



## WILMINGTON TUG OPERATIONS AND FLEET EXPANSION



**H. Hickman Rowland, Jr.**  
President, Wilmington Tug, Inc.



**WILMINGTON TUG, INC.**

## ***Tug Chris***



**WILMINGTON TUG, INC.**

## ***Tug Carey***



WILMINGTON TUG, INC.



## Chris working on the bow of the *Pacific Star*



WILMINGTON TUG, INC.

## Car ship sailing from the Port of Wilmington



WILMINGTON TUG, INC.

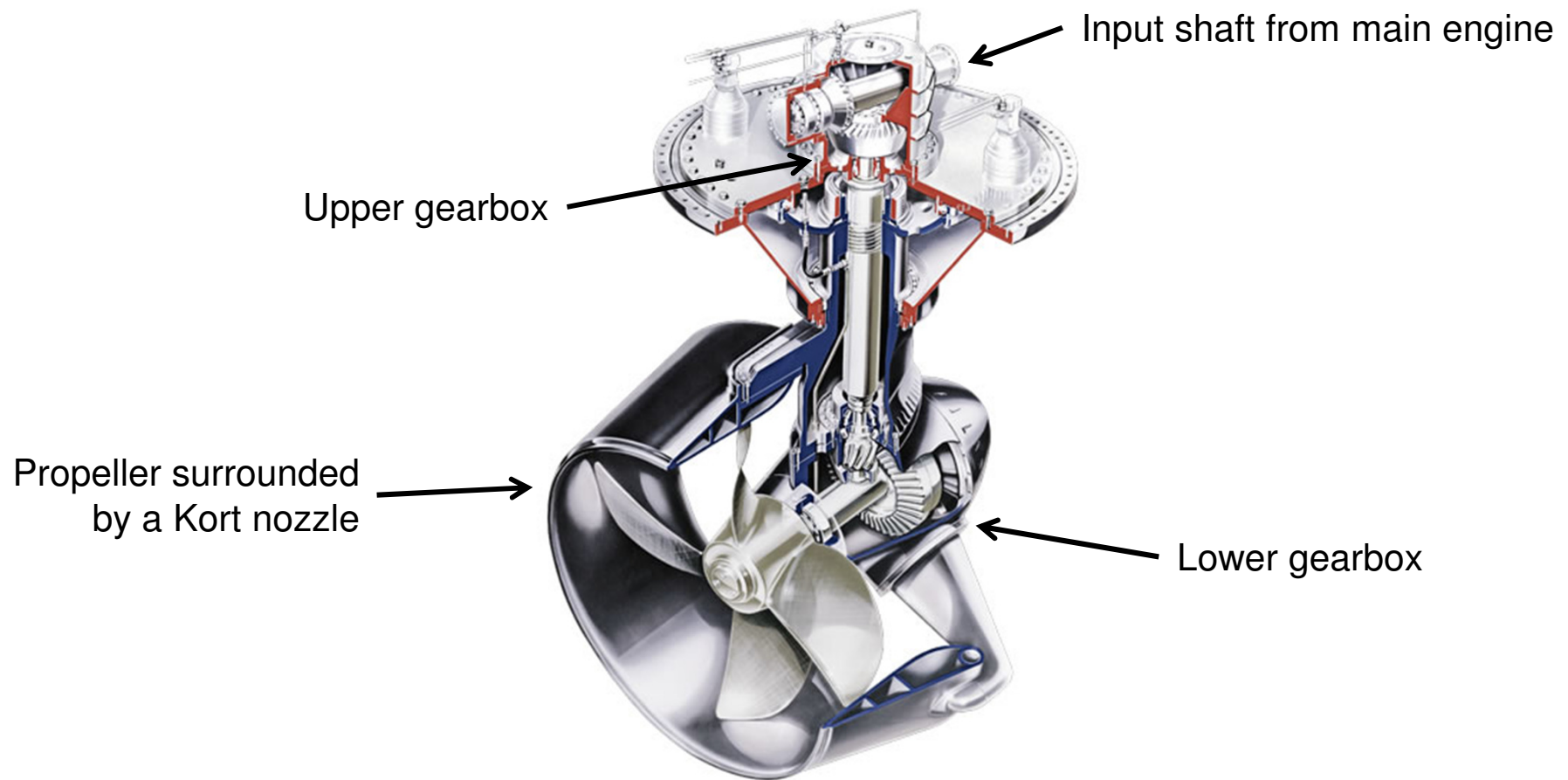


## *Tina* on Gladding-Hearn's Railway



WILMINGTON TUG, INC.

