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DEPARTMENT OF HOMELAND SECURITY
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# WebWatch

**Division 8, 5NR**
**January 2010**

A. **PRESIDENTIAL NOMINATION OF COMMANDANT**
ADM T.W. Allen, Commandant, United States Coast Guard

President Obama has approved and will forward to the Senate the nomination of VADM Robert J. Papp Jr. as Commandant of the United States Coast Guard to relieve Admiral Thad W. Allen effective 25 May 2010.

B. **CHANGE OF SHIP SECURITY ALERT SYSTEM (SSAS) ADMINISTRATION POINT OF CONTACT**
VADM R.J. Papp, Jr. Commander Atlantic Area

This ALCOAST implements changes to the United States Administration Point of Contact for the Ship Security Alert System. Effective 25 December 2009, the Atlantic Area Command Center (RCC Norfolk) 757-398-6700, will assume the responsibilities of the administration point of contact for action and disposition of SSAS alerts.

The SSAS transmits a security alert to the Coast Guard either directly or via a communications service provider (CSP) such as INMARSAT or COSPAS/SARSAT indicating the security of the ship is under threat or has been compromised. The Coast Guard must be prepared to receive security alerts directly from a shipboard SSAS, or indirectly via designated competent authorities, CSP, or authorities of other states, and relay alerts to other international contacts. To facilitate the exchange of ship and port security information, the International Maritime Organization (IMO) has developed a list of administration points of contact as required by regulation XI-2/13. The contact for the Atlantic area Command Center (RCC Norfolk) and this includes ship security alerts routed via a CSP.

C. **RELEASE OF THE FINAL ACTION MEMO (FAM) FOR THE ADMINISTRATIVE INVESTIGATION AND THE FINAL DECISION LETTER (FDL) FOR THE MISHAP (SAFETY) INVESTIGATION FOR THE COAST GUARD AIR STATION BARBERS POINT CLASS "A" AVIATION INCIDENT INVOLVING HH-65C CGNR 6505 ON 04 SEP 2008**
ADM T.W. Allen, Commandant, United States Coast Guard

At 2011 (HST) on September 4th 2008, Air Station Barbers Point Coast Guard Helicopter Number (CGNR) 6505 was taking part in a night hoisting training evolution with Station Honolulu Motor Life Boat (MLB) 47317 approximately six miles south of Honolulu, HI. CGNR 6505 was carrying 4 people: two pilots, one flight mechanic and one rescue swimmer. CG 47317 had four people onboard: one coxswain, one crewmember / break-in coxswain, one engineer and one break-in crewmember. CGNR 6505 was in the recovery phase of a hoist following a standard delivery of the rescue basket with trail line to the MLB when the mishap occurred.

As the helicopter maneuvered overhead, it descended as the MLB rose on a swell. The relative motion created excess slack in the hoist cable. Despite the efforts of the attending MLB crewmember, the excess cable entangled on the MLB engine room dewatering standpipe on the aft buoyancy chambers forward face. As the MLB rode down the swell and the helicopter maneuvered to regain altitude, the cable became taut, physically pulled the helicopter down to the right and then parted under tension at the engine room dewatering standpipe. The cable parting induced an unusual attitude recovery (extreme yaw to the left), during which the main rotor blades contacted the hoist boom assembly. This created a significant out of balance condition that caused severe vibrations for the remainder of the flight. The main gearbox suspension system was also compromised at this point from the forces of extreme dynamic loading. Despite the severe vibrations, the aircrew recovered from the unusual attitude, and in the process, flew away from the water. They also made several Mayday calls that were overheard by the MLB crew, sector Honolulu, and Honolulu International Airport Air Traffic Control Tower. Approximately three minutes later, the damage to the airframe was compounded by deterioration of components of the rotor system, further degrading the airworthiness of the helicopter. The aircraft departed controlled flight at approximately 500 feet and 40 kts and entered an uncontrolled descent to the surface. All four people onboard CGNR 6505 were killed and the aircraft was lost. No injuries to the MLB crew or damage to the MLB occurred as a result of this mishap.

