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JULY 2014

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*Newbuild construction stays steady.*





# The I's Have It

*Patti Marine builds two Subchapter I tugs for Signet.*



The *Signet Arcturus* was delivered in April. Its first big job was towing Chevron's *Big Foot* deepwater platform, when it exceeded bollard pull estimates.

**By David Krapf,**  
Editor in Chief

**S**ignet Maritime has been more than happy with the highly maneuverable and efficient *Signet Weatherly* built at its Mississippi yard in 2012. The 4,720-hp **Robert Allan** Ltd. RAM-parts 3200-class ocean towing and escort tug and its 61 MT of bollard pull have exceeded expectations.

So when Signet wanted to build new multimission tugs that could handle big ocean towing jobs, they decided to base it on the *Weatherly*'s successful design but make it more powerful.

The result is a pair of multimission 6,834-hp tugs built for the Houston-based tug operator by **Patti Marine Enterprises** at its Pensacola, Fla., shipyard. The 105'x38'x17'8" RAL-designed tugs are the seventh and eighth RAL designs for Signet. The first tug, the *Signet Arcturus*, was

delivered in April. The second, the *Signet Polaris*, was delivered in June.

Signet essentially took the hull of the similar-sized 105'x38' *Weatherly* that is outfitted with MTU 16V4000 M60 engines and **Niigata** Z-drives and swapped in **Caterpillar** engines with **Rolls-Royce** Z-drives.

"We wanted these tugs to work offshore, so they are more powerful with more bollard pull," said Joe Dahl, vice president and general manager for **Signet Shipbuilding & Repair**, Pascagoula, Miss. Dahl has essentially been based in Pensacola during the construction of the tugs.

Bigger engine rooms were needed to fit the **Caterpillar** C175-16 Tier 3 engines, each rated at 3,417 hp. The Cats drive **Rolls-Royce** US 255 controllable-pitch Z-drives, and a pair of 110"-dia.

All photos by Bill Treondle



4-bladed nibral wheels in Kort nozzles. The package gives the tugs a hefty 83.45 tons of bollard pull ahead and 75 tons astern.

For service power, the tugs are outfitted with pairs of **John Deere** 6068AFM85-powered, 125-kW generators.

## SUBCHAPTER I

Many of the new tugs' features are not typically found on other ABS-classed tugs. What sets these tugs apart are the additional requirements needed to secure a Coast Guard Subchapter I Certificate of Inspection.

Patti Marine project manager Ashley Stone said the *Arcturus* and *Polaris* are the first Subchapter I tugs in this size range. Usually, Subchapter I tugs are much larger. The *Arcturus* and *Polaris* are the also the first RAL RAMparts tugs to receive Subchapter I certification.

"It is a very small vessel to have this classification" said Stone. "The tugs have automation, a safe manning certificate, and a lot of SOLAS features that bigger tugs have."

Subchapter I tugs are rare, he said. The only other Sub I tugs he's aware of are **Crowley Maritime's** 10,880-hp Ocean-class tugs that have 150 MT of bollard pull. Two 146'x46' and two 156'x46' Ocean-class tugs were built at **Bollinger Shipyards**.

"Having the dual ABS classification

and Coast Guard inspection raises the bar for all facets of construction," said Stone. "With a Coast Guard NVIC 10-82 tug, the higher standard applies, regardless of the system. If an ABS and Coast Guard rule is not the same, then the more stringent of the two is incorporated and enforced. No doubt, this results in increased safety and redundancy for the owner and operators of the tug." (With NVIC 10-82, the USCG allows ABS to review certain systems for compliance with Subchapter I. It also permits ABS surveyors to perform structural inspections on behalf of the USCG.)

Dahl agreed. "At Signet we've always been advanced in our thinking and wanted to provide a safer and better operating vessel that can meet all

the requirements of our customers. By being U.S. Coast Guard inspected, we exceed our competition in certifications and provide our customers with more skilled licensed personnel. The chances of something going wrong with our vessels are far less than others."

To meet Subchapter I, the tugs have a 400-point alarm and automation system, with automatic starting and remote monitoring of the fire pump. The automation system was reviewed by the Coast Guard Marine Safety Center and extended trials were required to test the system. The system allows for reduced manning.

For ship-assist work, each tug has a **Markey DEPCF-52S** electric hawser winch on the bow. For ocean towing and rig moves, the tugs have a Markey



The big bow fender, supplied by Schuyler, is needed for LNG and other work.