## Z-Drive Diagram

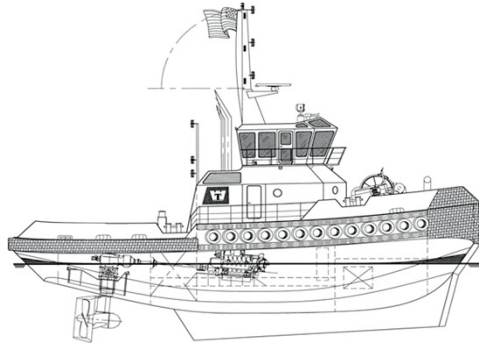


WILMINGTON TUG, INC.

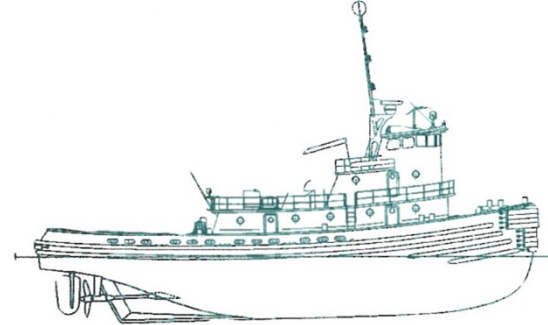
# Advantages of ASD tugs vs. Conventional tugs



ASD Tugboat



Conventional Tugboat



- ◆ Thrust astern equal to 95% of thrust ahead on an ASD tug
- ◆ ASD's steer effectively when working astern
- ◆ Due to enhanced maneuverability, ASD tugs can quickly change from push to pull and reposition themselves from one side of a ship to the other



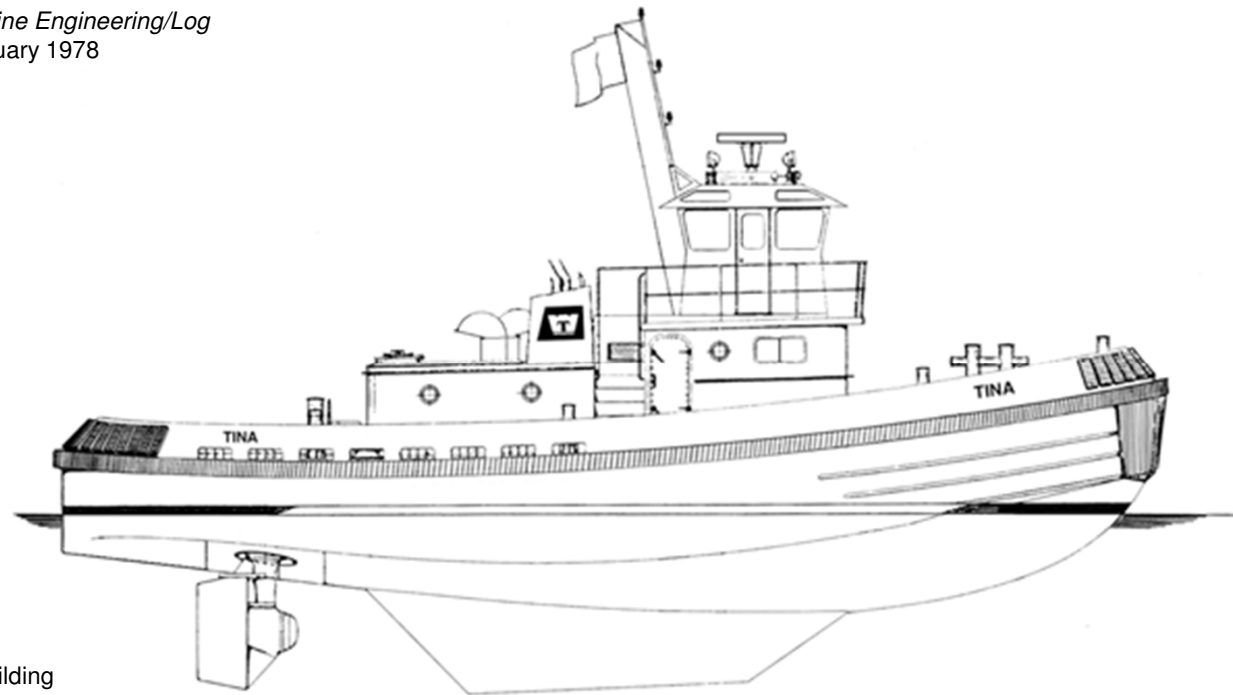
WILMINGTON TUG, INC.