The release of the FAM and the FDL signals the completion of rigorous administrative and mishap (safety) investigations, analysis and high level review of the circumstances which led to the loss of CGNR 6505 and crew on 04 Sep 2008. The primary purpose of the administrative investigation was to make findings and provide information upon which to base decisions and take action.

The sole purpose of the mishap investigation was to determine the causal factors and underlying conditions that contributed to them. Both the FAM and the FDL summarize actions taken since the accident and task various Coast Guard programs with required actions to identify/avoid similar hazards and their consequences in the future. All members of the Coast Guard are highly encouraged to read the FAM and

the FDL posted in the FOIA reading room at: http://www.uscg.mil/foia/reading-room.asp .

Capt Thomas Nelson, LCDR Andrew Wischmeier, AMT1 Joshua Nichols, And AST1 David Skimin made the ultimate sacrifice while serving our nation. It is up to all Guardians to reflect on our loss, to do everything possible to ensure that we act on what we have learned, and to prevent this type of tragedy in the future.

D. **APPROVAL OF ENTERPRISE WIDE INDUSTRIAL SERVICES (EWIS) BUSINESS PROCESS REENGINEERING (BPR) MANAGEMENT PLAN**
VADM J. P. Currier, Chief Of Staff

1. On 13 November, the EWIS BPR management plan was approved. This marks a major milestone in the evolution of the mission support organization. The management plan affects the program management, production and support operations at the fourteen Coast guard industrial support activities and detachments. These support activities and detachments provide depot level maintenance, repair, and overhaul to shore infrastructure, surface forces and aids to navigation throughout the Coast Guard. The business process reengineering effort is designed to provide better oversight, management, and support to the Coast Guard industrial program. It is expected to create efficiencies through implementation of standard business processes and establishment of a centralized industrial management staff. Standardizing business processes across the enterprise will aid in achieving CFO compliance, improving safety and delivering the right products at the right cost to our operational partners.

2. While not formally a part of modernization, the EWIS BPR management plan directly aligns with the four cornerstones of the Coast Guard's new business model: total asset visibility, product line management, configuration management, and bi-level support.

3. Approval of the management plan kicks off the beginning of a phase-in period, with the first formal performance period scheduled to begin on 1 Oct 2010. During this period, teams within the industrial program will be working with unions, future DCMS directorates, and the personnel service center to make the transition occur in a smooth, coordinated fashion.

## E. A Checklist for Getting Underway

Bob Adriance**,** Seaworthy Magazine (A Boat US Publication)

**Who Needs Checklists? Older Skippers Tend to be Forgetful. Younger Skippers Lack Experience . . . Maybe *Everybody* Needs Checklists!**

Capt. Eric Mold, a retired Air Force pilot, wrote *Seaworthy* a while ago about the importance of making and using checklists aboard a boat. Now that he's getting older, Capt. Mold describes himself as "list crazy", but it wasn't always so. Years ago, when he was learning to fly airplanes, he'd dash through his pre-flight checklist "with a cadence that almost equaled the speed of sound." He and the other young military pilots viewed the long list of safety checks with youthful impatience, even though he says there were incidents that might have been averted if the pilots had been take the routine a little more seriously.

Capt. Mold's views changed years later when he was promoted to a Nuclear Bomb Commander; even the brashest pilot tends to become a stickler for pre-flight details when a careless oversight might level a city. He is quick to point out that largely because of checklists, there has never been an accidental nuclear explosion.

On the other hand, there have been lots of boats that ran out of gas, got lost, had engine breakdowns, sank, burned, grounded, or had crews turn mutinous because the skippers forgot to open an engine intake, add oil, fill the gasoline tank, clean out the strainer, pack a lunch, etc. Maybe a solitary boater won't level a city accidentally, but a lot can go wrong when you get sloppy on the water.

