Sun Ship Historical Society's

Sun Ship's 100th Anniversary History

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Sun Ship's 100th Anniversary- Courtesy of the Delaware County Daily Times and Colin Ainsworth

Hope you enjoy this 'Sun Ship's History Page' courtesy of Colin Ainsworth and the Delaware County Daily Times. As always, if you have any additional information, suggestions or corrections, please let me know.
Our grateful thanks to Colin for his effort and talent in putting this comprehensive history of Sun Ship together on the 100th Anniversary of the launching of our first ship, the "Chester Sun".

Thank You,
Dave Kavanagh
SSHS

Sun Ship's 100th Anniversary by Colin Ainsworth and the Delaware County Daily Times.
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'The Sun Also Rises'

This weekend marks 100 years since 1st ship rolled out of powerhouse Sun Ship in Chester
By Colin Ainsworth
cainsworth@delcotimes.com

CHESTER >> When William Penn landed in Chester in 1682, he brought with him an emphasis on shipbuilding from his island homeland of England, specifying that his fellow colonists save all the good oak trees for shipbuilding when they cleared the land. Even the visionary founder of the Pennsylvania colony likely didn't foresee that centuries later the banks of the Delaware River where he landed would be the home of the largest privately owned shipyard in the world.
October 30 marks 100 years since the "this city's first all-Chester-made vessel, 'Chester Sun,'[1] a 10,000 ton bulk oil steamer, gilded majestically down the ways" at the Sun Shipbuilding & Dry Dock Co., as the then Chester Times described the scene in 1917.

The "Chester Sun"[1]was the first ship to launch at the yard that would produce 40 percent of U.S. tanker production in World War II – helping to lift the Philadelphia region to account for one-sixth of the nation's industrial war effort by mid-1942 – and set off 65 more years of innovations in all-welded ship construction, roll-on, roll-off cargo ships, industrial manufacturing for high octane fuel production and aerospace, covert ship construction for the CIA, and reshaping its home city of Chester.

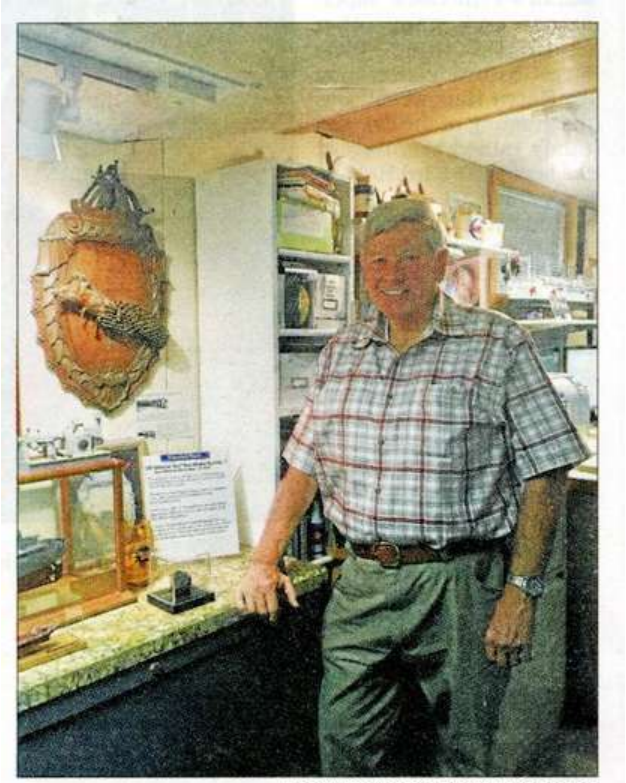

SUBMITTED PHOTO
An aerial view of the yard during the interwar years.

On the 50th anniversary of the Chester Sun's launching, the Times described it as signaling "the birth of a community job source in Chester that directs an average of $40 million annually in wages and benefits into Delaware County."

Within 15 years, however, a convergence of economic factors led to its sale to Levingston Industries of Orange, Texas, in 1982, closing a 66-year chapter in Chester history. Its successor,

Pennsylvania Shipbuilding Co., would close in 1989. Metro Machine Corp. of Virginia acquired the site in 1993, lasting until 2001.

