

## Chapter 19 Safety

### **Flares**

Before we left the SF bay area in late 2005, Janet and I, along with Jim Shates (AT34-#47 “Annie’s Song”) had the opportunity to attend a 'Flares Shoot Off' session that was sponsored by the Olympic Circle Sailing Club in Berkeley. If you ever get the opportunity to attend to one of these, you should definitely go.

It was very informative in that you got the opportunity to learn about the types of flares that are available, as well as learning how to safely set them off. Everyone who attended had the chance to actually set off one or more flares. While West Marine provided several flares of various types that were within date, attendees were encouraged to bring their expired flares in order to set them off and/or safely dispose of them. As anyone knows who’s tried to dispose of old flares, it’s not that easy. They are considered Hazardous Waste and you are not allowed to just ‘throw them out.’

There were about 20 or so folks there together with lots of expired flares. Most folks brought flares that expired in the early 90's. Only aerial and hand-held flares were permitted. Smoke flares were not allowed due to the proximity of the shoot off to a busy highway.

We dug-out our 'oldest-of-the-old' flares, mostly SOLAS parachutes and hand-held flares with expiry dates ranging from the mid 1980s into the early 1990s. Like pretty much everyone else there with old flares, we had stored them inside our boat in waterproof bags.

Besides having the opportunity to actually shoot off the flares, the most interesting part of the day was seeing the failure rates of the old flares. There were definite patterns based on the type of flare and brand for what worked and what didn't. From the worst to the best, these were our observations and conclusions.

### **Skyblazer hand-held pencil flares**

These things are, to be frank, crap! Of the 6 we brought, 5 did absolutely nothing. The one that did manage to shoot off did not ignite. Granted ours had expired, but there were some other folks there with current versions and they had similar results. I've heard these have really high failure rates, but I honestly didn't expect it to be that bad.

### **12 Gauge Flare Guns**

We didn't bring any of these, but lots of other folks did. Almost all fired (maybe 90%), but they went maybe 100ft and were back down into the water within the blink of an eye. You'd have to be looking in the area of the flare at the time it was shot up in order to see it – not very impressive.

### **25mm Flare Guns**

There are two types of 25mm flares, the regular type that go up and then come right down similar to the 12 gauge flares as well as parachute flares. The 'up and down' flares seemed to have a failure rate of about 20% - slightly higher than the 12 gauge. The ones that went off, however, seemed to go higher and burn brighter than the 12 gauge flares. The 25mm parachute flares were markedly better. They all fired, went much higher and came

down slowly – providing prolonged visibility.

### **SOLAS Parachute Rocket Flares**

Easily the best flares by far were the self contained SOLAS parachute flares. These flares come in a tube where you pull out a pin and then push a tab up to set them off. We brought along 8 of these and they all shot off. The only failures we had were that one didn't ignite after it was shot off and one didn't deploy the parachute. They were, however, pretty old – probably 15 years past their expiry dates. The ones that did deploy were really bright and went much higher than anything else that was shot off. Since they have a parachute, they came down slowly – again providing prolonged visibility, for about 40 seconds. Probably the best part of the flares was the fact that, unlike flares that require a gun to shoot off, they did not kick back at all when they were deployed. Since they are self contained, they are also easier and quicker to deploy than those requiring a gun. All of ours were Pains-Wessex, and we noticed that they seemed to go higher and burn brighter than some of the others brands that were there.

Everyone present was suitably impressed with these: they were markedly better than anything else there. (SOLAS is the Safety Of Life At Sea convention, that sets international standards for equipment carried by commercial vessels.)

### **Hand-held flares**

Something we didn't expect to see was the huge failure rate for the large hand-held SOLAS flares. We were only able to get 3 of the 7 we brought to ignite. They also seemed a bit risky to use. One of them started to shoot flames from the back end as it was burning down. Fortunately Jim, who was holding it, quickly dropped it into a very large puddle. Even the ones that did work correctly were dropping hot bits of stuff off as they burned down. You'd definitely want to wear gloves when you light them and make sure you are holding them downwind and way out over the water - I could just imagine burning a hole in a life raft while holding one of these things. We noticed that the flares where you pull a string on the bottom had a much higher success rate of going off than the ones where you twist the bottom and give it a hard belt with the palm of your hand. We didn't get any of ours that were that type to ignite at all. Some other folks also brought some, and they only got one to ignite. Of all of the hand-held flares that did ignite, the Pains-Wessex were by far the brightest and burned the longest.

### **Conclusion:**

Based on our observations, we plan to continue to buy and carry the self-contained Pains-Wessex parachute flares. Even though they are pretty expensive (around \$50 each), they seemed to be the easiest and safest to use and provided the best visibility. We no longer carry any of the Skyblazer flares and we've relegated our remaining 12 gauge flares to the dingy.