# Tug Tina



Marine Engineering/Log  
January 1978



Builder: Gladding-Hearn Shipbuilding  
Build/Rebuild: 1977/2005  
LOA: 19.8 m (65 feet)  
Beam: 7.9 m (26 feet)  
Engines: 2 X 6170A Luger  
Horsepower: 2 X 900 bhp (1800 hp total)  
Propulsion: 2 X 4111WM HRP Z-Drives  
Bollard Pull: 20 Tons

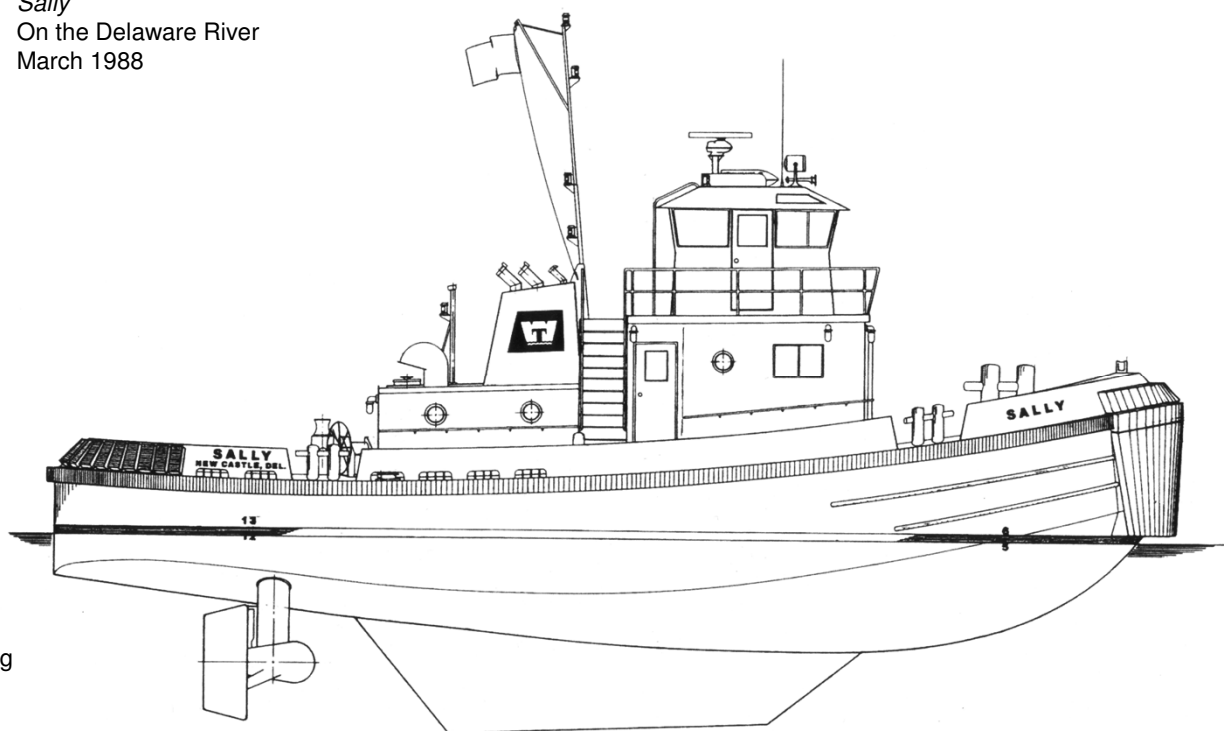


WILMINGTON TUG, INC.