“The company gave me the opportunity to come out of high school, work in industry and the opportunity to work my way up to become a superintendent without a college degree,” said Dave Kavanagh, founder of the Sun Ship Historical Society. Kavanagh spent 18 years at the plant until its sale, beginning as an electrician’s helper, moving into plant electrical maintenance and holding the position of general foreman in Sun Ship at the time of Sun Ship’s close. He served as plant superintendent for Penn Ship before leaving the company within a year of the sale.

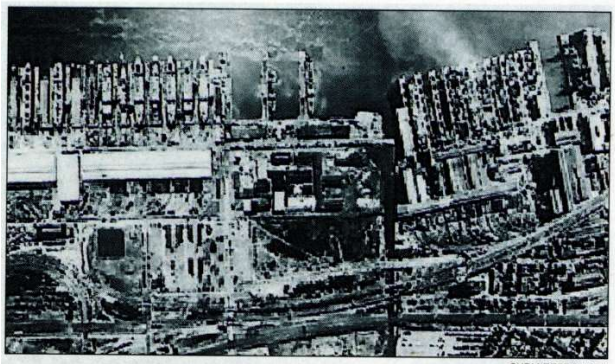


COLIN AINSWORTH - DIGITAL FIRST MEDIA

Dave Kavanagh, founder of the Sun Ship Historical Society, stands beside a plaque commemorating the launching of the "Chester Sun" (Hull No.1) and other artifacts he has collected.

“It was a badly needed organization that fulfilled a great need for the purpose that it was built, and provided a lot of jobs,” said R. Anderson “Andy” Pew, a member of Sun Company (today Sunoco, known as Sun Company Inc. and Sun Oil Co. over its history) and Sun Ship’s founding family. Pew had a professional relationship with the shipyard while in Sun Company’s treasury department and as CEO of Helios Capital Corp., a Sun Company leasing unit. “But over time, the world changes.”

Of the 200,000 employees to pass through the yard over its 66 years, the peak came during World War II when the yard employed 35,633 in July 1943. That’s roughly equivalent to the city of Chester’s population today. Sun Ship became a city unto itself, with 28 ways across four yards, spanning 1.5 miles through the city’s East End and Eddystone Borough. Along with the 250 vessels and 35 large car floats manufactured at the yard, Sun Ship repaired more than 1,500 ships from the attack on Pearl Harbor until the war’s end.



SUBMITTED PHOTO

A view of the four yards in Chester that made up Sun Ship's '28 Ways to Win the War' during World War II.

Sun Ship’s naval architects and engineers did their part for the war effort with the design of the T-2 tanker. Along with the 198 constructed at Sun Ship, the United States Maritime Commission – which oversaw merchant ship production during the war – had more than 300 others built at yards around the country. Able to carry 141,000 barrels of oil at 14.5 knots, the ship ensured delivery of fuel to both theaters of war.

Along with its industry output, Sun Ship was a microcosm of the booming home front economy

during the war years. Employees generated about $36 million in War Bonds by the close of the war through deductions from wages and about $1 million in cash sales, and the company providing another $21.5 million in purchases, and $156 million as gifts to ship sponsors and for plant awards.

By December 1944, 2,681 women were employed by Sun Ship. African-American employees numbered about 12,000 during the war years, making up nearly the entire workforce at the No. 4 yard, constructed in Eddystone in early 1942. About 18,500 Sun Ship employees served in the U.S. Armed Forces, with 173 dying in service to their country. As one of the major employers in the city, it played a large role in the wave of housing development in Chester and its suburbs during the war. The city reached its peak population of 66,039 in the 1950 census.

While the yard carried on a centuries-long tradition of shipbuilding on the Delaware, it was a 30-year series of international events that would come together to establish Sun Ship on its banks. Those events started about 350 miles northwest in Titusville, Pa., the United States' first oil boomtown. In the 1880s, Joseph Newton Pew entered the natural gas and petroleum business, establishing predecessors of Sun Company in his hometown and a refinery in Toledo, Ohio.

It was the country's next oil boom, the 1901 strike at Spindletop oil field in Beaumont, Texas, that set-in motion Sun's move from the Midwest to Delaware County and Philadelphia. Pew sent his nephew Robert to Beaumont to purchase oil leases to supply the company's Toledo refinery.