The checklist below is meant as a guide only. Use it during the off-season hiatus to custom-make a checklist for you own boat and needs. And don't forget to use it next summer.

- The Basics

Install the drain plug. If the boat is kept on a trailer, davits, or dry stack, the drain plug should have been out while the boat was being stored. On any boat, be sure to check the bilges.

Open engine and deck hatches. You and your boat both benefit from fresh air below.

Have you filed a float plan? At least let someone know where you intend to go; when you plan to return; and how many people are aboard.

Are you sure the boat is not overloaded? If the boat is under 20', check the capacity plate for the maximum persons and weight the boat should carry.

- **Gear**

PFDs. Is there a PFD for each person aboard? Are they in plain sight or do you need to let people know where they are?

How about the rest of the basic equipment; flares (check the expiration date), flashlight, anchor, first aid kit, spare oil, drinking water, tool kit, bilge pump or bailer?

Does everyone know how to operate the head? Learning by experience could be embarrassing for them as well as troublesome for you.

Do you have a chart for the area where you will be going? Is it at the helm where you can refer to it often?

Did you leave anything in the car?

- **Safety**

Position your nose as low as possible in the bilge and sniff for gasoline or propane vapors. If any are detected, get everyone away from the boat and notify your dock master or harbor authorities. (Send guests to get breakfast and forget the rest of the list; your trip will be delayed.)

Switch on your VHF and listen to the NOAA weather forecast. When you're done, leave the VHF radio set on channel 16.

Are there children or guests aboard new to boating who should be cautioned about keeping hands and feet inboard and away from lines, winches and cleats; staying seated; holding on when going below; or avoiding other hazards?

- **Engines and Generators**

Open seacocks, fuel valves, and align battery starting switches.

Check fuel, engine oil and coolant levels.

Look at hoses, fittings, tanks, thru-hull fittings, etc. Leaks, loose wires, etc. could be a sign of serious trouble and should be investigated.

Run bilge blower for at least four minutes before starting the engine.

Check flow from overboard discharge to make sure cooling water is being circulated.

Disconnect AC power cord, water hose, and unnecessary dock lines.

After a warm-up period, check gauges for proper readings. Also, recheck engine for leaks.

- Personal

Stow loose gear to prevent it from spilling onto the cabin sole; open or close ports and hatches to keep water out but provide ventilation according to anticipated sea conditions.

Wind and current. Observing can help or hinder a smooth departure. Plan maneuvers before casting off.

Cast off! Bring in the fenders to look trim and ship shape, and coil dock lines so they are ready to use. And don't get so distracted as you leave the marina that you fail to watch out for incoming boats.

## F. Ethanol and Boating

Seaworthy Magazine (A Boat US Publication)

On November 11, the U.S. Environmental Protection Agency delayed making a decision on a petition to increase the amount of ethanol in gasoline to 15% (currently it's limited to 10%). Rather than deny the petition filed by a pro-ethanol industry lobby, the agency said it will review tests of "mid-level" ethanol blends in newer automobiles before revisiting the waiver in mid-2010.

Focusing on automobiles ignores millions of other gas-powered engines, including boat engines, that ethanol is known to damage. BoatUS urges the agency to use the next six months to consider the effects of higher ethanol blends on all gas powered engines, and not on just newer automobiles.


BoatUS supports a common-sense approach to the use of alternative fuels as a way for the nation to diversify its sources of energy. The Association is part of a coalition of 46 motor sports, environmental, food and citizen advocate groups under the banner followthescience.org. BoatUS is also a member of AllSAFE, the Alliance for a Safe Alternative Fuels Environment. The association urges anyone concerned about a higher percentage of ethanol in gasoline and the lack of testing to contact their Members of Congress.