# Tug Sally



*Sally*  
On the Delaware River  
March 1988

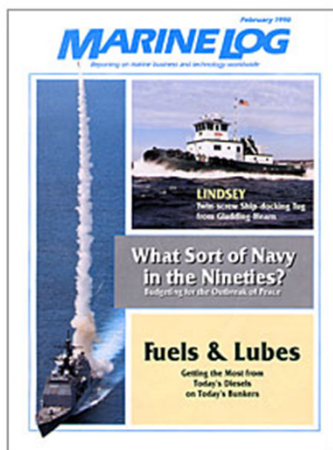


Builder: Gladding-Hearn Shipbuilding  
Build/Rebuild: 1987/2007  
LOA: 21.3 m (70 feet)  
Beam: 9.1 m (30 feet)  
Engines: 2 X 8V4000 MTU Detroit Diesel  
Horsepower: 2 X 1200 bhp (2400 hp total)  
Propulsion: 2 X 6000 HRP Z-Drives  
Bollard Pull: 35 Tons

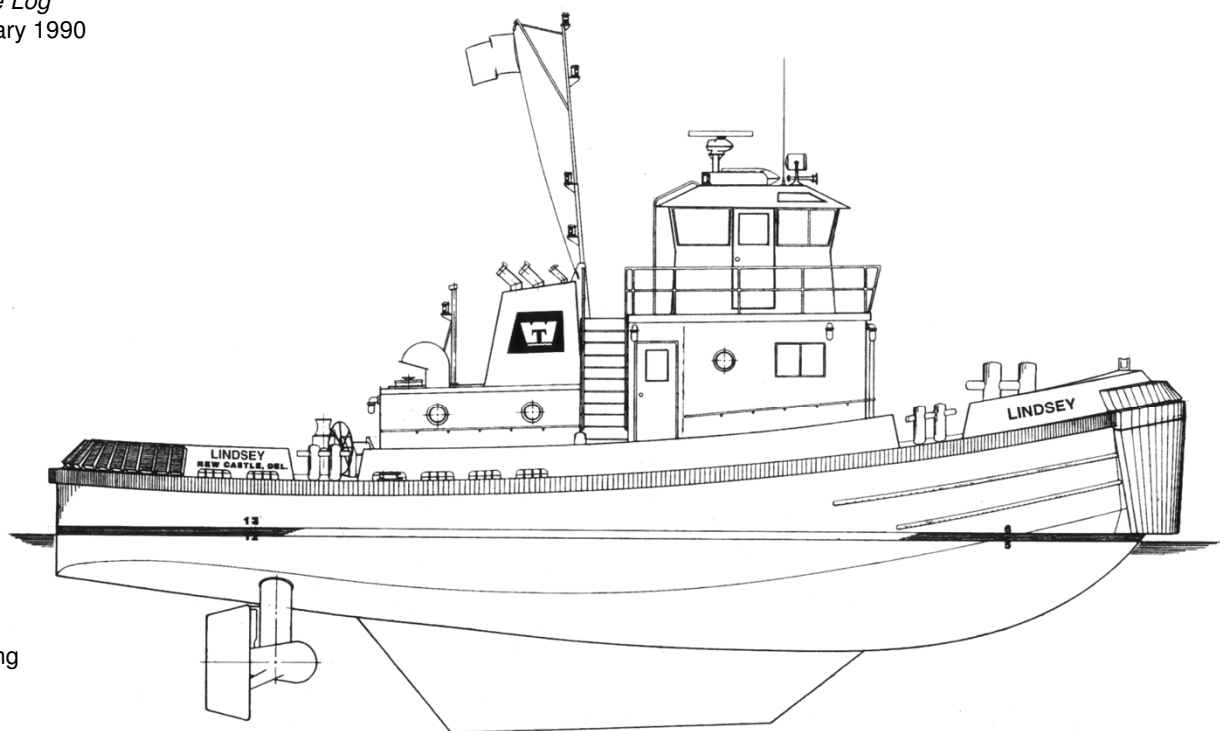


WILMINGTON TUG, INC.

