

Tiara

YACHTS



BOAT	<i>3100 Open</i>	
DESIGN/ MANUFACTURER	<i>Tiara Yachts</i>	<i>Michigan</i>
TYPE	<i>Deep-V</i>	
WEIGHT (lb)	<i>12,300</i>	
L O A (ft)	<i>33' 10"</i>	
WIDTH (ft)	<i>12'</i>	
WATERLINE (ft)	<i>31' 6"</i>	
CUSTOMER	<i>PRIVATE</i>	<i>Maryland</i>
ENGINE	STEYR 256	<i>Twin</i>
POWER / RPM	<i>(250 HP)</i>	<i>4500</i>
DRIVE / GEAR RATIO	<i>ZF 63A</i>	<i>2:1</i>
PROPELLER	<i>19 x 19 3-Blade</i>	
PROPELLER SHAFT	<i>1 3/8"</i>	
BOAT SPEED	<i>26 kts. Cruise 32 kts. Max</i>	



HORIZON EAST DIESEL, INC.

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Panama City, FL 32402





Gentlemen,

I am confident you have heard from John and Ken Navis about the trials yesterday on TOMCAT in Annapolis. I just want to extend my thanks to the team at Horizon East who have supported this project. Based on the initial diagnostics, I have a boat that will truly outperform any other 31 Tiara Open in the country and will be pleased to have her featured in your marketing program.

You have teamed up with a master mechanic who puts his customers above all other considerations and I am grateful to have Ken Navis as a colleague and friend. His thoughtful attention to all the details involved in such a complex undertaking is the reason for the success(es) yesterday. We look forward to the results of the sea trials next week after we change the props to a set that has been reworked by Black Dog Propellers here on Kent Island. We will run with a set of 3 bladed props when next we put the laptop on the motors to see how we do with fuel consumption and all the other data we can get while running at cruising speed.

The other factor that has led to such a happy beginning for the "new TOMCAT" is the incredible quality and engineering excellence of your Steyr products. These engines are quiet, free of vibration at all speeds, efficient, maintainable in a small boat engine room, accessible, very well instrumented and alarmed, and frugal in their use of fuel and lubricants. The finish and generous use of ceramic coatings to prohibit rust and corrosion suggest years of clean operation. We could not find a drop of any fluid in the bilge after an hour of running up to full throttle.

I have had the pleasure of spending 20 years in the navy, have had command of diesel and steam powered warships, and logged over 200,000 miles at sea in new and old ships, sailboats, and motor boats. This is the most responsive, efficient power plant I have ever taken to sea and look forward to years of reliable service as we enjoy our "new" boat.

Please feel free to pass this message along to Steyr Motors, and to John and Ken as I do not have email addresses for them. I will forward a message I sent to my friends last night that expands on the details of our findings during the trials yesterday.

Pete Abbott

Gentlemen,

UNDERWAY on diesel power! Thanks to a spectacular job done by Ken Navis and our good fortune to have been introduced to STEYR Motors as an alternative to conventional diesel engines, TOMCAT returned to the water yesterday for sea trials with the Steyr Tech Rep, John Scott, onboard. John brought his laptop with the diagnostic programs to let us see what was going on inside the engines during a 90 minute check run on the Severn River.

From the initial light-off, things just felt right once the factory preservatives burned off and the smoke cleared up. It only took a few minutes and when we closed the hatch, it was noticeably quieter at idle than the Crusaders. At idle, the engine rpm is 630. That converted to a speed of 4.1 knots. We will troll for rockfish on one engine in calm weather conditions to get our speed down a little, but we are use to that.

These engines have considerably more torque than the Crusaders albeit less horsepower. With the 4 blade props, we worked up to full power on the throttles and reached 3850 rpm, with speed at 28 knots. The full power range for the motors is 4200-4500 rpm, so we confirmed the props need to be down pitched to let the motors run up to the full power zone. I took the set of 3 blades to Black Dog on Kent Island and they will adjust the pitch so we can put these props on next week and rerun the trials. Our target is 4400 rpm and taking 2 inches of pitch out of the blades should get us to that level.

All the internals were on spec for temps, fluid flow rates, pressures and the like. It is really helpful to have a data port on each engine that lets you conduct a full range of diagnostics in real time and make a permanent record from day one. We did encounter one reading that had John, Ken and the tech center experts puzzled. The diagnostic program measures fuel flow by counting the injector pulses. The amount of fuel per pulse is converted to a liter per hour flow rate and then to a gallon per hour figure. This is really the "bottom line" we were interested in as fuel consumption was the driving concern that led to the decision to repower.

