor to her CO$_2$ toxicity.

To quantify individual response to increasing levels of CO2, researchers and clinicians may measure hypercapnic ventilatory response (HCVR). HCVR is the rate at which an individual’s ventilation increases in response to increasing inspired (inhaled) CO$_2$ levels. The test begins with the subject hyperventilating in room air, after which he or she will inhale from, and exhale into, a large gas bag containing a
mixture of 5% CO₂ and 95% O₂. The high oxygen content in the bag prevents hypoxia, while the high CO₂ content begins to provoke the subject’s ventilatory response. The CO₂ content of the gas bag will increase as the subject exhales into it.

The subject’s CO₂ level is measured with an end-tidal CO₂ meter, which measures the CO₂ level in the exhaled gas. Normal end-tidal CO₂ ranges from 35 to 45 mmHg. Measurement of the HCVR begins when the diver’s end-tidal CO₂ reaches 55 mmHg, and ends when it reaches 65 mmHg. When the results are plotted on a graph, a line is drawn, and the slope of that line indicates the relative strength of the individual’s HCVR. A steeper slope indicates a brisker HCVR, and a flatter slope indicates a weaker HCVR.

Though hypercapnic ventilatory response is not addressed in our case study, it can play a significant role in some cases of CO₂ toxicity. Recently, we evaluated a diver who complained of severe, migraine-like headaches after surfacing from his dives. When the diver’s HCVR was measured, the resulting graph was nearly flat, which means that his respiratory rate did not increase with increasing levels of CO₂ in his blood. Our physicians concluded that his blunted HCVR was allowing the partial pressure of CO₂ in his arteries to increase to toxic levels during his dives. He has since stopped diving and is awaiting further testing. If a diver experiences one or more unexplained episodes of CO₂ toxicity, an HCVR test may be indicated. Dr. Cherry’s research can be directly applied to good diving practice. Arguably, the most important practical aspect is that no matter how good a diver’s physical condition and exercise tolerance are on the surface, gas density and breathing resistance become significant factors under water, and their influence

Sample HCVR graph. End-tidal CO₂ is on the x axis, and ventilation in liters per minute is on the y axis. The small squares are individual ventilation vs. end-tidal CO₂ readings. Image courtesy Mike Natoli
increases with increasing depth. In other words, a diver can’t exercise to the same level under water as he or she can on the surface. Still, the better a diver’s physical condition, the better he or she will be able to tolerate the rigors of diving, and the better he or she will be able to cope with unexpected circumstances like those encountered by our fictional drift diver.

Most divers know that skip-breathing can lead to dangerously high carbon dioxide levels, and modern diving classes discourage the practice. In this article, we’ve examined several other important factors in CO₂ toxicity. Gas density, external breathing resistance, individual exercise capacity, and individual hypercapnic ventilatory response all play a role in a diver’s CO₂ level. Awareness of these is critical for divers, especially those who dive beyond recreational depth limits.

Eric Hexdall may be reached at eric.hexdall@duke.edu.

References:


Four to six subjects performed maximal voluntary ventilation (MVV) and forced expirations during rest, exercise (50, 125, and 200 W), and inhalation of air and CO₂ and air at rest while submerged at pressures of 1.45, 2.82, 4.64, and 6.76 atm. Maximal expiratory flow (at 40% of vital capacity) and MVV at rest decreased as exponential functions of gas density, but the decrease was less than in some earlier studies. Independent of pressure, MVV increased by about 10%–17% at the heavier work loads and expiratory flow increased by 27%–48%; the increase in expiratory flow disappeared within 2 min after exercise.

Exercise increased end-tidal CO₂ tension by up to 9 mmHg. Carbon dioxide inhalation increasing the end-tidal level by up to about 25 mmHg during rest had no effect on MVV and a slight to moderate effect on flow, increasing it by a maximum of 21% at 4.64 atm. The enhancing effect of exercise on MVV and expiratory flow at depth apparently was mainly due to modified autonomic nervous activity reducing pulmonary flow resistance, CO₂ accumulation playing an uncertain role, and passive distension of airways playing no role.

Metro Dive Team practices search techniques during fake plane crash
HTTP://WWW.DENVERPOST.COM/NEWS/CI_21891900/METRO-DIVER-TEAM-PRACTICES-SEARCH-TECHNIQUES-DURING-FAKE
10/31/2012 By Yesenia Robles The Denver Post

A fake plane crash into a Thornton reservoir Tuesday helped firefighters who make up the Metro Dive Team sharpen their skills and work together while responding to less-than-common emergencies.

"Communication is always something we can look at for improving," trainer and dive team operation board chairman Brian Timmens said Tuesday.

The 78-member regional dive team — made up of officers from Thornton, Westminster, South Metro and West Metro fire departments — trains quarterly, typically taking basic skills refresher courses. Re-creating emergency scenarios is rare.

On Tuesday morning, the team responded to the crash into Tani Reservoir, which is off Interstate 76 and Dahlia Street. Under the training scenario, two people who fell out of the plane were rescued right away by regular firefighters who responded first. A third passenger was unaccounted for.

When dive teams arrived, the plane had completely submerged. The teams were briefed that one person was possibly now underwater.

As large trucks positioned the boats they hauled to be released into the reservoir, divers were inside the trucks putting on gear.

"The challenge is safety," said Thornton police commander Lee Vitgenos, who served on the dive team for four years. "Everybody is in rescue mode, and that's what you want to do, but you don't want to rush out and become casualties."

Divers went into the reservoir once sonar had located the submerged plane about 30 feet underwater.

To avoid fatigue, they are rotated out of the water after about 20 minutes.

The dive team Tuesday wasn't able to recover the dummy that represented the missing passenger within the 90-minute window during which survival is likely.

The last time the dive team
responded to a similar situation was eight years ago during another training scenario.

Timmens estimates the teams responds to about 15 to 20 emergency calls per year — mostly search and rescues. The team helped search for 10-year-old Jessica Ridgeway earlier this month. The group also helps police departments recover evidence, sometimes including vehicles, from bodies of water.

During the summer, calls often involve boating accidents, while in the winter, calls are generally about people who are trapped or fall through ice.

**Louisiana, Orange Beach dive teams come together for yearly training**


November 5, 2012 **BY JOHN MULLEN**

ORANGE BEACH, Ala. — Craig Russell of the Baton Rouge Police Department likes to vacation on the Gulf in Orange Beach. And when he can combine some training with the department’s dive team in coordination with the Orange Beach Fire and Rescue dive team, that’s makes it even better.