# Tug Lindsey



Marine Log  
February 1990



Builder:	Gladding-Hearn Shipbuilding
Year:	1989
LOA:	21.3 m (70 feet)
Beam:	9.1 m (30 feet)
Engines:	2 X 16V149TI Detroit Diesel
Horsepower:	2 X 1600 bhp (3200 hp total)
Propulsion:	2 X 950 Ulstein Maritime Z-Drives
Bollard Pull:	40 Tons



WILMINGTON TUG, INC.



## *Capt. Harry on the bow of the VLCC Stena Vision*



WILMINGTON TUG, INC.

## Three Wilmington Tug Z-Drives escorting the *Stena Vision*



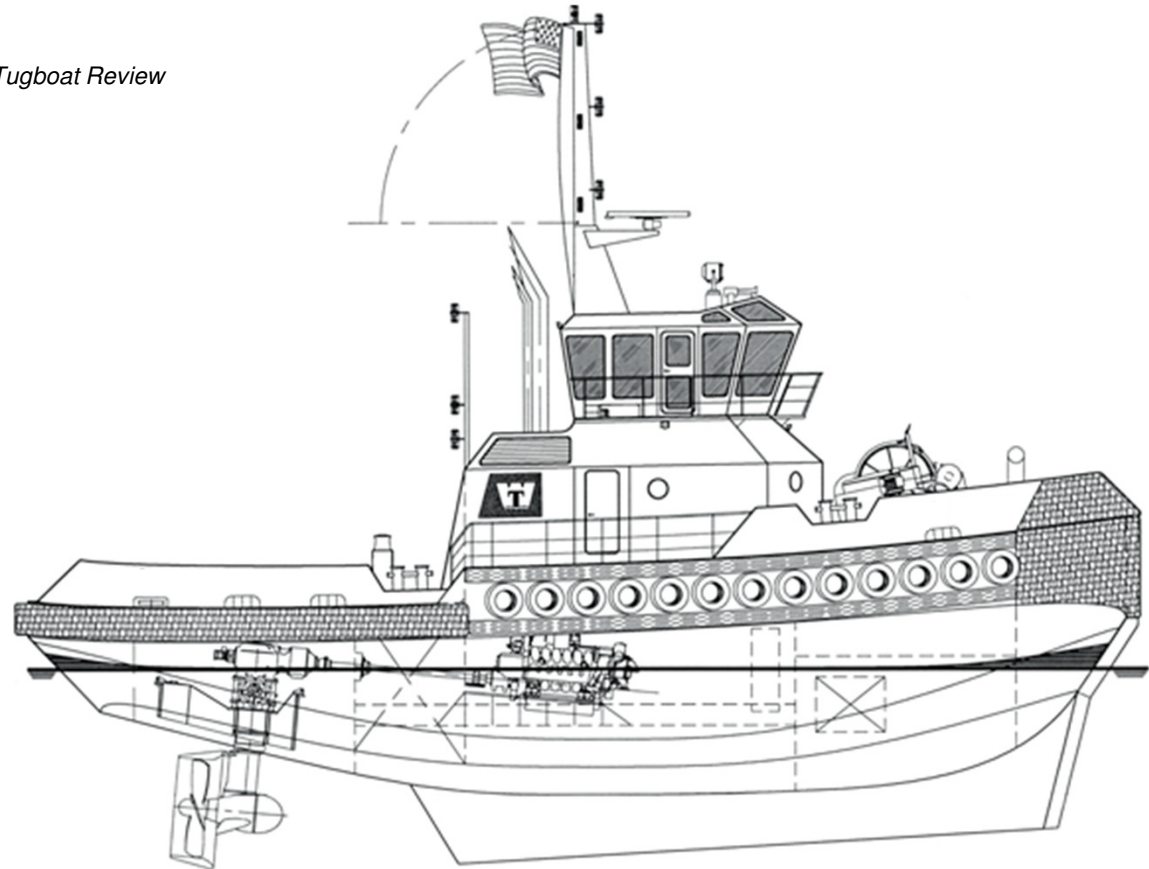
WILMINGTON TUG, INC.