## G. Results of BoatU.S. Sponsored Fuel and Fiberglass Gas Tank Tests

Frederick G. Hochgraf, Senior Scientist, NH Materials Laboratory

Soon after the Long Island Sound area of New York switched to gas mixed with ethanol, BoatU.S. began receiving calls from boaters who owned older gas-powered boats with fiberglass fuel tanks. The tanks, it seemed, were being slowly dissolved by ethanol; black stuff was building up on valves and intakes, destroying engines and some fuel tanks were becoming soft and even weeping fuel. Since then, BoatU.S. has sponsored several tests to find out exactly what the problem is. Here are the results of what we have learned so far. We've highlighted the important aspects in each case.

- **Tests of the black material from an intake valve:**

"A portion of the black material was scraped from the intake valve, pressed flat, and transferred to a potassium bromide crystal plate. The sample was then analyzed by Fourier Transform Infrared Spectroscopy (FTIR), which produced an infrared spectrum. As indicated on the spectrum, the peaks at 2800-3000 cm-1 are due to Carbon-Hydrogen absorptions; the strong absorption at 1730 cm-1 can be from Esters or Ketones. The small sharp peaks at 1460 and 1370 cm-1 are indicative of Hydrocarbons. Finally, the large broad peak seen from 1000-1200 cm-1 is due at least in part from Carbon-Oxygen single bond absorbers. **It can be said that this spectrum is consistent with the presence of polyester, whoever this cannot be unequivocally proven from this spectrum alone."**

- **Test of fuel from an affected boat**:

EPA 8260 fuel analysis of a sample of fuel taken from a 1968 Bertram 31 located on Long Island Sound indicated 736,426 µg/L of styrene, a component of polyester resin.

- **Test of sections of fiberglass fuel tanks from a 1967 and 1970 Bertram:**

Testing Summary:
To date, the testing done by IMS, LLC indicates that the **two fuel tank samples have undergone some aggressive degradation (40% of their strength)**. The bottoms of both tanks have lost more strength than the tops. The older tank (1967) was laminated to a much higher level of quality in terms of entrapped air and fiber roll out. The mode of property reduction in the newer tank (1970) appears to be both resin softening and loss of adhesion between fiber and resin. This is evidenced by a moderate loss in both strength and stiffness. The older tank has lost nearly a similar amount of strength but has retained all its original stiffness. This indicates some resin degradation has occurred but no loss of the fiber/resin interface's integrity has occurred.

Both tanks were produced using a fire retardant resin system although we feel the base resins for each tank are of a different type. Both tanks have absorbed in the range of

4.2% fuel into their volume over time (tank bottoms). The top of the newer tank has also absorbed over 4% fuel. The top of the older tank has absorbed 2.2% fuel over time.

- Tests of Fiberglass Fuel Tank Samples

We recently analyzed intake valves having heavy, black deposits under the crowns. The valves we have received to date had been taken from gasoline engines in older yachts that had recently changed over to gasoline containing ethanol. Bent pushrods and bent valves have been reported with heavy engine damage when pistons impacted the valves.

We removed some of the black sludge from under an intake valve crown. We soaked the sludge in ethanol and, after taking the extract down to dryness, we obtained the infrared absorption spectrum. We found that the material is di-iso octyl phthalate.
We ran a series of experiments using straight gasoline and gasoline with 10% ethanol on fiberglass coupons and coupons of filler taken from one of the fuel tanks of the vessel from which the valves had been taken. Shortly before engine failure that vessel had changed over to gasoline having 10% ethanol. The results can be summarized as follows:

> With both the straight gasoline and the gasoline having 10% ethanol, analysis by Gas Chromatography Mass Spectrometry (GCMS) shows that the fuel's lightest fractions were absorbed into both fiberglass and filler. Noting the very high flammability and volatility of these light organic compounds, boaters needs to be alert to possible outgassing and fire/explosion hazards.
>
> GCMS shows that the gasoline having 10% ethanol picked up four very heavy molecules from the fiberglass and two from the filler. The molecular weights of these molecules were in the range of 281 to 379. The straight gasoline did not pick up these molecules. Evaporating the straight gasoline we were left with a thin film. Evaporating the samples that had picked up the heavy molecules we were left with heavy, brown sludge. Infrared spectroscopy showed molecular similarities between the sludge, and the material taken from under the intake valve crowns.