“Life is good,” a grinning Russell said. Both teams were training recently in an area just east of Sportsman Marina and south of the dog park on Terry Cove.

“Be careful coming down that hill,” Russell warned a visitor. “But if you fall, go ahead and roll all the way into the water because we already got divers out there to get you.”

Russell and the Baton Rouge team discovered during some of those vacation stays that Orange Beach has ideal waters for the training sessions.

“We did some yearly training down here for a number of years,” he said. “My family vacations down here in the summer in the area and we wound up calling the fire station a couple years back and asked them about airfields and support and some ideas.
“We had some jetskis at the time and they offered to do some basic training on the jetskis for us and they hooked me up with Chief (Kevin) Lanford there and we’ve been adding to it since then.”

The joint training has now become an annual event.

“This is our third year of coming down and working jointly with the Orange Beach Fire Department and in support of the Orange Beach interagency training and each year we’ve grown a little bit more,” Russell said. “This is starting out to be our best year yet.”

The crews have become so familiar with each other, there is a little competitive ribbing between them.

“We were in, found our object and they came in and did a search on their object,” Russell said. “Now we’re back even. We were hoping they wouldn’t find it.”

“The difference is we haven’t lost anything,” Lanford answered back.

More importantly, Russell said, the crews learn from each other and come away with more knowledge about diving.

“We’ve watched the technique of some of the drills that Orange Beach is doing which raised our curiosity and we’re trying that same technique with our equipment so that we can evaluate it and ask them questions,” he said. “‘Why do y’all do it this way?’ and my guys can tell me this is what we liked, this is what we didn’t like, tweak it, share information and make both departments better.”

The week began with some offshore diving just to review the basics, Russell said.

“For us this is kind of the best of both worlds because this environment is so great for training,” he said. “We were able to go off yesterday on a boat dive and all the divers got to dive to depth to make sure they are still performing tasks, functions, drills and they are comfortable at depth.”

On day two of training week, the crews were working in water that was a bit murkier on Terry Cove next to Sportsman.

“We were able to come into this which is semi-visibility and still see,” he said. “It allows if we’ve got a question of what’s somebody doing we can send another diver out to watch and it allows us to work on things.
On day three the crews went to the clear water of some springs near Ponce De Leon, Fla., followed a day later on the Intracoastal Waterway in water more like the Mississippi River back in Louisiana.

“We go to the springs and have real-life conditions with better visibility and then move over to The Wharf we really get into actual scenario type for us, water that’s not so clear,” Russell said. “The canal resembles the water we have back home and so there we get to take and clean up at the end of the week and practice any techniques there in more conditions like what we’re used to diving in.”

On Terry Cove, the crews simulated retrieval of evidence that might be tossed out and even some body recovery training.

“Earlier we looked for a hammer,” Russell said. “We threw a hammer out there as an object that might have been used in a crime or something. Right now, I don’t know if they recovered it, there was an old cordless drill out there.

“We’ve got a dive mannequin that we can put out there to simulate body recovery and just different things that might be common of things we would be asked to look for.”

Russell said eight of his nine-man team was able to make the training trip. Back home, they are called out for a variety of situations.

“We’ve probably been called out 10 times this year,” he said. “It varies. We were on standby for (Isaac) with our boats to go in and help people and once before we’ve rescued animals. People evacuated, didn’t think the water was going to get that high and we were on standby for animal control.

“Some of our boats can make it into relatively shallow water. And a lot of times in flood situations you have lots of changes in elevation.”

**Forensic diving: Aiming for recovery and reconnaissance, not rescue**


Nov 05, 2012 By E.A. HARVEY Correspondent*
Intelligencer Journal Lancaster New Era

When veteran divers John Walker and Bud Kauffman are called in to assist in locating someone, the men are not
conducting a rescue. Instead, they have been asked to help investigate a death that occurred in water, to find a body that has been dumped after a murder or locate underwater crime clues.

Walker and Kauffman are trained to find, catalogue and recover evidence and help bring closure to grieving families and friends.

Though not as pleasant as saving a stranded boater, bringing home a body to be viewed and put to rest has its own sense of satisfaction, says Walker, owner of Lancaster Scuba Center and a diver since 1976. Giving closure is hard but important. "Especially children," he says.

"If we can return a body to a family, especially if it is done quickly," notes Kauffman, chief of dive operations with Harrisburg River Rescue, "we take that to heart."

Equally fulfilling, he says, is finding a weapon, a vehicle or another key item that helps solidify a conviction. "It makes our team's day when we can (find) a piece of evidence and help put away (a criminal)."

Traditional on-land crime scenes can be complex enough, but when the scenario is ever-changing, has poor visibility and has open boundaries, the intricacy amplifies.

Underwater investigators find themselves looking for clues in lakes and ponds, rapidly moving water, swamps and even waterfalls, sewage treatment facilities and flood waters.

Though divers have been assisting law enforcement agencies for decades, there was a time, in the not-so-distant past, when aid came from municipal fire departments and other untrained sources. These hodgepodge search-and-rescue teams, though highly appreciated, were mainly focused on recovery rather than securing evidence. Most had no investigative skills, so important clues were mishandled and their usefulness compromised. "Just because you're a recreational diver does not make you a forensic underwater specialist," Kauffman says.

Today, trained underwater investigators are versed in proper evidence collection. They understand that items must remain undisturbed until documented through photos, measurements, sketches and detailed descriptions. "It's a crime scene until proven to be an accident," Walker explains.

Forensic divers must be meticulous in preserving not only the article they are bringing to the surface, but the water in which it rests and samples from a

*Discovery of evidence is one of the main purposes of forensic diving.*
sometimes-mucky bottom.

"In addition to being skilled in evidence-gathering techniques," says Kauffman, a diver's training needs to include safety. There is danger in undertow, currents, water pressure on the body and hypothermia, he said. Sometimes, Kauffman notes, the conditions make it too dangerous to dive at all.

"We know there is a body there, but we can't get to it. It sort of feels like a failure."

Around here, Walker says, the water almost always is murky. In those cases, much of what divers do is by feel. "Seventy-five percent of the time you are looking with your hands," he notes, "sweeping" an area to find evidence or a body.

Recently, Walker constructed a PVC car to submerge for training in the Lititz Rec Center swimming pool. "Divers wear a blackout mask that will make it look just like the Susquehanna," he says. "They will sweep inside and around the car with their hands looking for victims and evidence."