# Tug Capt. Harry



*American Tugboat Review*  
July 2002



Designer: Robert Allan, Ltd.  
Builder: Washburn & Doughty  
Delivery Date: December 2001  
LOA: 24.38 m (80 feet)  
Beam: 9.75 m (32 feet)  
Engines: 2 X 12V4000 MTU Detroit Diesel  
Horsepower: 2 X 2100 hp (4200 hp total)  
Propulsion: 2 X 1350 Rolls Royce Marine Z-Drives  
Bollard Pull: 54 Tons



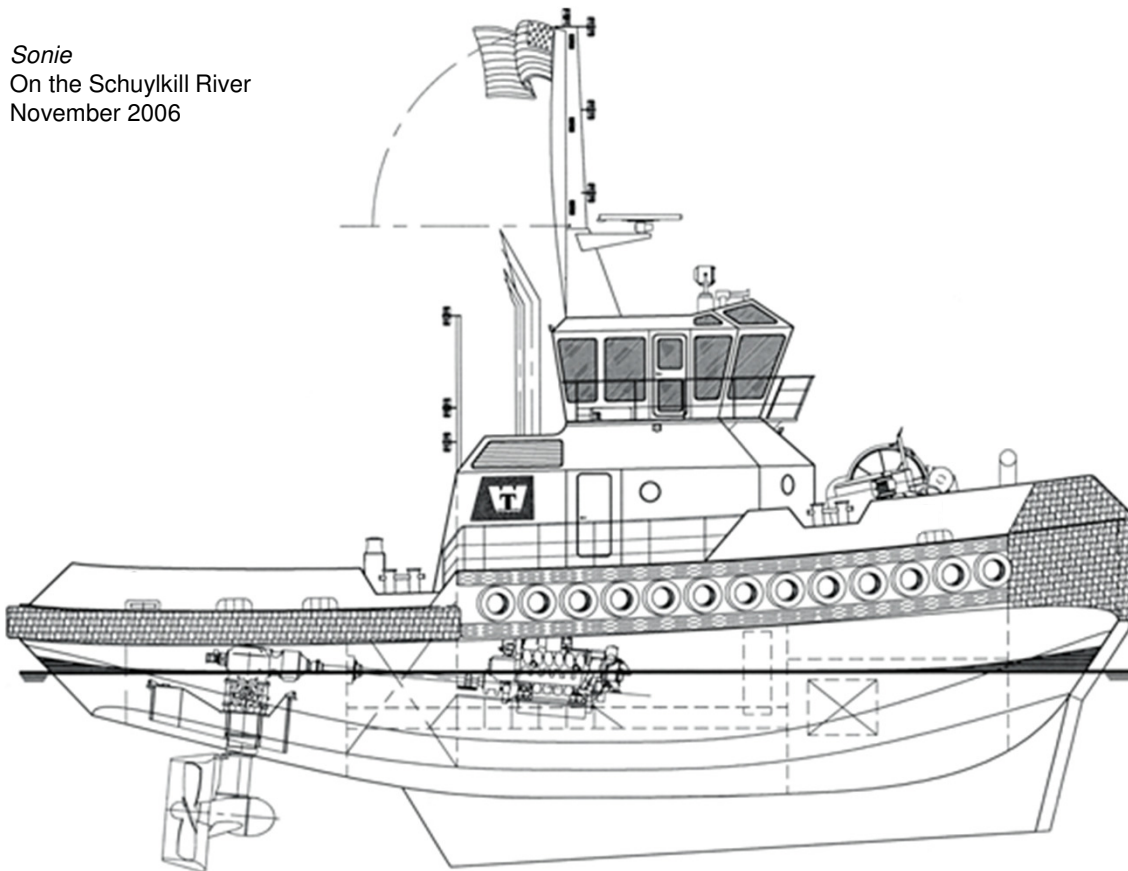
WILMINGTON TUG, INC.