While Sun had been quietly working on commercial uses for the then-useless naphenic crude oil discovered at Spindletop (John D. Rockefeller's Standard Oil held a near monopoly on paraffinic crude, with a different structure of the hydrocarbon molecule that makes up crude oil) and anti-trust laws kept Standard Oil from making significant inroads at the oil fields, Rockefeller and fellow oil barons held an edge over independent companies: Control of railroad tank cars.

Purchasing the former Lindenthorpe Park resort grounds in the burgeoning industrial town of Marcus Hook, the Pews set about building an oil refinery there and chartering a cargo ship. "It was much cheaper to ship crude than it was for refined product," said Andy Pew. "We would fill it on the Sabine River in Beaumont with this supposedly worthless crude, bring it up to Marcus Hook and refine it there. So, we were effectively able to thumb our nose at Mr. Rockefeller and his tank cars."

With its corporate headquarters now in Philadelphia and its primary refinery in Marcus Hook, Sun was able to establish itself as a viable independent oil company.

The outbreak of the first World War in 1914 presented a series of challenges. The progress Sun had made was being threatened as non-American ships were called back to their home ports, domestic and foreign shipyards were booked years in advance, and the already problematic railroads were operating at maximum capacity.

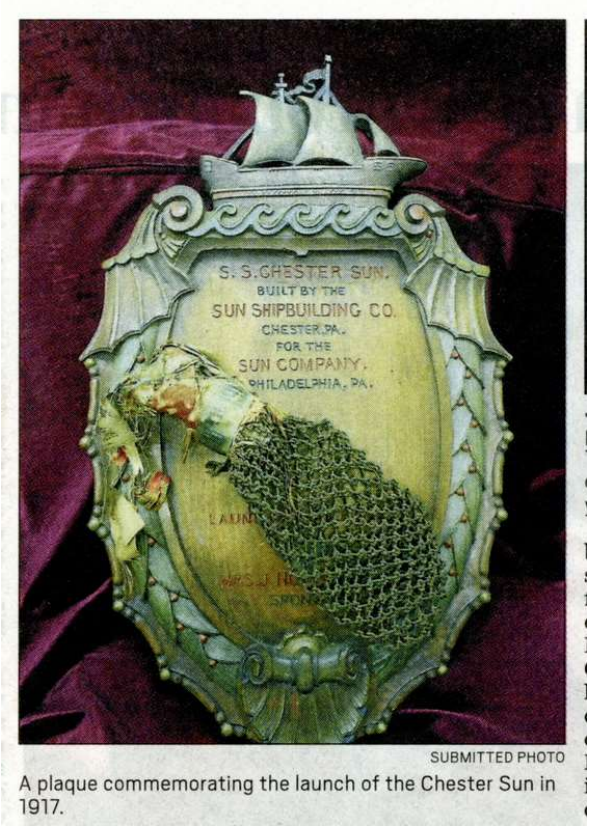
On a 1915 trip across the Atlantic to check on the company's British and continental European interests, the Pews realized the havoc German submarine warfare was reeking on American shipping to Allied nations. It quickly became apparent a self-reliant solution was their only option.

"The Germans were sinking our ships faster than we could build them at the beginning of the war," said Andy Pew. "Our family felt that this was a real threat to the democracy of the world,

so they decided to build their own shipyard and build ships faster than the Germans could sink them."

In May 1916, the Sun Shipbuilding Co. was formed and a $5 million project began to turn 50 acres of skunk cabbage fields into five shipways along the riverfront site of Chester's East End, located between Sun Company's Philadelphia headquarters and the Marcus Hook refinery. The acquisition of the neighboring Robert Wetherill Engineering Works provided a machine shop and space for engine construction.

Although a fraction of its output during World War II, Sun Ship produced nine ships during the Great War. The "Chester Sun", whose design became the tanker standard for the United States during the war, was joined by a second tanker, the "Sabine Sun"[2], four cargo ships and three minesweepers.



SUBMITTED PHOTO

A plaque commemorating the launch of the Chester Sun in 1917.

Beyond the nine ships produced during the war, the new yard had an enormous impact on its home city of Chester. The city of 38,500 people in 1910 would be home to 58,000 by 1920. At peak during the war, the yard employed about 15,000 people, necessitating the building of two East End neighborhoods that still bear its name – Sun Village and Sun Hill.

With more than 25 languages being spoken at the yard, English language courses were offered at night to workers from the city's growing immigrant community. Sun Ship was also one of the industrial sites in the city offering work that spurred the Great Migration, the wave of Black Southern citizens who moved north from their rural hometowns to the industrial North during the 1910s.