Kauffman, who has 39 years of water rescue experience and 30 in law enforcement diving, said he originally volunteered as a teenager with the New Cumberland Junior Rescue and took scuba classes. Later, he served with Lemoyne and New Cumberland police departments, the latter as chief. It was along that career path that he recognized the need for underwater investigators.

"It's another tool in the investigative tool box," he says.

Now retired, Kauffman works closely with Lancaster city and Pennsylvania State police and other law enforcement agencies, and he presents training programs throughout the United States and Canada.

His organization, Harrisburg River Rescue, covers a nine-county area that includes Lancaster, as well as the Chesapeake Bay and Schuylkill River. He works with about two dozen volunteer divers; some are police officers or emergency medical personal. "They all have other jobs, but they are all trained for underwater investigations," he explains.

Kauffman and Walker, like their fellow divers, offer their expertise as volunteers.

Walker says he began diving years ago with Smokey...
Roberts, a Lancaster-based underwater cinematographer. Over the years, Walker took public safety and forensics classes and, like Kauffman, was a diver with Harrisburg River Rescue. Today, in addition to running the diving business, he teaches forensics to firemen, EMS, police and other public-safety experts.

During training, Walker emphasizes that evidence can be as large as a car or truck or as small as a wallet. And, sometimes, the find is a total surprise.

On one dive, Walker says, the investigators were tasked with bringing a safe to the surface. Instead, they produced a purse, which they returned to the owner. Conversely, during a dive for cannon balls tossed into the Cocalico Creek during a Halloween prank, the divers found ... a safe.

Out of all the dives Walker has done, however, one stands out. In December 1991, two days after the highly publicized death of Lancaster's Laurie Show, Walker got a phone call from East Lampeter Township Police Department. They wanted him to search the Susquehanna River near Pequea Creek for an alleged murder weapon. To make the exploration easier, the water behind the dam was lowered. Walker geared up for the dive but, because the water was so low, he located the butcher knife and rope submerged only a foot.

"When someone gets rid of something underwater they think it's gone. 'Out of sight, out of mind,'" Kauffman notes. "But, often, we can find a firearm that matches a bullet that killed a person. It's like find a piece of a jigsaw puzzle."

Suspect jumps in Allegheny River, dies after chase through downtown Pittsburgh

PITTSBURGH — Police say a man fleeing police in Pittsburgh died after jumping into the Allegheny River to evade capture.

Authorities said the man, identified as 19-year-old David Thomas, fled officers in a stolen car Wednesday night, sparking a pursuit through downtown Pittsburgh. Investigators said the man drove the wrong way on one street before crashing into another car then jumping over a wall and dropping a gun before jumping into the river.

“I saw a car going 40 mph down an alleyway with a cop car behind him going pretty fast. Then I saw 20 more cars headed in this direction,” said witness...
Rescue divers pulled the man from the water but he was pronounced dead at a hospital.

Police said they were pursuing the man’s car because it had been taken in a carjacking in Lawrenceville on Monday.

Two other men were in the fleeing car. Police said they’re trying to determine if those men were involved in the carjacking.

Venice 'high water' floods 70% of city
http://www.guardian.co.uk/world/2012/nov/11/venice-floods-high-water-italy
11 November 2012 Tom Kington The Guardian
Venice Flooded – Slideshow CLICK HERE

Venetians direct anger at forecasters after ‘exceptional and unpredictable’ rise in sea waters floods homes and businesses

Tourists attached plastic bags to their legs or stripped off to take a dip in St Mark’s Square in Venice on Sunday as rising sea waters surged through the lagoon city. High water measuring 1.49 metres (5ft) above the normal level of the Adriatic sea came with bad weather that swept Italy at the weekend, causing floods in historic cities including Vicenza as well in the region of Tuscany 250 miles further south.

Venice's high water, or "acqua alta", said to be the sixth highest since 1872, flooded 70% of the city and was high enough to make raised wooden platforms for pedestrians float away. The record high water in Venice - 1.94 metres in 1966 - prompted many residents to abandon the city for new lives on the mainland.

Venetians bombarded Facebook with moans about the...
city's weather forecasters, who had predicted just 1.2 metres of water on Saturday, before correcting their forecast at dawn on Sunday.

"How come the people from the council who put out the wooden platforms were predicting 150cm? asked Matelda Bottoni, who manages a jewellery design shop off St Mark's Square, which floods when water reaches 105cm. "Many residents and shopkeepers had gone to the mountains for the day and did not have time to rush back."

Bottoni is so used to floods she has installed waterproof furniture and an angled floor. "I cannot keep the water out, but at least I can make sure it goes straight back out when it recedes," she said.

Matteo Secchi, a hotelier and head of a protest group, who grew up in ground floor flat in Venice and recalls splashing into water on getting out of bed, said his hotel was only safe up to 140cm. "This morning the lagoon came right into the hotel entrance, and this is not clean water - you need to mop with disinfectant twice after it goes down," he said.

Alessandro Maggioni, the city's assessor for public works, defended the Venice weather centre, describing the high water as "exceptional and unpredictable". The Moses flood barrier system being built to protect the lagoon, due for completion in 2015, would have kept the city dry, he said. "Meanwhile, there is no rise in the incidence of high waters," he said.

Bottoni disagreed. "My shop now has some form of flooding 100 days a year, up from 30-40 days when I moved in just 10 years ago." But she does not plan to leave. "I was born and raised here and will stay here for the satisfaction of being in Venice."

Sussex Police diver gives notice – at the bottom of a lake...

http://www.theargus.co.uk/news/10047471.Diver_gives_notice_____at_the_bottom_of_a_lake___/15th November 2012 By Anna Roberts

A police diver hid his retirement letter at the bottom of a lake for his boss to find.
Specialist search unit (SSU) member Roger Negus, nicknamed Arf, decided to give notice in the most fitting fashion by sinking it underwater.

The diver, who has been with the team since 1989, left it for his boss, Sgt Lorna Dennison-Wilkins, to find while she was diving in Hastings.

Writing on her blog, she said: “I was on an operational dive looking for a weapon and, like all our diving, I had nil visibility.

“I had been diving for around an hour and was coming to the end of the jackstay near the bank when my hand touched something round and man-made.

“By the smoothness of the object I knew it was new and had not been in the water long and I was intrigued as I knew it wasn’t related to the weapon that we were looking for due to its age. I picked the item up and could feel that it was heavy and was probably made of tin.

“On closer inspection I saw it was taped shut with a note ‘FAO Sgt Dennison-Wilkins’ on.

“Inside were some diving weights and a laminated form notifying me of Arf’s impending leaving date.