# Tug Sonie



*Sonie*  
On the Schuylkill River  
November 2006



Designer: Robert Allan, Ltd.  
Builder: Washburn & Doughty  
Delivery Date: November 2006  
LOA: 24.38 m (80 feet)  
Beam: 9.75 m (32 feet)  
Engines: 2 X 16V4000 MTU Detroit Diesel  
Horsepower: 2 X 2400 hp (4800 hp total)  
Propulsion: 2 X 205FP Rolls Royce Marine Z-Drives  
Bollard Pull: 65 Tons

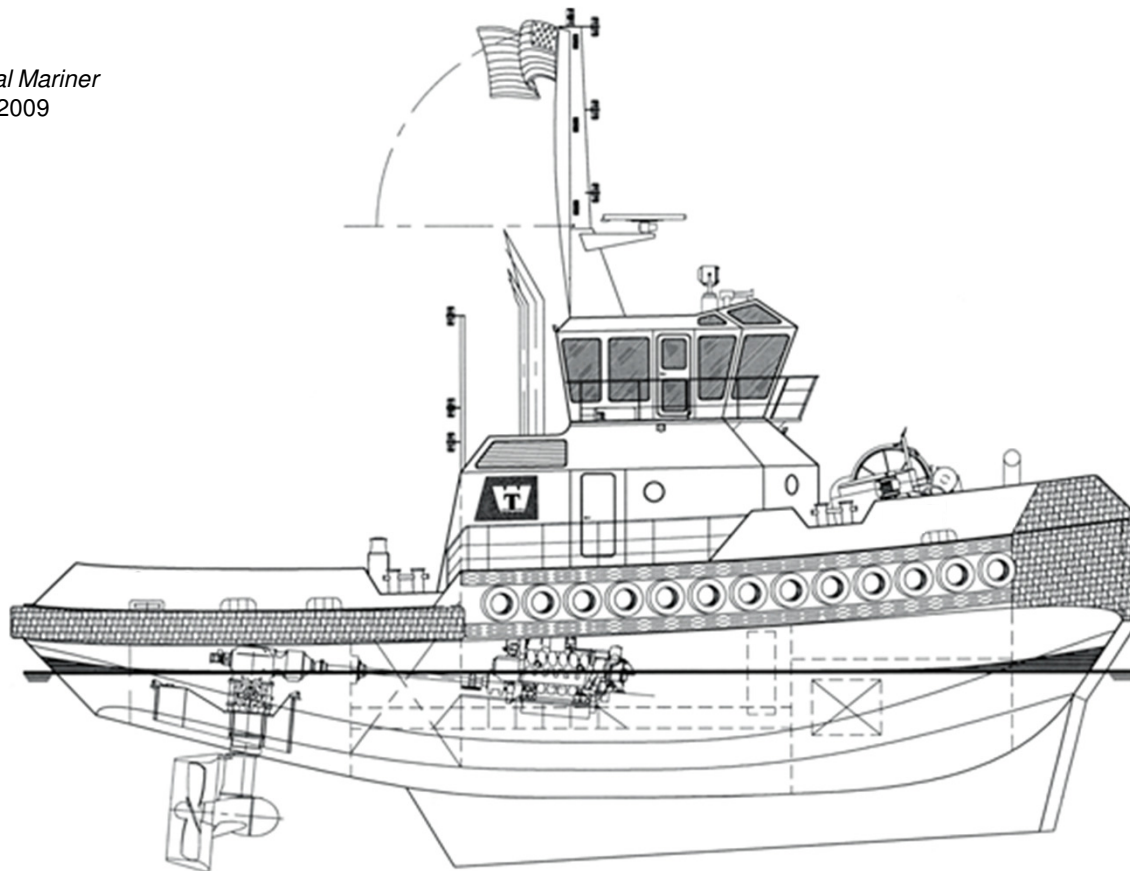


WILMINGTON TUG, INC.

