

QUARTERLY
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FIRE CAUSE INVESTIGATION

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OSHA requires Fire-Resistant Clothing for Most Oil and Gas Well Drilling Servicing...



Frank Johnson, P.E.
President / CEO

OSHA regulation 1910.132(a) requires Personal Protective Equipment (PPE), which can include Fire-Resistant Clothing (FRC). OSHA issued an interpretation on March 19, 2010, which defines the requirements for oil/gas production, drilling, and well servicing operations.

In summary FRC's are required for drilling in active hydrocarbon

zones; however, they are "usually not needed during rig-up and normal drilling..." FRC's are required "during well servicing or work-over operations..." The interpretation should be referenced for more detail.

In general, the industry is aware of the requirement for FRC's as evidenced by the following references:

1. Society of Petroleum Engineers (SPE), SPE 94416 – Upstream Onshore Oil and Gas Fatalities: A Review of OSHA's Database and Strategic Direction for Reducing Fatal Incidents, 2005;

2. National Fire Protection Association (NFPA), NFPA 2112 – Standard on Flame-

Resistant Garments for Protection of Industrial Personnel Against Flash Fire, 2007 Edition;

3. National Fire Protection Association (NFPA), NFPA 2113 – Standard on Selection, Care, Use, and Maintenance of Flame-Resistant Garments for Protection of Industrial Personnel Against Flash Fire, 2007 Edition; and

4. OSHA, March 19, 2010 Interpretation –

Enforcement Policy for Flame-Resistant Clothing in Oil and Gas Drilling, Well Servicing, and Production Related Operations.



If you need more information or would like to discuss the above, contact **Frank Johnson, CSP, P.E. at 800-624-0905 or fjohnson@sealcorp.com.**

Personal Watercraft Safety

Use of personal watercraft such as Jet Skis, Sea Doos and Wave Runners continues to grow. These watercraft are small, fast and highly maneuverable.

Personal watercraft (or PWCs) are subject to all boating laws, plus regulations specific to operating PWCs. Check the Texas Water Safety Act for a complete list of rules and regulations.

Here are some important rules for personal watercraft:

- Children under 13 are prohibited from operating a PWC unless accompanied on board by a person at least 18 years of age.
- A Texas Parks and Wildlife boater education certificate and photo ID is required for operators between 13 and 17 years of age. A person is exempt from mandatory boater education requirements if they are at least 18 years of age.

Kawasaki Law

Wave

A U.S. jury has awarded \$3 million to a Bahamian - student in a lawsuit originating from a local jet-ski incident - a case that could change global manufacturing of the watercraft from here on out.

A jury in a U.S. District Court in Savannah, Georgia on August 9 ruled that manufacturer Kawasaki was to pay 26-year-old Megan Sands for injuries she suffered in a jet-ski accident in 2006.

The case, however, may have bigger implications for The Bahamas and the entire industry, argues her Bahamian-born attorney Robert Parks.

"Manufacturers are going to have to pay attention to addressing the problem," he told Guardian Business.

'People in The Bahamas who rent jet skis are now on notice [and] if I go to Cabbage Beach and say I want to rent a jet ski from in the back of Atlantis, those people are now responsible because they are renting jet skis with known defects and bad label.

"So hopefully this will have an impact on that part of the industry."

The incident stems back to May 21, 2006 when Sands, whose parents are William and Cheryl Sands, was visiting Nassau and decided to go with her friends to Rose Island. She boarded from the passenger side and the watercraft operator proceeded slowly along the beach, said a release on the situation. The watercraft stopped and Sands spent several minutes talking with her friends, before deciding to head back. However, when the jet ski operator hit the throttle and lost control of the watercraft, Sands was thrown off the back of the craft and consequently, suffered multiple injuries from the powerful jet of water coming from the stern.

"We sued Kawasaki on several grounds," Parks said in a public statement. 'First, the jet ski as designed was unreasonably dangerous to users, particularly to passengers, because it does not have a rear seat guard to prevent this kind of accident."

