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A WORD OF CAUTION ABOUT A MISAPPLICATION OF THE PARDEY METHOD:

Safety At Sea is concerned about a misapplication of the tactic promoted by Lin and Larry Pardey to Para-Tech Sea Anchors.

In their books and video the Pardeys tell of their experiences lying to a sea anchor at an angle, using a bridle and a riding sail arrangement unique to them. The parachute used by the Pardeys was a high-porosity ex military Buord with a nominal diameter of 9-ft. (inflated diameter 6-ft.), which is small by accepted standards (see *Heavy Weather Tactics Using Sea Anchors & Drogues* by Earl R. Hinz and *Drag Device Data Base* by Victor Shane).

The Pardeys' system of setting up a square drift (turbulent field) by dragging a small, porous parachute through the sea appears to work for their vessel, but we do not recommend it in association with large-diameter, non-porous, (high-drag) Para-Tech Sea Anchors.

From our knowledge base the parachute needs to be large enough to (A) overcome the lateral resistance of any keel and (B) to properly "anchor" a vessel to the surface of the sea. In light of this, a 25 or 30ft sailboat with a full keel will need a 12 or 15-ft. diameter zero-porosity Para-Tech Sea Anchor.

In anchoring a yacht to the surface of the sea, a correctly sized, properly rigged Para-Tech Sea Anchor can place a monohull or multihull in an optimal defensive posture. With her attitude restrained and her bow/s held high into seas, the vessel is least susceptible to the adverse, cumulative and oft catastrophic effects of kinetic and inertial energies.

Kinetic energy is energy of motion. The kinetic energy of a yacht depends on two variables: her mass (m) and her speed (v). The following equation is used to represent the kinetic energy (KE) of a yacht in a seaway:

$$KE = \frac{1}{2} mv^2$$

The equation shows that the kinetic energy of a yacht is directly proportional to the square of her speed. Meaning that for a twofold increase in speed, the translational kinetic energy will increase by a factor of four; for a threefold increase in speed, her kinetic energy will increase by a factor of nine; for a fourfold increase in speed, it will increase by a factor of sixteen.

Kinetic energy also quantifies the amount of physical work that a yacht could do on the sea, or conversely the amount of damage that the sea could do to the yacht by way of resisting that work. The total mechanical energy of a yacht in a seaway is the sum of its kinetic energy and potential energy, which can add up and explode into tons of unpredictable force in a matter of seconds. Let us try to understand the words of Commodore Nigel Warrington Smyth, quoted by Adlard Coles in *Heavy Weather Sailing* (third revised edition, page 277):

One has to realize that a large breaking crest in a full gale may be travelling at 15 or 20 knots, whereas the green water underneath it has virtually no horizontal motion. It follows that any vessel which is small enough or of shallow enough draft may be picked up and carried to leeward by the crest at great speed until some part of her stabs into the motionless green water, and she will be smashed down, capsized, or turned head over heels.

Catastrophic inertial augmentation has been the undoing of many a yacht in heavy seas. The risk is minimized when a vessel is held stationary by a sea anchor, or hove-to to a sea anchor and riding sail arrangement. The risk is maximized when a vessel is running unrestrained, or when a vessel that is lying a-hull is captured, carried and slam-dunked by a breaking crest.

Everything else being equal, we feel that being “at anchor” provides a cruising yacht with a safety net in terms of a minimization of inertial forces. In light of this we agree with the Pardeys’ cautionary tone when it comes to the business of “running with a storm.” We feel that it is far safer, at least for the average cruising yacht, to opt for the age-old tactic of heaving-to.

However, we do not feel that the Pardeys' *particular* method of heaving to (using a relatively small, low drag sea anchor) is applicable to large diameter, non-porous Para-Tech Sea Anchors, and caution against it.

These and other considerations are discussed in Victor Shane's DDDB book (*Drag Device Data Base*). It is available from our website www.safetyatsea.com or from www.dddb.com