The calculations led to a fuel consumption figure at 3400 rpm of 4.92 gph for both engines....TOTAL! We had done all our calculations on a projection of 15 gph total burn rate at cruising speed (3700 rpm). The Crusaders burned 30 gph at 21 knots. We were running 24.7 knots at 3400 rpm and burning less than 5 gph doing it. Mind you, we will have different props and will run at a higher rpm than the trial yesterday, but the net change should be a boat that cruises at 25 knots at 3700 rpm....and a burn rate below 10 gph at that speed.

You can do the math and pick your price of gasoline, but a savings of 20 gallons per hour and an increase of speed by 4 knots are compelling arguments for conversion. We are very excited to get the adjusted props on the boat and rerun the trials next week. If we achieve a burn rate of 10 gph, the full to dry range of the boat at 25 knots will be 600 nm. With the Crusaders, it was 168 nm.

Now it is up to Rick Maio at Technical Electronics to complete the installation of the new Furuno equipment and the auto pilot. We hope to shake down on a trip to Mobjack Bay on April 13 to find some big flounder with Captain Bob Reed but if the boat isn't ready to go, we will drive down and fish anyway:)

Thanks to all of you who have encouraged and supported us in this journey to revitalize a boat we love and did not want to sell. Looks like she is on her way to being all that she can be and that means years of reliable service at considerably less cost to operate and maintain. You are all welcome to join us for a cruise or fishing run as soon as you can get here.

Pete Abbott

Gentlemen,

We have passed the 100 hour mark with the new Steyr Motors and can unhesitatingly endorse these engines as the finest examples of propulsion engineering technology to appear on the marine scene during my lifetime. As you know, I have operated and owned vessels for over 60 years ranging from a 26 foot Steelcraft in the late 1940's with a 115 hp Chrysler Crown gas motor to a 420 foot guided missile destroyer powered by twin 15,000 hp, 1200 pound high pressure steam boilers. My diesel experience includes command of a coastal mine sweeper powered by 4 600 hp turbo-charged engines and operation and responsibility for over 150 water craft at the Naval Academy, primarily powered by a variety of diesel engines up to 200 hp.

As you know, TOMCAT is a 1994 31 foot Tiara Open with a 12 foot beam and approximate gross weight of about 7.5 tons loaded. After a year of trying to sell her with the OEM engines (twin 454 cu. in. Crusaders) it was clear that no one was interested in buying a gasoline powered boat regardless of the material condition and proven seaworthiness of this popular design that was the fleet leader for Tiara for over 25 years.

In late 2006, we decided to remove the boat from the market and make an investment in new diesel engines and a modern electronics suite that would restore the value to the hull and allow us to achieve some important financial objectives necessary for us to retain ownership and allow us to operate the boat at a high rate of usage in the Bay and on the ocean. In consultation with Ken Navis, your representative in the Chesapeake Bay, and the engineer who had maintained TOMCAT as a gas powered yacht, we chose the Steyr 256 model motors and a Furuno NavNet 2 system.

Ken completed the installation of the Steyr motors in time for us to begin using the boat in mid-April, 2007. Since then, we have run at high speeds, trolled extensively on 2 engines at idle, and made several transits of the Chester River and middle stem of the Chesapeake Bay at our new cruising speed of about 24 knots. Modification of the pitch of the propellers was the only change we had to make to use the original transmissions, shafts and props. By removing about 2 inches of pitch, the engines easily ran in the design full power range between 4200 and 4500 rpm and cruising at 24 knots was achieved at about 3700 rpm. Based on your observations and our experience in the first 100 hours, the cruising speed fuel consumption is not more than 10 gph. We will have an opportunity next week to confirm the consumption on a run from Annapolis, MD to Chincoteague, VA on the coast by way of Norfolk. My plan is to stop once for fuel and run consistently between 3600 and 3800 rpm throughout the 180 mile transit. The EMS control that over-fuels the motors in the break-in period should, by now, have shut down and the consumption we get on this trip will represent "best estimates" of how we are doing. I anticipate a value between 9 and 10 gph and will advise you what we find after we arrive at Chincoteague and refuel the second time on this trip.

Now that we have established a confidence level in the performance characteristics of the boat with the new engines, I can report to you that we have met or exceeded all of our financial objectives related to the re-power. When we first examined the potential savings that would result from changing the gas motors to diesel units, we were facing gasoline prices on the waterfront of almost \$4.00 a gallon. Diesel prices were about 80 cents per gallon below that of gasoline. As of June 11, the prices were \$3.39 a gallon for gas and \$2.59 for diesel. The 80 cent per gallon differential has held constant in MD throughout the period.