While the jet ski carried a warning advising users to wear a wet suit or protective clothing, the jury decided that the general requirement for all personal watercraft manufacturers since the early 2000's was not enough in this case.

"The jury found the warning was inadequate and that the defendant was liable for negligent design," added Parks.

Kawasaki Lawsuit

Makes Waves!

Michael A. Burlison, P.E., CSP
VP, Engineering Science



“We hope that this verdict will put manufacturers on notice that they need to pay far more attention to safety, so that future tragedies can be prevented.”

He said Sands, who recently earned a master’s degree in counseling at Georgia Southern University, was in a particularly good position to win the case, given the Bahamian citizen was technically a resident in Georgia at the time.

“The American courts, both state and federal,” he added, “are getting tougher for any person who is from The Bahamas or from anywhere else to try anything that occurs offshore.”

SEAL Engineer, Mike Burelson, CSP, PE, provided expert testimony to the jury in this trial concerning the watercraft design defects and safer alternative designs.

Inderia Saunders – NG Business Reporter (Published: Aug. 24, 2011). Kawasaki lawsuit makes waves: U.S. jury awards \$3 million to a Bahamian student in jet ski accident, which could change safety measures. The Nassau Guardian. Retrieved October 11, 2011, from http://www.thenassauguardian.com/index.php?option=com_content&view=article&id=12365:kawasa-ki-lawsuit-makes-waves&catid=40:business&Itemid=2

This Quarter’s Q&A

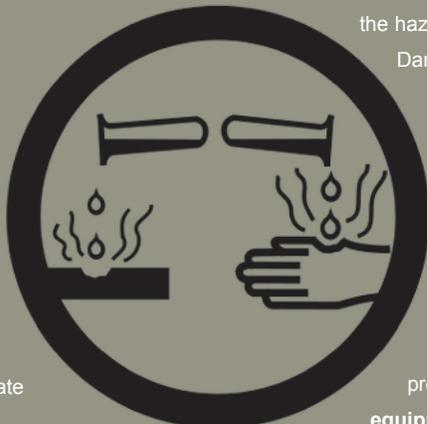
Q: What is the Hierarchy for Hazard Control?

A:

I. First, eliminate the hazard through a **fundamental design change**, or substitution.

II. Install an **engineered safety feature**, like a safety relief valve.

III. Provide a **safety barrier** to separate people from the hazard.



IV. Install **warning devices** (bells, horns) when the hazard is present. Post Caution/Warning/Danger signs.

V. After safety devices and warnings, **policies and procedures** should be administrated to protect people from the hazard.

VI. If the hazard cannot be eliminated, guarded against, or properly warned, **personal protective equipment** must be used.

Personal Watercraft Safety Con'td

- Each person riding on or towed by a PWC must wear a Coast Guard-approved life jacket or PFD.
- All equipment requirements for regular motorboats also apply to PWCs, including a sound-producing device and fire extinguisher. PWCs are prohibited on the water after sunset, and so are not required to display navigation lights.
- PWCs being used to tow someone must be rated for at least three people – the operator, the observer and the person in tow.
- The ignition safety switch must be attached to the operator, if equipped.
- PWC's need power to maintain steering control and change direction.



Resistance and Arcing: *Fire Starters?*

Arcing

An arc is “A high-temperature luminous electric discharge across a gap or through a medium such as charred insulation” (NFPA 921, Chapter 3 Definitions, 3.3.7). This discharge must be of sufficient energy to raise ignitable material to its ignition point. In the case of an arc, the relationship between the voltage, current, the medium (such as air), and the duration of the arc determines whether it is sufficient to produce ignition.

Arcing is almost never desirable since it can easily become another source of ignition. Arcing must be sufficient not only in energy but duration. Parting arcs as well as parallel arcs. Watt_seconds.

Melting of material secondary to heating. If the melting temperature exceeds the ignition temperature of material on which it falls, ignition could occur.