The combination of a Markey stern towing winch (above) and Markey bow hawser gives Signet flexibility to meet customer needs



## SIGNET ARCTURUS, SIGNET POLARIS SPECIFICATIONS

**Builder:** Patti Marine Enterprises  
**Designer:** Robert Allan Ltd.  
**Owner:** Signet Maritime  
**Mission:** Ship assist, escort, ocean towing  
**Length:** 105'  
**Beam:** 38' **Depth:** 18'2"  
**Load Line Draft:** 17'3"  
**Height of Eye:** 26'4"  
**Gross Registered Tonnage:** 476  
**Propulsion:** (2) Caterpillar C175-16, 3,417 hp  
**Z-Drive:** (2) Rolls-Royce US 255 CPP  
**Propeller:** (2) 110"-dia. 4-bladed nibril in Kort nozzle  
**Bollard Pull:** 83.45 MT, ahead; 75 MT, astern  
**Generator Drive Engine:** (2) John Deere 6068AFM85, 125 kW, 60 Hz, 480V  
**FiFi System:** (2) FFS SFP 250x350 pump, driven off front of main engine; (2) FFS 1200LB, remote operated monitor, 5,300 gpm fl w, 400' range  
**Speed:** 13.5 knots  
**Capacities (gals.):** Fuel oil, 90,068; hydraulic oil, 125; lube oil, 507; ballast, 26,162; potable water, 6,104

The *Signet Polaris* was delivered in June.



**Crew Capacity:** 10  
**Winch:** Markey DEP-CF-52S, 75 hp, electric hawser winch on the bow, 9"-circ. x 500' Samson Saturn-12 line; Markey TESD-34, 100 hp, double-drum electric towing winch, 2.25"x2,500' tow wire, 2.25"x1,500' tow wire  
**Electronics:** JRC 150AC DUC GMDSS; (2) JRC JMA-5312-6 radar with 6' arrays

and NJU-85 displays; Simrad AP50 autopilot; JRC JHS 183 AIS; JRC NCR333A navtex receiver; JRC JLR7800 DGPS; JRC JLN205TM speed log; JRC JFE380252 echosounder; (2) Icom M-504 VHF  
**Classification** ABS Maltese Cross A1; Maltese Cross AMS, FiFi 1; USCG Subchapter I

**Delivery Date:** *Signet Arcturus*, April 2014; *Signet Polaris*, June 2014

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TESD-34 100-hp double-drum electric towing winch on the stern.

Signet determined that the combination of a bow hawser and a stern towing winch would give them the most flexibility to meet customer needs.

This meant that the design needed to incorporate a large bow for the hawser winch.

A **Coastal Marine Equipment** capstan was also added to the main deck bow for mooring line assistance.

The hawser winch has 500' of 9"-circ. **Samson** Saturn-12 line and the big towing winch — for rig moves and ocean towing — has 2.25"×2,500' tow wire on one drum and 2.25"×1,500' wire on the other.

Stone pointed out that typical escort/ship-assist tugs have much smaller fuel oil tankage. With the tugs' dual ocean towing configuration, Signet decided to increase the fuel oil tank sizes to increase tug endurance. Each tug has tankage for 90,068 gals. of fuel oil.

#### OTHER CHANGES

Other notable changes/additions from the *Weatherly* was the addition of a control room so the tugs have full monitoring and control. Also, the new tugs are FiFi 1 classed. The FiFi 1 classification as needed so the tugs can work LNG tankers.

A typical ABS-classed tug will have two smaller, dual-purpose fire main bilge pumps.

The *Arcturus* and *Polaris* each have a high output, dedicated fire main pump and two higher capacity bilge/pumps, for redundancy. The FiFi 1 system features two **FFS** SFP pumps, driven off the front of the main engines, and two **FFS** 1200LB remotely operated monitors. The pumping capacity is 5,300 gpm with a range of 400'.

Other important additions include an independent engineers control room, which was added to the forward end of the engine room. To enhance crew safety, Signet added a bridge navigation watch alarm system. The wheelhouse arrangement was also modified to incorporate a built-in GMDSS console and aft control station. Also

added was a stern steering station in the wheelhouse, which overlooks the aft deck and winch. It was completely outfitted with communications and fully functional engine, Z-drive, towing and FiFi controls.

The *Signet Arcturus* recently completed its first big job, towing Chevron's *Big Foot* deepwater platform. The tug reportedly outperformed bollard pull estimates. The ASD tugs operate out of Ingleside, Texas, where they pri-

marily perform offshore and inshore rig escort, barge and subsea support work.

Signet has built and is operating more RAL tugs than any other company in the U.S., according to Stone. Based on this experience, Signet went into the design process with the intention of building a tug with the most desirable features possible. With the *Arcturus* and *Polaris*, that's what they got — two desirable tugs.

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