After the armistice of Nov. 11, 1918, signaled the end of building ships faster than the Germans could sink them, Sun Ship and its parent company kept the yard going by turning to the diversity of production and innovation that would characterize it until its close.

John G. Pew Sr. served as president of Sun Ship from 1919-1950, leading the company through its peak years during World War II.

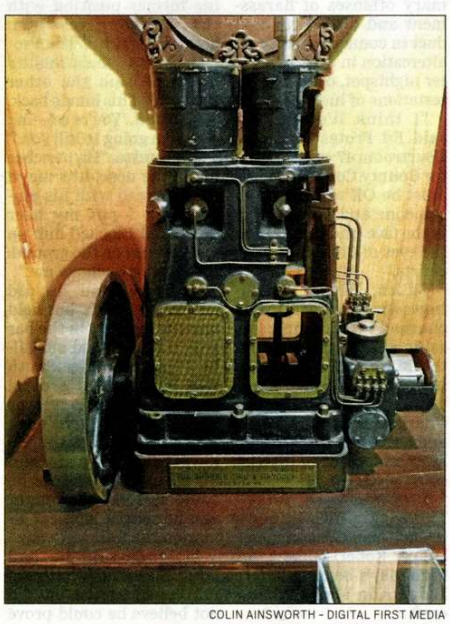
Three new shipways and a drydock were added in 1921 – with a second drydock to follow in 1924 – and the yard entered the lucrative ship

repair work that would help carry it through the lean years of the Great Depression.

"There is not only a science in the ship repair business, there is a certain degree of art to it," said Andy Pew. "John Pew Jr. (son of then President John G. Pew) had a rare ability to look at a ship for a day or two and then come up with an estimate for its repair and be within 1 percent of the ultimate cost of it." John G. Pew Jr.'s talent with estimates landed Sun Ship much work, along with contract jobs to provide estimates at other yards, with Pew's fees going into Sun Ship's treasury.

Along with ship repair, new revenue sources for the yard were industrial manufacturing for shipbuilding and oil refining through the Sun-Doxford Diesel Engine and cases for Sun Oil's Houdry Process, respectively. While others looked for fast money during the Roaring '20s and short-term cost-cutting during the Depression, the Pews focused on long-term opportunities that carried the yard through to World War II.

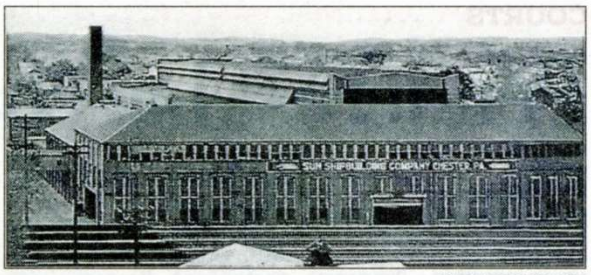
As diesel engines became the new standard for commercial ships during the 1920s, many large U.S. shipyards entered into proprietary contracts with engine designers to exclusively supply their ships. When Sun Ship became the sole U.S. licensee of a diesel engine from William Doxford & Sons in the U.K., it elected to make the engine not only for its own ships, but for other yards around the world.



COLIN AINSWORTH - DIGITAL FIRST MEDIA

After founding the Sun Ship Historical Society, Dave Kavanaugh has been contacted by people around the country with Sun Ship artifacts, including a moving scale model of the Sun Doxford Diesel Engine that had ended up in Maine.

Production in the Wetherill shop grew to make Sun Ship the largest manufacturer of marine diesel engines in the U.S.



SUBMITTED PHOTO

The main building bearing the original name of the company, before the addition of drydocks in the 1920s as ship repair became a large part of the yard's activity.

The yard made a major contribution to ship construction technique during the Depression with the launch of the SS "White Flash"[3] in September 1931. The "White Flash" was the first all-welded ocean-going vessel. At a time when over 1,300,000 rivets went into the average large tanker, the all-welded ship brought a welcome reduction in labor and materials costs. The world took notice, with the

all-welded ship becoming standard in a little more than a decade.