“I wouldn’t have expected Arf to have informed me via conventional means, one of the many ways in which he brought a smile to our faces.

She paid tribute to her colleague, who was one of the most experienced diver supervisors, having seen the part-time unit turn into a full-time one in 1994 during his 23 years.

Sgt Dennison-Wilkins added: “He’s developed extra skills in almost everything we do, so we won’t just miss him as a person, we’ll miss his vast experience.

“From a personal point of view I’ll miss Arf a lot. He was one of the optimists on the unit and gave me huge amounts of support when I joined, as I knew nothing.

“He continued to support me until he left and always gave me good advice and had the best interests of the unit at heart.

“If I was working away from the rest of the SSU or was having a challenging time, Arf always checked to see if I was alright.

“He
understood the pressures that we face on a unit like ours and those that you encounter supervising it.”

Sweatman inquest hears from police diver
November 20, 2012 By Greg Nesteroff - Nelson Star

An RCMP diver told a coroner’s inquest this morning his team wasn’t deployed to the Goat River where a Nelson Search and Rescue volunteer drowned last year partly because the water sounded too dangerous.

Sheilah Sweatman, 29, died on June 29, 2011 while trying to recover a car that belonged to a missing woman. Her leg got caught in a steel cable and pulled her off her raft into the river.

Cst. Dale Judd, formerly stationed in Castlegar, testified by video link that his team leader asked if he could investigate the submerged vehicle, but he was in the midst of moving to Prince Rupert.

He also talked to Cst. Shelley Livingstone, who was in charge of the scene, and asked her what the river was like. She guessed it was 10 to 15 knots, which he felt was “too strong and unsafe.”

“We could not put a diver in the water under those circumstances,” Judd said. He asked her to give him an update once Nelson Search and Rescue arrived, and in the meantime called another member of the team, but he was in Christina Lake.

Judd said he never received any further update on the risk the river posed.

“Might you have provided assistance had you been there?” family lawyer Cameron Ward asked.

“Without knowing the speed, I don’t know if I could swim against the current,” Judd responded, adding “If I felt it was safe, we would make an attempt.”

Judd agreed with Ward’s suggestion that the dive team might have helped, even if it was only to provide advice. Ward also asked if the bolt cutters the team normally carried could have cut the steel chain Sweatman got tangled in.

“You probably could, but it would be some work,” he said. “I’ve never tried.”

Judd said in other vehicle recoveries they have used a poly-steel rope that their cutters are able to sever.

Eyewitness account
This morning also heard from the first
eyewitness to the tragedy, Creston RCMP Cst. David Skretting, who was standing on the Goat River bridge with search personnel, and called an ambulance after Sweatman went into the water.

Skretting says upon arriving on scene, everyone seemed to know what they were doing and nothing gave him any concern.

“If I was in the same position, I would want those people there,” he said.

Skretting is also testifying on behalf of Cst. Livingstone, who is on vacation. Family lawyer Cameron Ward, however, wants her to testify by phone, but coroner Matt Brown has put off a decision pending the completion of other testimony.

**TV station applies for footage**

Global News has applied to broadcast portions of the video taken that day as part of filming for the reality TV series *Callout: Search and Rescue*.

Reporter John Daly argued in person that the station only intends to use small excerpts from the footage to demonstrate the efforts of Sweatman’s colleagues to rescue her.

The coroner ruled the application will be decided upon after Ward has had a chance to consult the family and the video is viewed in the inquest, expected later today.

**Inquest behind schedule**

Ward began the day’s proceedings by saying Sweatman’s family is concerned about the pace of the inquest given the number of witnesses yet to testify.

According to a schedule released by the BC Coroners Service, five people are supposed to give their evidence today in addition to viewing the view footage, but by the lunch break, only two had.

Another 11 witnesses are scheduled Wednesday and Thursday, followed by jury deliberations Friday.

**MORE ON THIS STORY:**

- [Inquest planned in Sweatman death](#)
- [Sweatman inquest set for June](#)
- [Sweatman inquest set to begin Monday](#)
- [Inquest hears of Sweatman’s final moments](#)
- [Inquest delayed for Nelson Search and Rescue’s Sweatman](#)
- [UPDATED: Sweatman ‘never backed down’](#)

**Robot to hunt for body of Wellfleet fisherman**


PROVINCETOWN — It won’t be easy, dropping a robot into 198 feet of churning seas to get a close look at the sunken Twin Lights scallop boat.
But that’s what the Coast Guard and state police divers will attempt today when they use a remotely operated vehicle, or ROV, to inspect the 40-foot fiberglass vessel that capsized and sank Nov. 18.

Capt. Jean Frottier, 69, of Wellfleet, is believed to have gone down with the boat after he struggled to untangle a scallop dredge from another fisherman’s lobster traps. Frottier’s body has not been recovered. Crewman Eric Rego was rescued by a nearby lobster boat.

An ROV is an underwater robot equipped with a video camera and lights, and sometimes sonar systems, magnetometers, still cameras, mechanical "arms," water samplers and other instruments. It is tethered to a handling system onboard a ship such as a Coast Guard vessel, and can send back video and data.

Images from a sidescan sonar helped the Coast Guard and state police the day after the sinking find the Twin Lights on the sea floor two miles north of Race Point. But more precise information only comes from sending a diver — or in greater depths an ROV — to get a closer look.

Matter of safety
An ROV can get close enough to show the name of the vessel and the color of the paint, Dana Yoerger, a senior scientist at Woods Hole Oceanographic Institution, said Monday, speaking generally from his nearly 30 years of experience.

But an ROV won’t be able to get inside a sunken vessel, and the mission’s success, Yoerger said, will depend on the clarity of the water, the strength of the current, the depth of the sunken vessel and the ability of the team of people — or technology — at the surface to maintain a steady position in the water.

"Our main priority is to get down there and see what the status of the vessel is," Coast Guard Station Provincetown Chief John Harker said Monday. "We have been gathering gear that has been coming up. It looks like the vessel may be moving around a bit with the currents and the tides. We're pretty positive it's in the same position."

In recent days, gear from the Twin Lights has washed ashore in the Cape Cod National Seashore as far south as Coast Guard Beach in Truro.
UPDATE FROM THE WRSTC

The WRSTC met in Las Vegas at the DEMA show. All 6 of the agencies were represented: DRI, LGS, PADI, PSDA, ERDI, IANTD. Minutes from the last meeting were discussed and then members continued with a discussion of the by-laws and made minor changes to meet the needs of the WRSTC.