# Tug Madeline



*Professional Mariner*  
December 2009

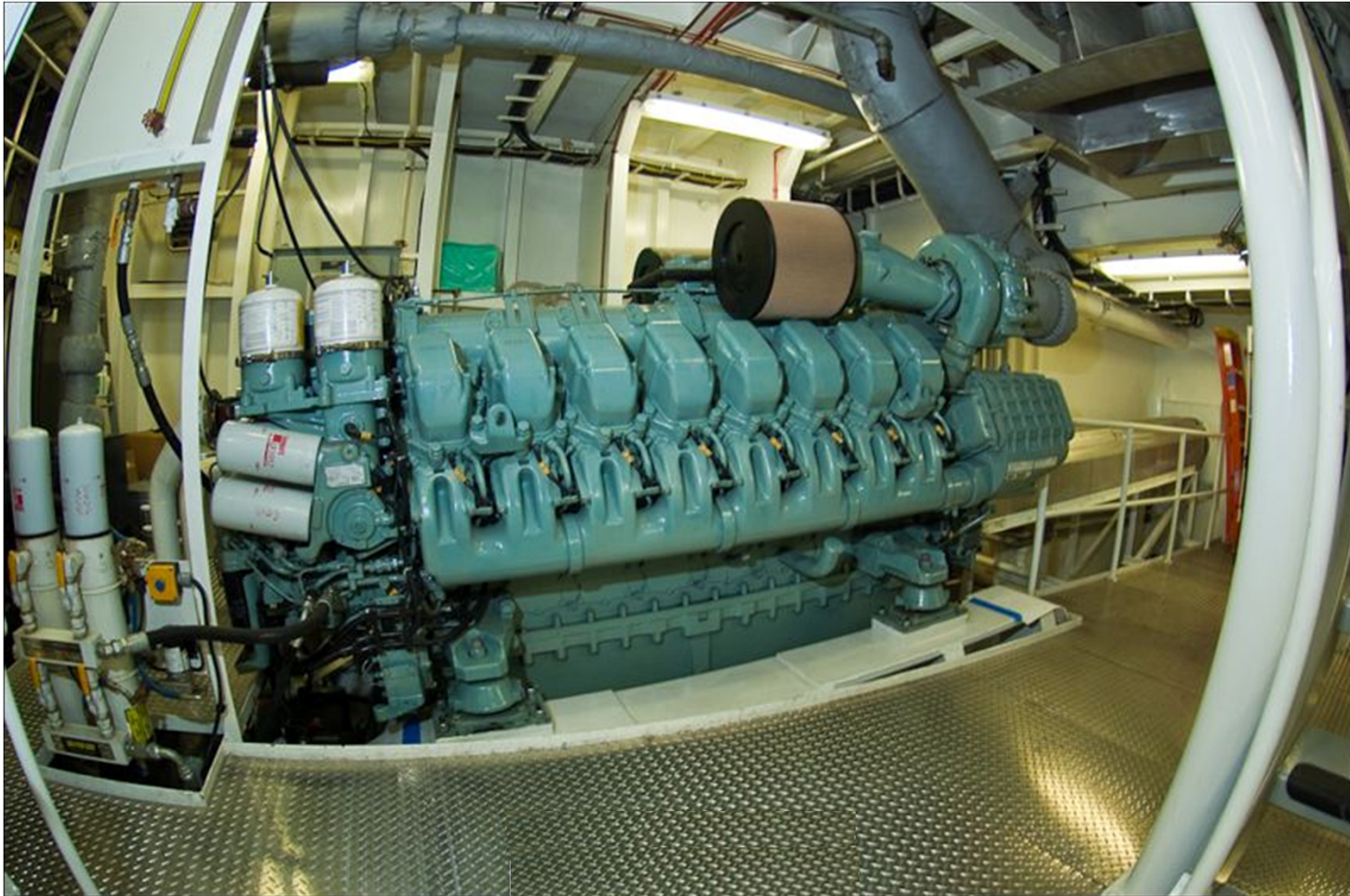


Designer: Robert Allan, Ltd.  
Builder: Gladding-Hearn  
Delivery Date: April 2008  
LOA: 24.38 m (80 feet)  
Beam: 9.75 m (32 feet)  
Engines: 2 X 16V4000 Detroit Diesel  
Horsepower: 2 X 2400 hp (4800 hp total)  
Propulsion: 2 X 205FP Rolls Royce Marine Z-Drives  
Bollard Pull: 65 Tons



**WILMINGTON TUG, INC.**

## Engine room on the *Madeline*



WILMINGTON TUG, INC.



## Z-Drive compartment on the *Madeline*



WILMINGTON TUG, INC.

## Wheelhouse view from the *Madeline*



WILMINGTON TUG, INC.



## Wilmington Tug returning home after assisting a ship in the Bay



WILMINGTON TUG, INC.