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MV Susitna full of firsts

By SCOTT BOWLEN

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Most discussions about the MV Susitna seem to contain a lot of adjectives and superlatives.

Words like "innovative," "complex" and "unique" float by, usually near phrases like "cutting-edge," and "one-of-a-kind."

The word "first" pops up a lot, too.

Here's an example: "MV Susitna is the world's first ice-strengthened, twin-hulled marine vessel."

That's a statement from Alaska Ship and Drydock, the Ketchikan-based builder of the Susitna.

ASD found that a number of original concepts and equipment were required to complete the design and construction 195-foot, \$70 million ferry required a number of original concepts and equipment to complete the design and construction



"There's been a lot of firsts," said Doug Ward, director of shipyard development for ASD, earlier this week as he prepared for Friday's christening ceremony for the ship.

The Susitna's four, 2,735-horsepower engines are the first of that type to be built by their manufacturer, MTU.

Each engine spins a unique waterjet made by Wartsilla. North American Marine Jet built the new 360-degree thrusters.

"Because it's a twin-hulled vessel, it requires some different kinds of geometry and arrangements that haven't been seen before," Ward said.

The design of the unique and complex hydraulic lift cylinder hardware and control system that raises and lowers the Susitna's central deck was done by Bosch Rexroth AG.

Susitna's uniqueness stems from the Office of Naval Research's interest in testing the concept of a vessel that can operate as a high-speed catamaran at sea and as a shallow-draft, barge-like vessel capable of landing gear and personnel on the beach.

Such a vessel would be useful in the U.S. Navy's "Seapower 21" strategy of "sea basing," the ability to operate at sea without using land bases in foreign countries, according to a Congressional Research Service report.

The development of the Seapower 21 strategy in the early 2000s coincided with two other developments.

Lockheed Martin had come up with the basic design for what it called the "Vari-craft," and the Matanuska-Susitna Borough was interested in obtaining a ferry that could transit a relatively short (about 2 miles) but challenging (extreme tides, currents and ice) section of Knik Arm between Anchorage and Port MacKenzie.

In 2003, the Mat-Su Borough had contracted with Lockheed Martin to further develop its Vari-craft concept for the Knik Arms conditions.

Lockheed Martin, which had been in contact with the Navy about the Vari-craft concept, approached the Office of Naval Research.

In 2005, the Office of Naval Research announced an agreement by which Alaska Ship and Drydock would coordinate the final design and construct the ship; the Mat-Su Borough would own and operate the ship as a ferry; and ONR would test the vessel, and receive data about its operations from the borough.

Federal funding for the vessel came from two main sources, Congress and the Office of Naval research.

The uniqueness of the Susitna pushed the project beyond its anticipated early 2008 delivery date.

In October 2008, ASD President Randy Johnson told the Daily News that the design challenges pushed the design period back by about 18 months.

Working with the Seattle naval architect firm of Guido Perla and Associates, ASD completed several design cycles beyond the typical amount for a new ship.

"We were breaking a lot of new ground in a lot of different areas, in both stability and structural analysis that had to be done," Johnson said at the time. "As if that isn't enough, we've got to break ice with the ship.

This is the very first twin-hull icebreaker ever designed or put into service."

The shipyard also developed new manufacturing techniques and purchased state-of-the-art, semi-automatic welding equipment for use in the project.

ASD built the Susitna on land at the Ketchikan Shipyard, piecing together the individual modules that ASD personnel had pre-fabricated in another area of the shipyard.

It was launched for the first time in April.

So what, exactly, does it do?

That question might be more easily answered by a kid who's familiar with the popular, shape-shifting toys called "Transformers."

Imagine a very large catamaran. Now imagine that the center deck of the boat can move up and down. Imagine further that the central deck is buoyant - when it's lowered into the water, it pushes the rest of ship up so the catamaran's twin hulls on either side of the central deck float a lot higher in the water.

When that aluminum central deck is down in the water, the vessel's draft changes from 12 feet to about 4.5 feet, according to ASD.

In this configuration, the Susitna is designed to be able to operate as a landing craft, discharging or loading passengers, vehicles and equipment on a beach.

When the central deck is up out of the water, Susitna can travel fast, about 17 knots when its loaded to a capacity of 20 vehicles and 130 passengers, according to ASD.

A lot of people in the maritime industries will be paying close attention when the Susitna begins sea trials later this summer.

Ward said there will be two kinds of sea trials, one for ASD and another for the Mat-Su Borough. The sea trials will be followed by various demonstration periods.

In May, the Mat-Su Borough Assembly voted to have the Susitna spend the winter in Ketchikan, and possibly hire the vessel out before bringing it north to upper Cook Inlet.

Ward said there have been contacts with the U.S. Coast Guard and others about the potential of using the Susitna in the Gulf of Mexico as part of the oil-spill response effort in the aftermath of the Deepwater Horizon oil rig accident.