Dive Rescue International passed the position of President to Life Guard Systems as called for in the by-laws.

The Chair recognized Dr. Richard Sadler from Dive Rescue International and the International Assoc. of Dive Rescue Specialists to create medical standards for public safety divers. These would replace the RSTC medical standards.

Pete Gannon, President
Dive Rescue International
201 N. Link Ln.
Ft. Collins, Co. 80524
954-648-7887 cell
1800 248 3483
Diverplus@aol.com

It wasn't clear Monday who is supplying the ROV for today's search. But Darren Moss, the product line manager for Teledyne Benthos in North Falmouth, which is an ROV supplier, said the robots are another way to get information.

The ROVs won't replace divers, he said but using one allows searchers to explore at greater depths for longer periods of time.

Given that the Twin Lights may be entangled in lobster gear almost 200 feet deep, an ROV can serve as a "reconnaissance type of device." Moss said. "It helps remove the diver from a hazardous area until better information is gathered."

The typical safe limit for scuba diving is 125 to 130 feet, Moss said.

Multiple uses

ROVs are used commercially by the military, the oil and gas industry, researchers, academics and divers. They can be used for harbor security and law enforcement, and even by private citizens to inspect the bottoms of boats.

The Twin Lights was one of 54 commercial vessels regularly docked at MacMillan Pier, Harbormaster Rex McKinsey said.

Frottier was known among local fishermen for his innate curiosity and problem-solving skills, and for his mastery
of any fishery. He had been a lobster diver from the 1960s until a decompression injury ended that career.

The Coast Guard has opened an investigation into the incident but the results are not expected for several months.

Related Stories
- Friends say fisherman was hardworking, devoted family man
- P'town fishing vessel capsizes; captain presumed dead

Chicago Firefighters Save Man From Jumping Off Bridge
November 28, 2012 Rosemary Regina Sobol Chicago Tribune

For nearly an hour Tuesday, police and firefighters waited out the man as he stood at the edge of a Loop bridge and threatened to jump.

Nov. 28--For nearly an hour Tuesday, police and firefighters waited out the man as he stood at the edge of a Loop bridge in the freezing cold and threatened to jump.

A helicopter hovered nearby. Two boats stayed at the ready in the Chicago River below. Finally, it was time to act: The man quit talking, and he seemed to be loosening his grip on the railing.

"They got close enough where they could grab him and flip him back over the rail," Central District police Lt. John Willner said.

The 43-year-old man collapsed, sobbing, and was taken to Northwestern Memorial Hospital, police said.

The rescue played out about 3:35 a.m. at the LaSalle Street Bridge. The first crews to reach the man saw him perched at the edge of the bridge. He kept repeating, "I can't go back to jail, I can't go back," according to police.

Authorities said he was being sought by Bellwood police for a domestic issue.

About 45 minutes went by as negotiators talked to the man and inched closer and closer, finally getting about a foot and a half away. All the while, they tried to get him to talk. The man started to cry when a police officer asked about his grandson.

"We were running out of time," said one of the firefighters on the scene, Eric Sobolewski. "It seemed like his attitude had changed a
little bit. He got quiet, and it was getting really cold. His hands had been on a cold railing for almost an hour."

Then the man dropped his cellphone and keys and change from his pocket onto the ground, as if to leave them behind.

Sobolewski said the man seemed to be "making up his mind," so the firefighter began talking to him again. "I was saying, 'It's not worth it, there's a better way. ... You've got kids, I've got kids. You wouldn't want to put them through this.'"

By this time, Sobolewski said he and another firefighter, Mike Cronin, had gotten within reach of the man. "We were getting closer and closer, and Mike and I just kind of looked at each other and grabbed him," said Sobolewski, 41, who has nearly 10 years on the job as a firefighter.

Sobolewski said he and Cronin both have years of training for this kind of emergency, but it still comes as a surprise. "It was unreal. ... You're out there in the freezing cold and you don't imagine that these things are going to happen."

Added Cronin, "It's nice when things work out well."

"You really, really have to have everyone working together," said Cronin, who is 41 and like Sobolewski works out of Squad One. He's been a firefighter for 13 years.

"I'm just glad the guy's OK," Cronin said. "It might not have had a happy ending if we didn't have everybody working and doing their jobs and preparing for something bad to happen."

Willner singled out several police officers, including John Harrison, Belinda Flores, Calvin Blunt, Eleanor Diggs and Sgt. Craig Roberts. "It was a tremendous effort," Willner said

**FOUND ON THE WEB**

Researchers develop rapid test strips for bacterial contamination in swimming water

http://www.eurekalert.org/pub_releases/2012-04/mu-rdr043012.php

HAMILTON, ON, April 30, 2012 — Urban beach closures due to coliform outbreaks have become disturbing signs of summer, yet water-testing technology has never been fast enough to keep up with changing conditions, nor accessible enough to check all waters.
Now, researchers at McMaster University have developed a rapid testing method using a simple paper strip that can detect *E. coli* in recreational water within minutes. The new tool can close the gap between outbreak and detection, improving public safety.

Scientists from the Sentinel Bioactive Paper Network have created and validated the viability of the test strip, which can detect potentially harmful concentrations of *E. coli* in water quickly and simply, with much greater accuracy than existing portable technology.

The work is described in a paper published online in the journal *Analytical and Bioanalytical Chemistry*.

"Coliforms are always a big problem," says the paper's lead author John Brennan, a McMaster chemistry professor who holds the Canada Research Chair in Bioanalytical Chemistry. "The methods used to detect outbreaks are slow, and tend not to be portable, as they often need a lab-based amplification step prior to testing, causing a time lag between an outbreak and a beach closure."

Bioactive paper is both old and new, Brennan explains. Since the late 1950s, physicians have been using bioactive paper to test for glucose in urine. In the last several years, the area has expanded quickly and research has become very competitive as scientists work on new applications.

"It's always a race," Brennan says.

The new strips are coated with chemicals that react to the bacteria, and are printed using inkjet technology similar to that found in standard desktop printers. Within 30 minutes of sampling, the paper changes colour to indicate the presence of *E. coli*, with colours coded to represent different forms and concentrations of the bacteria.

In the future, the test should make it possible for consumers to check their water affordably and easily, without additional equipment, scientific knowledge or long waits.

"One of the problems right now is that there is no simple, fast and cheap way to test recreational water, and certainly nothing out there in the realm of rapid tests for drinking water," Brennan says.

