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PARADISE LIVING ARTICLE / JANUARY 2017

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RANGE: HOW FAR CAN I SAFELY TRAVEL WITH MY VESSEL?

Over my 24-year yacht sales career, I have heard of many clients nearly running out of fuel, or they have actually run out of fuel because they miscalculated how far their vessel could travel on a full tank of fuel. The best-case scenario is the time inconvenience and you get to pay a towing bill. Worst-case scenario is that you put yourself and your passengers in a dangerous and possibly life-threatening situation. The first item of business is that fuel gauges are notoriously inaccurate. Trusting your fuel gauge on that 5-mile trip to Keewaydin may be okay, but trusting it on that trip to the Dry Tortugas is something altogether different. The shape of the fuel tanks in a boat are rarely symmetrical and most fuel level indicators are linear, meaning they would be somewhat accurate in a tank that was square or rectangle, but that is rarely the case. In addition, most boats run at an angle at speed. This means the fuel shifts towards the rear of the fuel tank when running; and that usually gives a false reading towards the positive. One of the worst feelings occurs when running along staring at a 1/2 reading on the fuel gauge only upon slowing down to get a snack or drink, watching that reading drop to a 1/4. My advice is never trust a mechanical fuel gauge for long trips. Always make the calculations ahead of time.

The second order of business is never trust a manufacturer's range given in the brochure. The range of vessel, as stated by the manufacturer, is usually theoretical. That means they base it on near perfect conditions (calm seas and light winds), perfectly clean hull bottom and running gear, brand new perfectly tuned engines, on a lightly loaded (2 people, no stores, with 50% fuel), vessel using 100% of the fuel tank capacity, in their calculations. In the real world, your vessel could never travel that distance for various reasons. When they use less than a full tank during testing, the vessel is going to be faster and burn less fuel due to it being lighter. Another issue is the weight of people, gear, tenders, water, food and other stores. When traveling long distance, you generally have a fully loaded vessel. There is also a certain amount of fuel that is inaccessible. Some vessel fuel tank designs are better than others, but never calculate range based on 100% fuel capacity. If your vessel has a generator and it draws fuel from the main tanks, keep in mind that manufacturers do not consider this when calculating their range.

A few more items that can dramatically affect the range of a vessel are sea conditions, wind, current, bottom and running gear condition. Vessels burn more fuel in rough conditions. There is more drag on the vessel and pushing the boat up and over waves burns more fuel than traveling in a nice straight line. Wind and water current also play a part in a vessel's range. Traveling into the wind and current will reduce your range. The last thing that many underestimate is the condition of a vessel's bottom and running gear. Even tiny barnacles on the propellers and bottom can reduce your range by 30, 40, 50% or more. Always start your trip with a perfectly clean bottom. Making sure that your vessel has engines that are tuned and in good running condition is a given, so I won't cover it here in depth.

So with all of that information, how far may I travel before fueling the vessel? There is no hard and fast set rule, but the following is what I do when planning a trip:

You need to know your main engine fuel burn at the speed you plan to travel. You will need to know your fuel capacity. You will also need to know your generator fuel burn if you plan to operate it.

I use 90% of my rated fuel tank capacity to make my calculations. This accounts for the inch or two of fuel in the bottom of the fuel tank your engine feed pickup tubes do not reach. It also gives you a bit of "fudge factor" in case you were not able to press the fuel tank completely full before leaving the dock. Take your fuel tank capacity (90%) and divide it by your gallons per hour you are going to burn at your cruising speed. This is going to give you hours of run time before you run out of fuel. If you multiply the hours times the speed you are planning to travel, this will give you your maximum range. On a coastal trip that is port to port, with calm seas, fair winds and favorable currents, I want a minimum of 20% of fuel in reserves when I reach my destination, so I reduce my maximum range figure by 20%. This figure is the maximum safe distance I should consider traveling between fuel stops. If the trip is offshore, or the weather and sea conditions are going to be less than perfect, I may increase my reserve figure to 30% or more. A vessel that holds 300 gallons (90% = 270 gallons), cruises at 30 M.P.H. while burning 27 G.P.H. (including generator) has a range of 300 miles. A range of 240 miles leaves you with 60 gallons (20%) in reserve.

If you want to discuss your next trip, or boating and boats in general, please do not hesitate to call. We would love to hear from you!