Kelley M. Stalder, P.E.
Electrical Engineer

The process of resistance heating is best understood by the classic analogy to water pressure and pipes. Think of the voltage as the difference between the pressure in the line behind the faucet and the outside.

When the tap is closed, the pressure in the line is static and represents the force waiting to push the water through the faucet, however no water is flowing. How fast the water flows through the faucet is directly related to the pressure difference (voltage). When the pressure (voltage) is low, the water trickles out slowly; when the pressure (voltage) is high, the water shoots out.

Current is analogous to the amount of water that flows in a specific period of time. If we take a bucket and place it under the faucet and then open the faucet for exactly one minute we can measure the flow per minute at that pressure (voltage). Again, at a higher pressure, we will have more water (current flow) in a minute than at a lower pressure. We can also increase the amount of water that flows by increasing the size of the pipe so that even at the same pressure we can flow more water. When we make this pipe larger we are reducing the resistance to the flow of water (current).

Now imagine that the water was actually a bunch a very tiny round balls, like golf balls or tennis balls. Each ball represents an electron. When we measure current, we measure the

number of electric charges that pass a certain point in one second. You can imagine that as these charges bounce around in the conductive material being used for our heating coil that they bang into larger atoms. When they do strike the atoms, they produce heat. The more charges (golf balls) that strike the atoms, the more heat is produced.

Resistance heating includes not only intentional heating devices but also unintended heating from improper installations. An improper installation generally creates heating by having a higher-than-expected resistance. This high resistance can occur because of a loose connection or because the connection develops a corroded surface over time that increases the resistance..

It is also possible to “over insulate” wiring in a structure. Typically, wiring is rated for heat dissipation and current carrying capacity based on its placement in “open air”. As soon as we run wiring inside a wall and then further insulate it, we have reduced its capacity to dissipate (release) heat. When designing for wiring, such reductions or “de-ratings” are routinely considered and can be engineered by either reducing load (and using lower amperage circuit breakers) or increasing the load carrying capability of the wire by making the wire size larger. All of these changes must be done within the safety margins specified by the National Electric Code (NFPA 70).

Resistance heating is a desirable effect; its how many of us cook our meals and stay warm at night; but resistance heating in an undesirable location, like inside the wall, can result in a catastrophe.





Chuck Boston
Certified CDR Analyst



What do "ORC, SDM, & RCM" have in Common?

They all refer to the so called "Black Box" now installed in most new automobiles.

Each is capable of recording data associated with an accident. The first "Black Boxes" were installed in General Motors vehicles in the 1990's.

The data recorded in these modules can be useful in investigating accident claims.

Examples of Crash Data parameters (not available on all vehicles):

- Vehicle Speed
- Steering Wheel Angle
- Crash Severity (delta-V)
- Brake Switch Status
- Tire Pressure
- Engine Throttle

- Accelerator Pedal Position
- Airbag Deployment Data

As you can see this data could be invaluable in determining the facts surrounding an accident.

However caution should be taken. The data should only be downloaded by a qualified/certified technician. If the proper protocol is not followed the data could be lost or corrupted

beyond use. Also without proper training and understanding on how the data is gathered by the automobile systems the data may be misinterpreted.

Current vehicles manufactured by the three major U.S. auto manufacturers plus Toyota can be downloaded using the "Crash Data Retrieval Hardware and Software System". General Motors vehicles starting with model year 1994 thru 2012,

Ford vehicles model year 2001 thru 2012, Chrysler vehicles

The data recorded in these modules can be useful in investigating accident claims.

model year 2005 thru 2012, and Toyota vehicles model year 2006 thru 2011. Not all models in every year can be downloaded. You can contact SEAL to find if a particular year model is supported.

Professional Development

System Engineering And Laboratories (SEAL) offers CE classes in various forensic engineering subjects. To receive more information contact marketing@sealcorp.com.

Consultant eNEWS Contact

Subscribe or unsubscribe by emailing System Engineering And Laboratories at newsletter@sealcorp.com. Any questions or comments please email marketing@sealcorp.com.