Field testing of the prototype strips is planned or under way in Canada and across the globe, in regions where untreated water poses particular health hazards. The results of these studies will help to refine the test strips and may lead to strips that are sensitive enough to tell whether water is safe enough to drink, says Brennan.
The standards for safe drinking water are hundreds of times tighter than those for safe swimming water. Typically, limits for safe swimming allow for a maximum of 100 to 500 cells in 100 mL of water, depending on jurisdiction. For water to be considered safe for drinking, there cannot be even one cell in 100 mL – a little less than half a cup of water.

The next stage of pre-commercial development of the test strips is already funded by NSERC through a Phase I Idea to Innovation grant. Commercialization of a final product could take as little as two to three years.

**LINKS:**
- The research paper is here: http://bit.ly/IhS3jX
- A video with John Brennan explaining the research is here: http://bit.ly/IEZQq7
- A photo of the test strip is here: http://bit.ly/JfT9Gx

For more information, please contact:
Wade Hemsworth
Public Relations Manager
McMaster University
905-525-9140, ext. 27988
hemswor@mcmaster.ca

**FREE TO DOWNLOAD**


**IMPORTANT! FOUND ON THE WEB**

The University of Maryland Scientific Diving Program has updated their medical forms. These are or should be the same or similar to what your team uses.

To download the file, go to:

**Part of the document DIFFERS from an ANNUAL Medical to: CLINICIAN’S STATEMENT:**

Diver IS medically qualified to dive for:
- 2 years (over age 60)
- 3 years (age 40-59)
- 5 years (under age 40)

**FOUND ON THE WEB**

I met these folks at DEMA. If I was even 20 years younger, I would be all over this event! If you don’t know what it is, click on the link!
~Mark

Seatbelts are there to save lives in an emergency, but in certain situations they can actually do just the opposite. If your vehicle ends up underwater after a freak accident, they can make escape difficult. So a Dutch company has developed a simple seatbelt adapter that automatically releases in the presence of water.

Fijen TMLS' Escape Belt uses a pressurized cartridge similar to what's found in inflatable life vests. But in this case it's being used to automatically activate the release mechanism on a seat belt.

And before you joke about a spilled coffee or Slurpee accidentally setting you free in the middle of traffic, the adapter is specifically designed to only activate in a situation where it's been submerged. For added safety's sake the cartridge needs to be replaced every couple of years to ensure it's in good working order (or after it's been triggered) but that's a minor inconvenience for a $39 device that could potentially save your life one day.

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**Found on the Web**

**Automatic Seatbelt Release Frees You If You End Up Underwater**


Andrew Liszewski

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**Found on the Web**

**Hot Docks, Hot Boats and Electric Shock Drowning**

This video is unlisted. Only those with the link can see it.

http://www.youtube.com/watch?v=O7-s_mdEPb0&feature=youtu.be

Yes – it is in this issue TWICE. It is THAT IMPORTANT! WATCH THE VIDEO!
SPONSOR NEWS

SALEM, N.H., November 5, 2012 – L-3 Klein Associates, Inc. (L-3 Klein) announced today that it has received an award from the U.S. Naval Oceanographic Office (NAVO) for seven life-cycle kits to upgrade existing L-3 Klein System 5000 sonar systems to the advanced Klein S5900 multi-beam side scan sonar.

The S5900 system will be deployed from six T-AGS 60-class oceanographic survey ships that are designed and constructed to provide multi-purpose oceanographic capabilities in deep ocean areas and shallow coastal waters around the world. The life-cycle upgrade to the S5900 system was awarded in support of NAVO’s emerging requirements for higher-resolution data collection in mine warfare, homeland defense and other fleet operations that demand high-resolution target detection and bottom-mapping capabilities.

“The U.S. Navy’s focus on littoral operations has created a large backlog of high-priority oceanographic, hydrographic and geophysical survey requirements, and L-3 Klein is proud to continue our support of NAVO with our latest-technology sonar systems,” said John Cotumaccio, president of L-3 Klein.

The S5900 side scan sonar uses high-frequency commercial-off-the-shelf (COTS) multi-beam technology to provide high-resolution imaging with 100 percent bottom coverage while towed at speeds of 2 to 12 knots. The S5900 tow fish is depth-rated to 750 meters and can operate with copper and/or fiber-optic tow cables. Interferometric bathymetry is included in the upgrade, providing simultaneous bathymetry and side scan data collection capabilities. Articulated depressor wings allow for remote control of depressive force as well as enhanced towing stability. Acoustic positioning systems are electronically and mechanically integrated into each S5900 tow fish. A gap filler sonar, for full coverage in the nadir region, is also available with the S5900 system.

L-3 Klein, a division of L-3 Marine & Power Systems, is located in Salem, N.H., and is a leading sensor technology provider that manufactures and designs high-resolution sonar systems, marine navigation systems, and radar-based security and surveillance systems. With over 40 years of experience, L-3 Klein’s customers include commercial, government and military organizations; shipping and offshore oil companies and related support contractors; maritime facilities; academic institutions; and underwater vehicle manufacturers. To learn more, please visit the company’s website at www.L-3com.com/Klein.
SPONSOR NEWS

RIMPAC 2012

SeaBotix participated with the Canadian Navy in the world’s largest international maritime exercise - Rim of the Pacific (RIMPAC) to create a unique training opportunity using the SeaBotix vLBV. The training exercise was designed to simulate real world operations by having objects of interest located, identified and recovered. There were other objectives such as magnetic and acoustic signature testing of various equipment including the vLBV.

During the weeks of RIMPAC SeaBotix assisted onboard the Royal Canadian Navy MCDV vessels Yellowknife and Saskatoon. The recently acquired vLBV950 systems were in operation by the Canadian Navy reservists and SeaBotix was on hand to assist where necessary.

An example of an operation was a large area AUV sidescan provided a target coordinate. The reservists would deploy the vLBV950 equipped with Tritech Gemini 720i multibeam sonar, Micron Nav USBL positioning system and grabber and use the technology to identify the unknown target by navigating with the tracking system and sonar. Targets included testing sensors, mock seamines and more. It was a great training exercise for the reservists to learn the capability of the vLBV950 and sensors. Read full article

SPONSOR NEWS

December 10, 2012

Damon Wolfe Joins EdgeTech

EdgeTech is pleased to announce the addition of Damon Wolfe in the role of Product Line Sales Engineer. Damon joins EdgeTech after four years with the U.S. Army Corps of Engineers (USACE) where he served as a technical lead for a variety of surveying and remote sensing projects including hydrographic surveying, topographic surveying, geodetic surveying and photogrammetry. Prior to working with the USACE, Damon was in the United States Marine Corps. Damon’s background and experience will be great attributes to the team at EdgeTech as the company continues to grow its bathymetry product offering. Damon has firsthand knowledge and experience with many of the systems used in underwater surveying. EdgeTech’s 4600 Side Scan Sonar & Bathymetry system is becoming an increasingly popular tool in this field and Damon will join EdgeTech in growing and enhancing the product line. Already in the works at EdgeTech are ROV and AUV-based bathymetry systems that will provide full swath bathymetry plus dual frequency side scan sonar imagery in a single compact system.