Incidentally, the USCG requirements are very basic: a minimum of 3 approved flares of any kind. That's a joke.

### ***Fire suppression***

The engine room has a Fireboy FE-241 automatic extinguisher system installed on the aft bulkhead above the engine.

<http://fireboy-xintex.com/>

There is a date stamped onto the cylinder. The effective life is 15 years, after which it cannot be professionally re-certified.

The factory alarm for this unit is a green LED 90107 on the helm dash, which is normally lit when the engine is operating. If it goes out, the extinguisher has discharged.

I thought this was a little too subtle: I like *loud obnoxious obvious ALARMS!* I removed the green LED and installed a Fireboy DA-1001-011-R alarm and horn instead, and wired it to an 'always-on' power source (in a distribution panel under the helm). It monitors the extinguisher and sound an audible alarm if the extinguisher has gone off. It is basically a pressure sensor that triggers the alarm if the pressure in the bottle falls off.

These Fireboy accessories are at:

<http://www.fireboy-xintex.com/accessories.html>

To meet US Coast Guard regulations for an under-12 meter vessel, an AT34 needs two extinguishers. That's pretty minimal. The Fireboy automatic system counts as one.

**AT41** An AT41 needs 3 extinguishers to meet US Coast Guard regulations.

On our boat, we have 6 dry powder fire extinguishers onboard. They are mounted:

1. On the port side of the bed, next to the footlocker
2. On a small shelf to the port side of the stateroom door
3. In the engine room
4. To the starboard side of the rear door, inside the boat
5. To the starboard side of the rear door, outside the boat
6. In the dinghy.

They should be inspected annually, but for a Private vessel you don't have to do this. The USCG official 'Safety Boarding' or USCG Auxiliary Vessel Safety Check voluntary exam just check you have the required number onboard and they look operational. (Incidentally the 'even-more-voluntary' Kurt Dilworth vessel exam at the owners rendezvous is much more thorough. He checked the inspection tags.....)

I had a professional fire equipment company inspect all the extinguishers on my boat. They charged me \$10 for each (more than they cost!), and would not re-certify any over 12 years old.

I also have Inspection Tags on every extinguisher, and every six months or so I take them out of the brackets, check the gauges and shake the dry powder ones well. Then I sign and date the tag myself. I had a

### ***Bilge pumps***

The AT34 is fitted with three Rule 1500 (gph) bilge pumps, each with a Rule Superswitch float-type switch.

They are located:

1. Forward - just aft of the holding tank, under the access hatch in the head. This discharges on the port side amidships, in the forward-most of two thru-hulls (the shower sump discharges through the other thru-hull).
2. Amidships – just aft of the forward bulkhead in the tank room, under the flat floor. This discharges on the port side stern quarter, in the forward-most of two thru-hulls,
3. Aft - at the bulkhead at the front of the lazarette. This discharges on the ports side stern quarter, in the aft-most of two thru-hulls.

There is no bilge pump in the engine room. I presume because of the risk of discharging spilled oil. After some thought, I added one. It's another Rule 1500, and it discharges all the way aft via an additional thru-hull on the port stern quarter.

The pumps should be tested periodically, by lifting up the float lever by twisting the small white knob on the side of the switch.



Kurt's Tip: Put a golf pencil or eraser under the helm switches to prevent them from being accidentally moved from the 'auto' position.

### ***Damage Control***

The first line of defense is realizing there's a problem as early as possible. I know of two times when friends of mine have only discovered bilge leaks in their sailboat when they saw the floorboards floating in the cabin ! The earlier you discover the problem, the more options you have.....

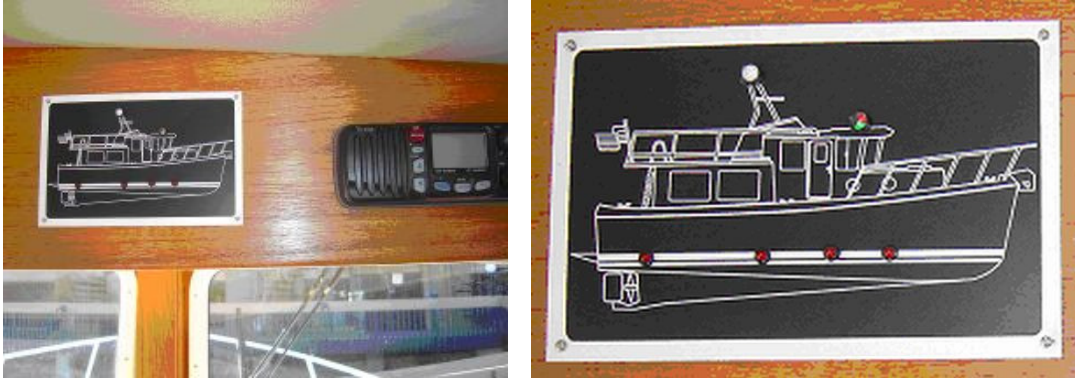
The first thing to do is taste the water. Roy Kupkowski (AT34 #039 "Mer Sea") heard his high-water alarm go off in the Canadian canals in 2006, and rapidly made emergency haulout arrangements. It turned-out to be a loose fresh water hose that dumped the tank contents into the bilge, but it certainly elevated his pulse-rate !!

