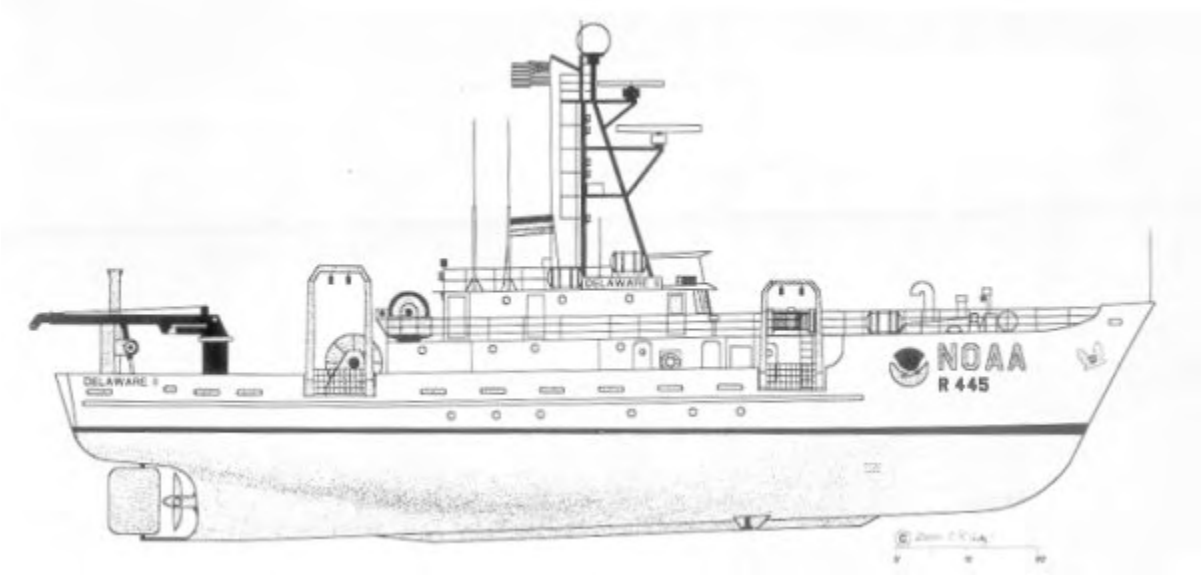
DELAWARE II

NOAA Ship DELAWARE II conducts fishery and living marine resource research in support of NOAA's National Marine Fisheries Service (NMFS), Northeast Fisheries Science Center's Woods Hole Laboratory in Woods Hole, MA. The ship's normal operating area is the Gulf of Maine, Georges Bank, and the continental shelf and slope from Southern New England to Cape Hatteras, NC. Typical assessment work includes groundfish assessment surveys and Marine Resources Monitoring, Assessment and Prediction (MARMAP) surveys. Research conducted from **DELAWARE II** provides an understanding of the physical and biological processes that control year-class strength of key economical fish species. NOAA Marine and Aviation Operations operate the vessel.



Line Drawing by Bob Hitz

Design

- Designer: George C. Sharp, Inc.
- Builder: South Portland Engineering, S. Portland, ME
- Launched: December 1967
- Delivered: October 1968
- Commissioned: March 12, 1975
- Hull Number: R445
- Call Letters: KNBD
- Home Port: Woods Hole, MA
- Length (LOA): 155 ft. (47.2 m)
- Breadth (molded): 30 ft. (9.1 m)
- Draft, Maximum: 16.6 ft (5.1 m)
- Hull: Welded steel
- Average Displacement: 897 tons
- Lightship Displacement: 758.3 tons
- Gross Tonnage: 610 tons
- Net Tonnage: 183 tons

Speed & Endurance

- Cruising Speed: 10 knots
- Range: 5,318 nmi
- Endurance: 24 days
- Endurance Constraint: Fuel

Complement

- Licensed Master: 1
- Licensed First Officer: 1
- Commissioned Officers: 3
- Licensed Engineers: 3
- Crew: 10
- Scientists: 14 (Max)

Food Service Seating

- General mess: 16

Berthing

- Single staterooms: 2
- Double staterooms: 11
- Four bunk rooms: 2
- Total bunks: 32

Medical Facilities

- Emergency and first-aid equipment aboard, administered by an EMT.