You can project a range of costs based on your best guess of the price of gas and diesel fuel, but I suggest that the present prices reflect a realistic level that will exist into the future with some escalation over time until alternative fuels are available in sufficient quantity to reduce pressure on petroleum products. At best, this should only stabilize prices and not bring them down significantly. On these assumptions, let me take you through the analysis that leads me to conclude that the change over to Steyr motors will pay off the cost of the new engines in less than 600 hours of operation at cruising speed.

The Crusaders consumed 30 gph at 21 knots. At a price of \$3.39 a gallon, the cost to run one hour was \$101.70.

The Steyrs consume 10 gph at 24 knots. At \$2.59 a gallon, the cost to run one hour is \$25.90. The hourly differential in fuel cost is \$75.80.

At a purchase price of \$42,000 for the new Steyrs, the break even point for operation at cruising speed is 554 hours.

You can add a number of factors, both factual and esoteric, that magnify the value of changing to diesels from gasoline engines. The safety alone is worth invaluable peace of mind. Reliability, hours between major overhauls, extended hours between oil changes, and the upward revision of the market value of the boat because of future operational savings all have economic value. It isn't my place or point to try to put a dollar value to each of these factors and they will differ by each boat you discuss. I believe that my boat would have sold last year for about \$60,000 as a gas boat. The Tiara dealer in the Bay priced the boat at \$115,000 when it went on the market in early 2006 based on the value of these boats across the country before gas prices went through the roof. As a diesel Tiara 31 today, I would estimate the value of the boat on the new engines alone at \$140,000 and with the electronics, \$160,000.

At \$26.00 per hour at over 26 mph, the relevant figure is a dollar a mile to run the boat. New EFI gas engines at a cost of \$30,000 should achieve a cost per mile of about \$3.10 per mile (22 gph @ \$3.39/gal = \$74.58 per hour/24 mph = \$3.10 per mile).

When you assess the wisdom of replacing gas with gas, yes, you can do the job for \$12,000 less in engine costs, but you lose \$2.10 every mile you run the gas motors that you could be running Steyrs for \$1.00 a mile. If you don't intend to use your boat, then go gas and let it sit at the pier and you will be \$12,000 ahead with new motors (gas) and worry about fumes, fires, explosions, 2000 hours before your next major overhaul, and the \$700 bill at the fuel dock when you next fill up. The more you use your boat with those new gas engines, remember that you are pouring \$2.10 into the water for every mile that you didn't need to to get the boat from point A to point B. Those are unrecoverable dollars and should be added to the cost of the engines (\$30,000). How many miles do you need to go before those gas engines are as costly as the new Steyrs? Looks like 5700 miles to me. How many miles do you put on your boat each year.? I've got 1000 miles on my new engines since April just fishing a few tournaments in the Bay and running up and down the Chester River 4-5 times. With 2 trips to ocean planned plus a 2 week cruising vacation with my wife, and our usual activities this fall, I can easily see 3000 miles this calendar year and that's not pushing it. Some of my friends fish offshore every weekend from June to October and that's at least 300 miles a weekend. Doesn't take long to put those 5700 miles on a boat if you use it. And at a savings of \$50 per hour over the new EFI gas engines on the market today, the Steyrs make it worthwhile to use the boat and not let it sit at the pier so you can say how smart you are to have bought new gas motors because they were \$12,000 cheaper than the Steyrs to buy.

After you run those 5700 miles, when I pass you going faster with my Steyrs than you cruise with your new gas motors, I will be looking for those dollar bills floating in your wake and just might stop and pick them up with my net. If I follow you long enough, you'll pay for my new engines as well as all that gasoline you are burning up thinking you made the economical choice by buying gas engines at a lower cost than the diesels. Sorry mate. It just doesn't compute if you are going to use and enjoy your boat while underway.

That's it guys. I don't know how else to say it. You get what you pay for. I bought economy and reliability, safety and speed when I bought Steyrs. The numbers don't lie and the market isn't going to get better for fossil fuels. Gasoline engines just no longer make sense in small boats when there is an economical alternative like Stery motors. I have the 256 hp model in TOMCAT. As I look at the product offerings in the marine category, I can see an alternative to every gas motor I have owned and operated and would make the change whether it was in my little Bayliner Ciera 2250 I/O or that old Steelcraft my dad bought in 1946. I just wish these engines had been available when I bought TOMCAT in 2001 and I knew then what I know now about the economics of diesel vs gasoline marine engines. Thank you Steyr.

Pete Abbott