At the same time, it was setting standards in its own field, Sun Ship also made a contribution to its parent company's field of oil refining. In the early 1930s, its fabrication shop had been making equipment for a Vacuum Oil plant across the river in Paulsboro, N.J., where an eccentric, auto racing French chemist, Eugene Houdry, had been experimenting with using an aluminum silicate catalyst to crack a more efficient, higher octane gasoline from crude oil (the latest effort in thermal cracking of the hydrocarbon molecule in crude oil to separate it into kerosene, gasoline, etc.).

As the Great Depression worsened and a new management team took over following a merger with Standard Oil of New York (Socony), the new Socony-Vacuum's support for Houdry began to wane. Sun Oil had taken notice and approached Houdry's team and Socony-Vacuum about taking a lead in a partnership between the three. "My father (Sun Oil research executive Arthur E. Pew, Jr.) heard about it, and my mother was fluent in French," said Andy Pew. "He invited Houdry to come down and live at our house in Bryn Mawr. They sat a card table in the living room and my mother translated." Full commercial production of the new process soon followed.

With Sun Ship's catalytic cracker casings now heading to Marcus Hook alongside Paulsboro, the Houdry Process proved a huge stride forward in gasoline efficiency. A Fortune magazine article, "Monsieur Houdry's Invention," reported that Arthur E. Pew Jr. "dropped a bombshell" on the industry when he presented the details of the Houdry Process to a meeting of the American Petroleum Institute in 1938.

Fortune's aerial warfare metaphor would be prophetic, as the Houdry Process provided the 100-octane aviation fuel that gave the Allies an edge during the war that pushed Sun Ship to its peak years.

Like it had during the interwar years, Sun Ship relied on ship repair, innovation and a diversity of projects to overcome the slowdown in the shipbuilding industry after World War II.

As world demand for oil grew after the war, Sun Ship entered the "supertanker" era with the 1952 launch of the "Delaware Sun"[4], almost twice the deadweight tonnage of the T-2 and capable of carrying about 240,000 barrels of oil.

Befitting the Herculean challenge of being the first commercial vessel to journey through the Northwest Passage to transport oil from Alaska to the U.S. East Coast, Sun Ship took the lead on the conversion of the SS "Manhattan", the largest tanker built in the U.S. at the time, into an icebreaker to complete the task. After Sun Ship cut the "Manhattan" into sections, the task required 2.5 million hours between four shipyards.

The most publicized contract Sun Ship took in its final decades came in the early 1970s. After a Soviet submarine sank in 1968, President Nixon approved a recovery operation by the CIA. The U.S. government approached eccentric billionaire Howard Hughes with a cover story to raise the sunken sub. Sun Ship laid the keel for the Hughes "Glomar Explorer"[5] in December of 1971, ostensibly to provide Hughes with a vessel for a deep-sea magnesium mining venture.
After it quietly launched in November of 1972, the "Glomar Explorer" was unable to raise any portions of the sub with intelligence value, though the ship and CIA project managed to attract nationwide news coverage and inspire works by Tom Clancy and other authors.

The years of research and development spent on welding and fabrication allowed Sun Ship to expand into a number of non-marine projects in its later years. “Pressure vessels – a natural outgrowth of Sun Shipbuilding and Dry Dock Co.’s experience since 1916 – are now making giant strides in industrial applications, aerospace, and hydrospace,” read a 1960s company publication.

The nuclear age saw bow sections for submarines carrying the nuclear-armed Polaris missile and nuclear fuel shipping containers come out of its shops. The Verrazano-Narrows Bridge connecting Staten Island and Brooklyn – the longest suspension bridge in the world at the time of its 1964 completion – rested on supports from the industrial products department. Hydrospace projects included submersibles for underwater geological surveying and U.S. Navy rescue missions to submarines.

As America entered the Space Age, Sun Ship did its part by fabricating the largest rocket motor cases ever built for Aerojet’s 260-inch diameter SL-1 and SL-2 rockets, in turn the largest rocket motors ever tested.

Alongside these other ventures, Sun Ship made two final innovations for the shipbuilding industry in its final 15 years. The “Admiral William M. Callaghan”[6] launched in 1967, the first cargo/ro-ro ship powered by jet propulsion, allowing it to be the largest and fastest of its time.

Another type of cargo ship came the same year, one that carried Sun Ship through its final years, the roll-on, roll-off ships, or “ro-ros,” designed to carry wheeled cargo such as tractor-trailers. When the S.S. “Ponce de Leon”[7] was launched in 1967, it was at the time the world’s largest and fastest ro-ro.