PSDIVER MONTHLY

THE FIRST 38

A collection of our first 38 issues on one disk.

Click HERE to Order FIRST 38 disk - $20.00.
Please join us in welcoming Damon Wolfe to the EdgeTech team.

For more information please visit www.edgetech.com or email info@edgetech.com

PSDiner

Fireman Joes

INGREDIENTS:
5lbs. 80/20 Ground Beef
1 large onion (minced)
1 large clove garlic (minced)
2 1/2 cups Ketchup
1/2 cup Mustard
3/4 cup Brown Sugar (dark)
3-5 tbsp. Lemon Juice
1/4 cup Cider Vinegar
1/4 cup. Worchester Sauce
1/2 cup water of Beef Broth
Salt and Pepper to taste
Hamburger Buns – Enough to feed your crew.

Dill and Sweet Pickles on the side.
Serve with Potato Chips and / or Potato Salad and Cole Slaw

DIRECTIONS:
Brown Ground beef and onions in large skilet, drain well. In a pan, add garlic and stir till you can smell it. Then add the rest of ingredients to make sauce. Simmer on low heat for 10 minutes. Add ground beef & onions to sauce. Simmer for 20 to 30 minutes adding beef broth or water to keep it juicy, stir occasionally. Serve on hamburger buns. Serves 8-10.

EVENTS*

International Workboat
December 5 - 7
New Orleans, LA
www.workboatshow.com/

January 15-17, 2013 Underwater Intervention 2013
http://www.underwaterintervention.com/
New Orleans, LA

February 5, 2013 - February 7, 2013
ACSR 2013 Conference
The Association for Crime Scene Reconstruction (ACSR) began in 1991 with a group of professionals in Oklahoma and Texas who investigated crime scenes and performed forensic analyses and comparisons on evidence from crime scenes. These professionals saw a need for an organization that would encompass an understanding of the whole crime scene and the necessity of reconstructing that scene in order to better understand the elements of the crime and to recognize and preserve evidence.
College Park, GA
www.acsr.org/conference

March 13th-15th 2013 - 2013 NDPA Symposium
Click HERE to download the AGENDA !
Click HERE to Download the Symposium BROCHURE
This year the Symposium is jam packed with a wide variety of breakout sessions, demos on the beach and in the pool, fun activities and lots of networking opportunities!
18 March to 20 March 2013

Scuba Fest 2013
Hosted by the Ohio Council of Skin and Scuba Divers (OCCSDI), this event promises to provide a weekend of fun, social gathering, underwater photography competition, exhibits, presentations and Saturday night banquet with keynote speaker.

Plus PSI visual inspection workshops, travel seminars, door prizes, silent auction, and more!


http://www.chaminade.edu/grad/si/underwater_forensic_investigation.php
Chaminade University, Honolulu, Hawaii

March 23, 2013
Western NC Death Investigation Symposium
Winston-Salem, NC
kfritz@wakehealth.edu agurley@wakehealth.edu

April 26-28, 2013
Be A Diver Adventure Sports Festival
Fort Lauderdale, Florida

Jun 8, 2013 - Jun 9, 2013
SCUBA SHOW 2013 - Long Beach
Events Calendar:
Long Beach ...

November 6-9, 2013
DEMA Show 2013
Orlando, Florida

Headaches and Diving

Headaches on Descent

- **Sinus Barotrauma**
  Frontal, sphenoid, maxillary, mastoid sinuses with varied headache syndromes and positions. Associated with nosebleeds, nausea.

- **Middle Ear Barotrauma**
  Usually located in and around the ear but can be temporal, cervical and centrally located. Associated with nausea, vertigo and deafness.

- **Dental Barotrauma**
  Related to poor caries repair, incomplete root canals or any process where air remains and can cause implosion and expansion. Pain referred into the jaw, neck, sinuses and centrally.

Headaches at Depth

- **CO2 Retention**
  Due to skip breathing, gear malfunction, rebreather failure. Causes a "sick headache" type of generalized pain and can be associated with nausea and vomiting. The tendency to retain CO2 may be suspected in divers who frequently experience
post-dive headaches or pride themselves on low air-use rates

- **Tempero-mandibular joint syndrome**
  Caused by poorly fitting regulator mouthpiece, TMJ arthritis, stress with clamping of teeth. Pain can be located in jaw, temporal areas posterior cervical neck, or referred to other areas of the face and head. May be associated with tinnitus (ringing in the ear).

**Gear pressure**
- Snorkel pressure when placed under the mask strap.
- Mask squeeze with pain in and around the eyes.
- Pressure from the tank valves on the neck.
- Choking from a dry suit neck seal that is too tight (as from a neck seal in a diver who has gained significant weight) and has obstructed or blocked neck veins. The arterial supply would continue with buildup of venous pressure from obstruction of the jugular vessels.

**Neck position (cervical arthritis)**
This is seen more frequently in older divers who have any significant arthritis of the neck. Because of the prone horizontal position, the neck is continually extended (looking up position and this can cause severe neck pain with occipital radiation (radiating into the back of the head).

**Contaminated air (CO and hydrocarbons)**
Associated with nausea, malaise and vomiting, this headache is another "sick headache" that only gradually goes away with ascending and breathing uncontaminated air or oxygen. It is usually associated with more serious signs and symptoms of hypoxia and decrease of consciousness.

**Headaches on Ascent**
- Continuation of the headaches at depth
- **Reverse sinus and middle ear squeeze**
- Sinus and middle ear swelling, edema and blood accumulation act to block the openings to the nose and as the diver ascends, there is an enlargement of any air pockets with severe pain - usually experienced by the diver as a boring localized headache that often is referred to the entire face and head.

**Exertional Headaches - Swimmer's migraine, Swimmer's vascular headache**
These headaches are reported in the literature and are generally thought to be due to combinations of cold, immersion and vascular dilation.