This is what we believe is happening:

> Polyester resins, gel coats and fillers commonly incorporate phthalates. In even the best resins and layups a small proportions of these phthalates remain

unreacted. There are several water soluble molecules that are found in these materials and they play a central role in blister formation and delamination. **Phthalates are only sparingly soluble in water, however many are readily dissolved by ethanol.**

Whereas gasoline free from ethanol never picks up phthalates, when ethanol was introduced the very small ethanol molecules diffused into the fiberglass, filler and gel coat materials where they dissolved unreacted phthalates. Having been dissolved by smaller molecules, and almost certainly accelerated by osmotic pressure, some portion diffused back to the surface and was dispersed in the gasoline. Based on our GCMS results to date there are some other, presently unidentified, large molecules that were also leached out by the ethanol and similarly transferred into the gasoline.

This internal solution and diffusion back to the surface is the process of leaching.

**Since they are in solution, the phthalates and the other heavy dissolved molecules are able to pass through the fuel line filters.** When the gasoline with ethanol evaporates in the carburetor the heavy molecules do not evaporate but come out of solution and are carried along in the air-fuel mix as an aerosol. When the droplets impinge on throttle plates and on the walls of the induction system they can collect as reported by Chuck Fort at BoatU.S. We do not presently know if after impingement the films are immobile or if they are able to migrate through the induction system towards the intake valves. **Some of the molecules that impinge on the hot valve stems and under the crowns decompose to leave carbon powder and ash. Others, such as the phthalates that in general have exceptional high temperature stability, remain intact or undergo only partial decomposition and then act as the binder that holds together the carbon particles and ash as the observed, black sludge.**

- Fiberglass Tank and Residue Analysis

Analysis of a piece of fiberglass tank (sample 1) and residue from tank (sample 2). Samples were examined using stereomicroscope and Fourier Transform Infrared Spectroscopy (FTIR). Sample 1 showed that the inside section of the tank has begun to erode. Portions of the resin material are flaking off in sheets, exposing the actual fiberglass webbing. Additionally, the resin on the inside of the tank had tiny granular particles adhering to the sheets that were delaminating from the inside surface. Examination of the residue (sample 2) showed sheets of resin-like

material, with a similar appearance as the material flaking off the tank. The sheets observed in sample 2 also had tiny granular particles adhering to the surface as viewed with the aid of the microscope.

Analysis of the resin and granular material from sample 1 and the residue and granular material in sample 2 showed they had a similar composition. **This indicates that the residue in sample 2 is coming from the erosion of the tank material (sample 1).**

- Other Independent Test Results

  Chemical Resistance Data From A Leading Epoxy Supplier. The test was made using the company's most resistant epoxy and exposing fiberglass lab samples to 10% ethanol gas and regular unleaded gas as well as diesel and aviation gas.

  The results for the ethanol gas showed a 10% loss in hardness and a 10-15% loss of compressive strength over a 16 week period. It is likely that the loss of hardness and strength would continue to fall at a similar rate over time. The unleaded gas, diesel, and aviation gas tests showed virtually no change.

- Ethanol and Fiberglass Tanks - Test Results are Discouraging. Meanwhile, Problems With Fiberglass Tanks May be Spreading

  The January 2006 issue *Seaworthy* reported on several engines in the Long Island Sound area that seemed to have been badly damaged when fiberglass tanks that had been filled with ethanol-enhanced gasoline started to fail. Some of the tanks had begun leaking. *Seaworthy* has since received dozens of additional complaints, which, again, were mostly from the Long Island Sound area.

