Damage Control Tools of the Trade

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Common Damage Control Scenarios

- Downflooding: Hull holed at or below the waterline as a result of collision with floating or submerged object or failed below-the-waterline plumbing (seacock, stuffing box, hose, etc).
• 40% of all underway sinking are result of striking submerged object

• 16% are a result of broken prop shaft or strut

• 16% result of damaged or deteriorated below the waterline plumbing
• Spar collapse: Mast falls as a result of metal fatigue or standing rigging failure.

• Rudder failure or loss.
Unfortunately, not every day at sea is like this…
Some are like this, or…
Like this
Dealing With Downflooding

• Find and gain access to the flooding; stop the water flow \textit{first}, then worry about pumping out.

• Shut seacocks, fill or patch the leak.

• Seacocks. Location, location, location.
DC Lessons Learned...

• Delay in dealing with leak
• DC kit missing key items

“All Is Lost”
Post a Seacock Location “Map”
Flood Rates

• A 1” hole 1 foot below the water = 1200 gallons per hour.

• A 2” hole 2 feet below the water line = 111 GPM or 6660 GPH.
• *Larger* electric bilge pumps are typically in the 1500-2000 GPH range, *under ideal conditions*.

• *Actual is often half rated capacity*
100 gallons/hour for every foot of boat length.

Submersibles only

Don’t forget the alarm.
“Electric Bilge Pump Systems Done Right”
Bilge debris is your pump’s worst enemy
Avoid the “hidden seacock” syndrome

You should be able to find and access every seacock aboard your vessel, *in total darkness, with your eyes closed and without the aid of tools.*
Cedar/soft wood plug assortment
“Leveraging” your seacocks
Seacock Durability and Strength

The 500 lb -30 Second Rule. Do yours measure up?
The “Liner” Hull Dilemma
Access, access, access.

Options for improving access to the *interior* of the hull in the event of damage...
Plan B
Cordless reciprocating saw and drill

Spare batteries

Spare high quality blades

Hole-saws

Kindling hatchet
Thin plywood patches

Drill and sheetrock screws (not for thick FRP)

Sealant
Self Tapping Screws

For FRP/Fiberglass

“Cutting Point” or PK Screws

Phillips Drive

Square or Robertson Drive
If You Can’t Access The Damage From The Inside…

Matriarch
Running The Rigging Failure

Gauntlet

• Assess damage to the hull quickly.
• Cast off the rig as quickly as possible.
• Save what you can, particularly the boom, for use as a jury rig.
Hydraulic Rigging Cutter
Adjustable wrench
Channel lock
Bolt cutter
Hacksaw and spare blades
Corrosion inhibitor
Not all hacksaw blades are created equal
A sharp file is like a sharp knife; indispensable
Clamps have a wide variety of uses.
An Ounce of Prevention…

Conduct regular rig inspections

Go up there

Remove tape and chafe gear

Un-step every 5 yrs.
Just because it still works...
Crevice corrosion and rust...
Under Cover Shroud...
The real damage revealed...
The Original Jury Rig
Be Prepared – Be Creative
Rudder Damage or Loss
Rudder Options
Prepare A Back-Up Rudder In Advance
Damage Control Summary

- Find the leak and fix it without delay. Keep the pumps clear.
• Don’t succumb to the shock of losing your rig or rudder, or you may succumb to the shock of losing your boat.

• Act quickly and calmly to prevent the rig from damaging your (life) boat.
Thank You