**References:**
Swimmer's Migraine
[http://snipurl.com/odp9](http://snipurl.com/odp9)
Swimming Induced Vascular headache
[http://snipurl.com/odpi](http://snipurl.com/odpi)
Benign exertional headaches induced by swimming
[http://snipurl.com/odqv](http://snipurl.com/odqv)
Swimming headache followed by exertional and coital headaches.
[http://snipurl.com/odqw](http://snipurl.com/odqw) or [Migraine](http://snipurl.com/odqw)
  Migraine can be brought on by diving and can mimic headaches caused by other things - mainly decompression accidents.
Decompression accidents

Headache is not a prominent symptom of neurologic decompression illness but can be associated with cerebral syndromes related to paresthesias of cranial nerves.

Headaches Post-dive
Any of the above; most often sinus and CO2 retention.

1) While diving tables generally are for nitrogen absorption levels, another body gas of concern at depth is:
   a. Ecochemical R2
   b. Plasma O2
   c. Carbon Dioxide CO2
   d. Carbon Mooxide C4
   e. All of the above

2) Salt water conducts electricity better than fresh.
   a. True
   b. False

3) Divers experiencing some discomfort in air delivery or breathing while submerged should:
   a. Continue the dive but seek advice upon surfacing.
   b. Notify the buddy and commence buddy breathing to finish the dive
   c. Abort the dive and surface, reporting the discomfort to a divemaster or equivalent.
   d. Begin skip breathing
   e. Any of the above

4) Smokers should be a little more conservative in selecting dive table NDL times.
   a. True
   b. False

5) Accidents involving a submerged aircraft are governed by:
   a. OSH
   b. H/S
   c. FBI
   d. ATSB
   e. A & D

6) Skip breathing when diving is exemplified by:
   a. Holding your breath for long periods of time
   b. Reducing your intake breathing by taking only ½ normal breathing rate
   c. Taking short rapid breathing breaths
   d. Breathing from your buddies tank
   e. Any of the above.

7) Equipment used for search and recovery should have some form of _________,
either owned or on mutual aid agreement.
  a. ATM
  b. Complete rebuild kit
  c. ROV
  d. SSA
  e. All of the above

8) Swim beaches could contain contaminants and should be checked before performing diving activities.
  a. True
  b. False

9) Symptoms of CO2 problems are shown by:
  a. Headaches
  b. Nausea
  c. Malaise
  d. Vomiting
  e. Any or all of the above

10) Bacteria is more prevalent in lake water than chemicals in general tests.
  a. True
  b. False

11) Developing a headache on ascent could be due to a reverse sinus or middle ear squeeze.
  a. True
  b. False

12) Any medical issue should be reported to your supervisor either upon surfacing or delayed post dive.
  a. True
  b. False

**TEAM DISCUSSION**

1. Discuss with your team the medical program you have. Do you address the diving contraindications.
2. Discuss with your team the air quality (tank) program you have. If none, consider adding and SOG/SOP to address the issue. Grade D or Better!
3. Discuss with your team the Aircraft Transportation Safety Board guides and rules for activity performed prior to their arrival and during their stay.
4. Discuss the importance of working with adjacent dive teams and the need to train together.
5. Discuss the related function of an ROV and how it may help in your searches.

**IMPORTANT NUMBERS:**

Chemical spill information can be obtained by calling 1-800-424-9300.

DAN Medical Information Line at 1-919-684-2948
DAN operates a 24-hour emergency hotline (1-919-684-9111) to help divers in need of medical emergency assistance for diving or non-diving incidents

Centers for Disease Control and Prevention
1600 Clifton Rd. Atlanta, GA 30333, USA
800-CDC-INFO (800-232-4636)
cdcinfo@cdc.gov
These training agencies have recognized PSDiver Monthly as a valued addition to their programs and Continuing Education requirements.

**Public Safety Diving Association (PSDA)** recognizes and approves the PSDiver CE program. Each month’s Q&A program credits 1 CEU for renewal up to a maximum of 3 CEUs from this source for each year’s renewal.

**ERDI** Recognizes and supports the PSDiver Monthly CE Program. Contact your ERDI Instructor for details.

**Life Saving Resources**
Lifesaving Resources advocates the need for Public Safety and Rescue personnel to be trained in Water and Ice Rescue and recognizes the PSDiver Monthly CE Program for continuing education training and credits.

**Lifeguard Systems – TEAM LGS**
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Continuing Education Editor: Chuck Elgin

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Humor in Action ...

The following is an actual question given on a University of Arizona chemistry mid term, and an actual answer turned in by a student.

The answer by one student was so 'profound' that the professor shared it with colleagues, via the Internet, which is, of course, why we now have the pleasure of enjoying it as well:

Bonus Question: Is Hell exothermic (gives off heat) or endothermic (absorbs heat)?

Most of the students wrote proofs of their beliefs using Boyle’s Law (gas cools when it expands and heats when it is compressed) or some variant.

One student, however, wrote the following:
First, we need to know how the mass of Hell is changing in time. So we need to know the rate at which souls are moving into Hell and the rate at which they are leaving, which is unlikely. I think that we can safely assume that once a soul gets to Hell, it will not leave. Therefore, no souls are leaving. As for how many souls are entering Hell, let’s look at the different religions that exist in the world today.

Most of these religions state that if you are not a member of their religion, you will go to Hell. Since there is more than one of these religions and since people do not belong to more than one religion, we can project that all souls go to Hell. With birth and death rates as they are, we can expect the number of souls in Hell to increase exponentially. Now, we look at the rate of change of the volume in Hell because Boyle’s Law states that in order for the temperature and pressure in Hell to stay the same, the volume of Hell has to expand proportionately as souls are added.

This gives two possibilities:

1. If Hell is expanding at a slower rate than the rate at which souls enter Hell, then the temperature and pressure in Hell will increase until all Hell breaks loose.

2. If Hell is expanding at a rate faster than the increase of souls in Hell, then the temperature and pressure will drop until Hell freezes over.

So which is it?

If we accept the postulate given to me by Teresa during my Freshman year that, 'It will be a cold day in Hell before I sleep with you,' and take into account the fact that I slept with her last night, then number two must be true, and thus I am sure that Hell is exothermic and has already frozen over. The corollary of this theory is that since Hell has frozen over, it follows that it is not accepting any more souls and is therefore, extinct..... ....leaving only Heaven, thereby proving the existence of a divine being which explains why, last night, Teresa kept shouting 'Oh my God.'

THIS STUDENT RECEIVED AN A+.

PSDM 98 CE Answers

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