  New York state recently switched their oxygenated gas mix from MTBE (an ether) to a blend of 10% ethanol. There have also been three complaints of the problem from California, which mandates a 5.6% blend of ethanol, as well two reported problems from the Great Lakes. Ethanol blends of up to 10% have been used in he Midwestern states for a many years.

The reports are all remarkably similar—a black sludge coats intake manifolds and builds up on intake valves, which soon destroys the engine. Most of the reports still involve fiberglass tanks made before the mid-80's by notable manufacturers

such as Hatteras, Bertram, and Chris Craft. We've even received reports from owners of small outboard powered boats that had been using portable fiberglass tanks.

- Fiberglass/Ethanol Test Results

  BoatU.S. sponsored lab test on two badly deteriorated fiberglass tanks to help confirm that the problems were indeed being caused by ethanol. The results, as expected, were not encouraging; though the report is full of hard to pronounce chemical names and expensive sounding equipment, the bottom line is that the tests indicate that two fuel tanks have undergone aggressive degradation—losing up to 40% of their strength. The report goes on to say that there is "resin softening and loss of adhesion between fiber and resin, evidenced by a moderate loss in both strength and stiffness."

  A separate test, this one on ethanol-enhanced gasoline taken from a fiberglass tank, revealed the presence of styrene, a component of polyester resin that is used to make fiberglass fuel tanks. According to the EPA, styrene should not be present in gasoline. Another lab test of the black stuff on a valve showed what appeared to be degraded polyester.

  An independent test done by New Hampshire Materials Laboratory seems to indicate that ethanol reacts with chemicals in the resins and causes a reaction much like osmotic blistering, only at a much faster rate. The report says that ethanol dissolves uncured phthalates in the fiberglass (the same chemical that can cause osmotic blistering of a boat's hull), which then pass through the engine's filters and get deposited on the intake components.

  Finally, chemical resistance data from a leading epoxy supplier showed that even epoxy can be attacked by ethanol. The test was made using the company's most resistant epoxy and exposing fiberglass lab samples to 10% ethanol gas and regular unleaded gas as well as diesel and aviation gas. The results for the ethanol gas showed a 10% loss in hardness and a 10-15% loss of compressive strength over a 16-week period and it's likely that the loss of hardness and strength would continue to fall at a similar rate. The unleaded gas, diesel, and aviation gasoline tests, none of which contained ethanol, showed virtually no loss of strength.

- **What to Do?**

  Many boaters have made the decision to replace what were thought to be superior fiberglass gas tanks with aluminum tanks (tank replacement is not covered by insurance). *Seaworthy* has talked to resin manufacturers who say that there are resins that resist ethanol, but simply coating a tank with one of these resins is not likely to work, since the tank has to be thoroughly cleaned and prepped on the *inside* and the resins have to be specially cured.

  The good news is that the requirement for oxygenated fuel has been dropped by the EPA this year. The bad news is that the recent energy bill introduced by the federal government calls for billions of gallons of ethanol to be used in the nation's fuel supply. And since there is a tax incentive for ethanol, more states are planning to use gasoline. (New Jersey, for one, will begin switching over about the time this issue is mailed.)

  What can an owner of a gas-powered boat with fiberglass tanks do? There doesn't appear to be any quick fixes or magic additives that can slow the degradation of fiberglass tanks. Tank replacement is the only sure cure. In the meantime, owners of these boats are urged to install gasoline vapor alarms.

**H. Life Jacket Loaner Program for Kids!**
Seaworthy Magazine (A Boat US Publication)

Every parent wants to make sure his or her child is as safe as possible, and that goes double for parents who take their kids on the water. The BoatUS Foundation for Boating Safety & Clean Water makes it easier for boating families to stay safe with its national life jacket loaner program. Around the country, over 350 marinas, fuel docks, BoatUS Towing Operators, Army Corp recreation sites and other waterfront businesses lend out kids' life jackets for the day or weekend to families who have a temporary need for one.