### **High Water alarms**

Newer boats have a high water alarm system. It is now required by ABYC standards. It appears that Tomco are building boats to these voluntary standards.

### **Bilge Pump Alarms**

We have added an audio alarm with a counter as well as a visual placard in the pilot house that lights up whenever a bilge pump runs. With the dripless shaft seal, the bilges stay so dry that a pump running is cause for concern.



I got a local trophy-shop in California to reproduce an outline of the boat engraved in black plastic. I think it cost around \$35 for the scan/artwork setup, and around \$18 for them to engrave the plate.

If you would like for them to make one of these for your boat, the contact information is:

Contra Costa Awards & Embroidery  
Concord, CA  
(925) 687-9171

The design should be stored under my name. I specified the panel as 6 ½ X 4 ¼ inches, with 11/64 in holes drilled for the LED lights.

There are 4 Red LEDs for the bilge pumps, a white LED for the anchor light, and a segmented Red/Green LED for the navigation lights. The red LEDs are by Blue Seas (from West Marine), and the other two are from:

[www.navlightindicators.com](http://www.navlightindicators.com)

The LEDs are wired to a terminal strip behind the panel, with a common negative wire, then wired via CAT-5 eight-strand computer cable down to the console. The wires are connected to the terminal strip behind the engine instrument panel.

The anchor light and navigation light wires go to terminals marked accordingly, The bilge pump wires go to the 'manual' terminal for each of the pumps, which will light-up the LED whenever that pump runs (either manually or if the float switch activates).

### Thru-hull plugs

I have tapered wooden plugs attached to each thru-hull. I checked the sizes at a haul-out, and the sizes that fits from the outside are

- Engine Intake: 1.95in diameter at the thinnest end of the plug
- Generator:
  - Intake: 0.55in
  - Water outlet: 0.95in
  - Exhaust gas outlet: 1.15in
- Air Conditioner: 0.85in
- Holding Tank Discharge: 1.35in
- Anchor Washdown Pump: 0.55in



The removable white cap (with an 'O' ring) on the handle is sized to block the thru-hull opening as an emergency 'plug'.

### **Underwater Epoxy**

There are many kinds: impregnated cloth, 2-part putty-like mixtures, liquids. 'JB-Weld'. I have 3 or 4 kinds on boat.

I know this stuff works. Many years ago I drilled right through the hull of someone else's sailboat while installing an air conditioner. It was a 'Wile E Coyote' moment when I removed the drill, and a small fountain of water spurted upward...

I quickly filled the hole with a small bit of this epoxy, which is activated by water. It held perfectly for a year or so until I could fix it properly at a haul-out - and then tell the owner....

### **Toilet boat wax ring**

This is the large gasket sold at Home Depot to fit below a toilet boat when is seated onto the sewer pipe. It's the right size to use as an emergency gasket to seal a badly leaking stern-tube seal (the stuffing box).

### **Manual Bilge pump**

I have a Rule Gusher pump for portable use.

### **Duct Tape**

I also have rolls of electrical tape, and lots of Duct tape. Duct tape truly is 'the Jedi Force of boating.' It has a Dark Side, a Light Side and holds the Universe together...

### **Horn**

Several models of horns have been fitted to AT34s over the years, all on the port side of the 'stack':

- Electric twin trumpet (by AFI)
- Electric single trumpet
- Compressed air single trumpet
- Buell compressed air twin trumpet (an option now)

My AFI twin horns started failing at around two years. One horn quit, then eventually the other, and they always sounded 'sick'.

They sounded more like a wimpy:

"Excuse me, but if it's not too much trouble for you, I'd appreciate it if you wouldn't run me over..." than

"HELLO, HERE I AM! CAN YOU SEE ME NOW????"

## American Tug 34 Owner Experiences

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I replaced them with Buell twin trumpets on the stack, powered by an air compressor down in the engine room. Kurt kindly sent me the parts list and installation instructions that Tomco use when installing these as an option, and I ordered them directly from Buell.



Expensive, but worth it....

<http://www.buellairhorns.com>

Be aware that the website is a bit noisy when you go to it, as it sounds a horn when it comes up !

The admiral made covers for the trumpets out of screening material to help prevent unwanted guests like mud-daubers from making their home in there.