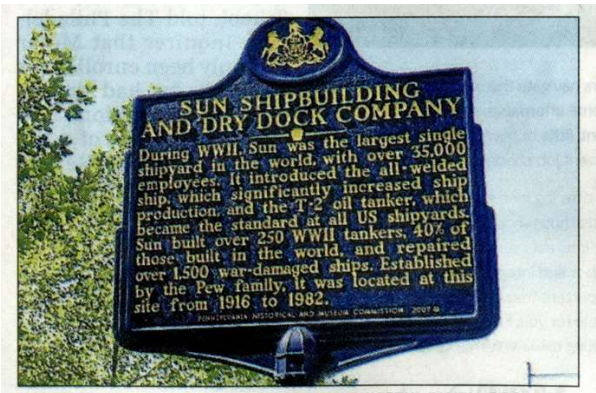
The ro-ro idea was championed by Paul Atkinson, president of Sun Ship from 1961-1977, and gave the viable product for the company as the U.S. market was declining in the 1970s. “He came up with the roll-on, roll-off concept, and that took off like a rocket,” said Kavanagh.

The ro-ro’s were well-suited to cargo transport from the U.S. East Coast to Puerto Rico, allowing for speed that other cargo vessels could not – the “Ponce de Leon” could travel between New York and Puerto Rico in 60 hours. Two ships went to Matson Inc. on the West Coast – one of the primary shipping companies for transport between the U.S. mainland and the Hawaiian Islands. Ships were also sent to Alaska during the construction of the Trans-Alaska Pipeline System (coincidentally the plan that superseded the “Manhattan’s” journey through the Northwest Passage).

Andy Pew said the great aspirations of the “Admiral Callaghan” and ro-ro’s could not overcome the realities of cheaper foreign competition, mounting fuel, steel and labor costs, and reductions in government shipbuilding contracts. Consequently, new cargo ship[6] and liquefied natural gas transport ship[7] designs did not become a reality.

What had become a reality by 1980 was more than $200 million in losses for Sun Company over a five-year period from the shipyard. As the Sun Company-published “Centennial Celebration: The Story of Sun Company” reads: “On a gray January morning in 1981, Sun announced that what was once one of the world’s greatest shipyards was going out of the shipbuilding business. The word came directly from Robert H. Campbell, then Sun Ship president, because ‘the employees deserved to hear it from me.’”

Today the legacy of Sun Shipbuilding and Dry Dock Co. lives on in its five remaining ships still afloat – including the Admiral Callaghan and the "Matsonia"[8] and "Lurline"[9] (the two ships delivered to Matson Inc.) – and through historical preservation efforts,



COLIN AINSWORTH - DIGITAL FIRST MEDIA

A state historic marker now stands at state Route 291 and Harrah's Boulevard in Chester, commemorating the former site of the Central Yard of Sun Shipbuilding & Dry Dock Co., which is now home to Harrah's Casino and Racetrack.

Kavanagh founded the Sun Ship Historical Society in 2000, launching a website at www.sunship.org and maintaining a society email list with former employees. His timing of rekindling an interest in his former employer was fortuitous, as he was able to save thousands of documents from destruction that were still housed at the Central Yard when it was razed to make way for Harrah's Casino and Racetrack in the mid-2000's.

He has worked with cataloguing archival material at the Delaware County Historical Society, Independence Seaport Museum in Philadelphia, and the Hagley Museum in Delaware, who have all contributed to keeping the memory of what was once the largest shipyard in the world alive.

Notes: By: D. Kavanagh

For additional information you can review the following Sun Ship hull numbers:

1: "Chester Sun" Hull 001
2: "Sabine Sun" Hull 002
3: "White Flash" Hull 138
4: "Delaware Sun" Hull 588
5: "Glomar Explorer" was Sun Ship Hull 661
6: "Adm. Wm. M. Callaghan" Hull 646 was a combination cargo/Ro-Ro (Roll-On/Roll-Off) vessel.
7: "Ponce de Leon" Hull 647
8: "Matsonia" Hull 664
9: "Lurline" Hull 662
10: The large RO-RO was to be a triple-propeller and designated as the "LFS" Large-Fast-Ship was Sun Ship Hull 665
11: The two liquified natural gas transport ships were to be Sun Ship Hulls 671 and 672