GMAC Insurance 7th Annual National Drivers Test Highlights.

- Northeast is the worst driving region with average scoring at 74.9 percent. Midwest is best driving region with average scoring at 77.5 percent.
- The older the wiser. Oldest drivers tested, ages 60-65, continued to have the highest average test scores at 80.3 percent.
- Be careful in the Empire State and Beltway: 1 of 3 (34 percent) of all drivers in New York and Washington, D.C. failed the test. The state with the lowest percentage of failures is Wyoming, with only 1 of 20 (4.5 percent) failing the test.
- New York no longer last: New York moves to 45th after placing last three years in a row with a score of 75.3 percent
- Biggest gains and losses: After ranking 24th place in 2010, Colorado moves to third place with an 82 percent average score. Alaska plummeted 30 spots from tenth place in 2010 to 40th place this year. Their average test score decreased from a 79.8 percent average to a 76 percent average.



H.G. "Gary" Jernigan, P.E.
VP, Mechanical Engineering

Can a Mechanical Failure Analysis (MFA) determine whether a steering component failed before or after a vehicle ran off the road into a concrete culvert? The answer is usually yes. It helps when the vehicle evidence is preserved relatively unchanged and the scene evidence is at least photographed. What can the appearance of a steering component, such as a ball joint, tell us about when and how the failure occurred and how this influenced vehicle steering?

For example, a failure in a steering component, the orientation of the vehicle? Was the angle which appears deformed and has impact of departure gradual or steep? Did the vehicle witness marks, likely failed as a result of an accident and did not fail causing the vehicle to leave the roadway. Most would probably agree that failure of a component might cause a loss of steering control. But, that would only be a cause if the failure occurred while the vehicle was driving down the road in a normal manner. In addition to the vehicle evidence, other input must be reviewed. What does the driver or witness say they saw, heard, or felt? What does the scene evidence indicate about

A mechanical failure analysis of vehicle components alone does not tell the whole story — and may lead to the wrong conclusion(s).

leave the road with side slip or with rotation? Was there a curve near the point where the vehicle lost control? Scene evidence and basic speed analysis are usually helpful in confirming a mechanical failure analysis, and they should always be evaluated. A mechanical failure analysis of vehicle components alone does not tell the whole story — and may lead to the wrong conclusion(s).

Recalled...

Bad Boy Enterprises Agrees to \$715,000 Civil Penalty for Failing to Report Defective Buggies!

EXCERPTS FROM PRESS RELEASE

WASHINGTON, D.C. - The U.S. Consumer Product Safety Commission (CPSC) announced today that Bad Boy Enterprises, LLC of Natchez, Miss., pay a civil penalty of \$715,000. The penalty has been provisionally accepted by the resolves CPSC staff allegations that Bad Boy report, as required by federal law, a defect involving Classic Buggies off-road utility vehicles with Series brand and SePex brand electric motors that resulted in sudden acceleration incidents and injuries to consumers. The off-road utility vehicles with Series motors were sold between 2003 and June 2007 and the off-road utility vehicles with a SePex motors were sold between 2007 and June 2010.

In 2008, Bad Boy Enterprises implemented a repair program for the SePex off-road utility buggies to address the sudden acceleration defect without notifying the Commission. The firm did not report to the Commission until August 2009. CPSC and Bad Boy Enterprises announced the first recall for sudden acceleration on October 21, 2009. Subsequent investigation conducted by CPSC staff uncovered that the firm failed to notify the Commission about the sudden acceleration defect and incidents involving the off-road utility vehicles with a Series motor. The firm did not give CPSC full information about the Series buggies until May 2010. The firm also reported in May 2010 that a new repair was necessary for the previously recalled off-road utility vehicles to repair the sudden acceleration defect. The second recall for sudden acceleration in these off-road utility vehicles was announced in December 2010. By that time, there were over 50 reports of sudden acceleration incidents, resulting in injuries such as arm and leg fractures, a fractured toe, rotator cuff injury, and sore muscles. CPSC urges consumers with recalled Series and SePex off-road utility buggies to call the firm toll-free at (855) 738-3711 between 8 a.m. and 5 p.m. CT Monday through Friday for a free repair.

The U.S. Consumer Product Safety Commission (CPSC) is still interested in receiving incident or injury reports that are either directly related to this product recall or involve a different hazard with the same product. Under federal law, it is illegal to attempt to sell or resell this or any other recalled product.



has agreed to settlement agreement Commission. The settlement Enterprises failed to immediately

To report a dangerous product or a product-related injury, go online to: www.saferproducts.gov, call CPSC's Hotline at (800) 638-2772 or teletypewriter at (800) 638-8270 for the hearing impaired.

Consumers can obtain this news release and product safety information at www.cpsc.gov.



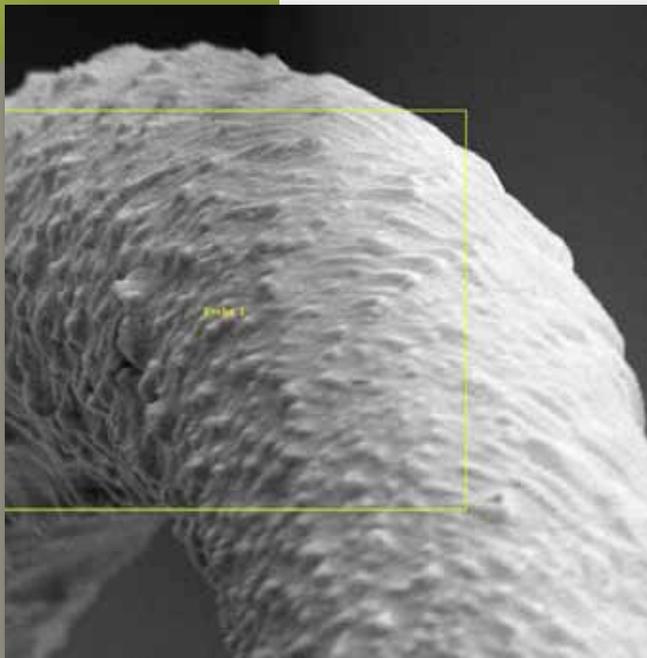
FCL: On The Fire Scene.

Know The Difference: Detection & Suppression



Fire Protection Systems are defined as detection systems that detect fires, and suppression systems that suppress fires. There are many types of detectors with different means of operating, like ultraviolet, ionic, incipient, infrared and photo. Suppression systems are wet pipe sprinklers, dry pipe sprinklers, deluge systems, carbon dioxide, dry chemical, halon, and a few others. Dry pipe systems are installed in areas that are prone to freezing, such as a parking garage.

Wet pipe sprinkler systems are very effective; in fact fully sprinkler buildings are the most effective means of protecting life safety. Sometimes (rarely) they go off prematurely and cause some water damage, but they are very effective when there is a fire. Most of the time if a sprinkler head opens prematurely, it is because they are damaged by being accidentally struck by a forklift or ladder, or something similar. If a building fire protection system is properly designed, it will put out the fire, but if the fuel load was changed or part of the system disabled, the fire may cause more damage or not be extinguished.



CAN YOU NAME IT?

HINT:

Used everytime you drive your car?

This object has been magnified 1000x with our in-house Scanning Electron Microscope (SEM).

If you think you know what you're looking at send an email to marketing@sealcorp.com or **post on our facebook page**. All correct answers will be placed in a drawing for a **\$100 dollar Visa Card** and the winner will be announced in the January Issue of the Consultant. Please include name, company, address, city, state, zip and email address.

Congratulations to Charlene Ferrucci of Metlife Auto & Home, winner of a \$100 Visa card for the answer "Paperclip" from the last quarterly newsletter. Thank you, to all that participated!