Scientific Laboratory Facilities

- Wet lab: 264 sq. ft.
- Dry/Chemistry lab: 230 sq. ft.
- Protected work area: 172 sq. ft.
- Scientific Freezer: Forward Main Deck, Walk-in, 201 cu. ft.

Cranes and Booms

- Telescoping Deck Crane
  - Quantity: 1
  - Manufacturer: Aurora
  - Boom Length: 35ft maximum
  - Location: Starboard Quarter
  - Lifting Capacity: 6,000 lb.

Winches

- Trawl Winch
  - Quantity: 2
  - Manufacturer: Marine Hydraulics Inc.
  - Drive: Diesel Hydraulic
  - Line Speed: 119 ft/min
  - Maximum pull: 20,000 lbs
  - Drum Capacity: 3,000 m of 1" wire rope
- Oceanographic Winch
  - Quantity: 1
  - Manufacturer: NETEC
  - Drive: Electrohydraulic
  - Line Speed: 60m/min @ 10,000 lb
  - Maximum pull: 20,000 lbs @ 30 m/min
  - Drum capacity: 4,400 meters of 0.625 in. or 600 m of 1.0 in conducting cable. (Interchangeable drum)
- Constant Tension Winch
  - Quantity: 1
  - Manufacturer: NETEC
  - Drive: Electrohydraulic
  - Line Speed: 320 ft/min
  - Maximum pull: 3500 lbs tension
  - Drum capacity: 329m of 0.5" conducting cable
- Net Reel
  - Quantity: 1
  - Manufacturer: NETEC
  - Drive: Diesel Hydraulic
  - Maximum Pull: 20,000 lbs
  - Line Speed: 100 ft/min
- Forward Hydrographic Winch
  - Quantity: 1
  - Manufacturer: Almon Johnson
  - Drive: Hydraulic
  - Line Speed: 80m/min
  - Line Pull: 5,000 lbs
  - Drum Capacity: 2,000 m of 0.25" and 0.322" conducting wire (Two drum winch)
- Aft Hydrographic Winch
  - Quantity: 1
  - Manufacturer: Almon Johnson
  - Drive: Hydraulic
  - Line Speed: 100 m/min
  - Line Pull: 5,000 lbs
  - Drum Capacity: 6,000 m of 0.25" or 0.322" conducting wire (Interchangeable drums)

A-Frames

- Movable Gantry
  - Quantity: 1
  - Clearance over the side: 4'
  - Work area below: 10' wide by 17' high.
  - Location: Stern
- Forward A-Frame
  - Quantity: 1
  - Type: Movable
  - Clearance over the side: 8'
  - Work area below: 6' wide by 13.3' high.
  - Safe Working Load: 5,000 lbs
  - Location: Stbd side, forward
- Aft A-Frame
  - Quantity: 1
  - Type: Movable
  - Clearance over the side: 8'
  - Work area below: 6' wide by 16.5' high.
  - Safe Working Load: 7,000 lbs
  - Location: Stbd side, aft

Ground Tackle

- Bower anchor
  - Quantity: 2
  - Type: Stockless
  - Weight (each): 1,950 lbs
- Anchor Chain
  - Quantity: 1
  - Size and type: 1-1/16" stud link
  - Length: 135 fathoms
- Anchor Windlass/Capstan
  - Quantity: 1
  - Manufacturer: MESCO
  - Type: 15 hp, dual speed, reversing

Small Craft

- Rigid Hull Inflatable Boat (RHIB)
  - Length: 18'
  - Propulsion: Gasoline Outboard, 25 hp
- Boat Davit
  - Type: Single Point Release
  - Safe Working Load: 2,696 lbs

Engineering

General

- Cruising Speed: 10 knots
- Range: 5,318 nmi
- Power: 1,230 SHP
- Fuel Capacity: 24,500 gallons
- Fuel Consumption: 52 gal/hr
- Fuel Type: #2 diesel
- Endurance: 24 days
- Endurance Constraint: Fuel

Propulsion Plant

- Main Propulsion
  - Type: Geared diesel
  - Quantity: 1
  - Manufacturer: General Motors/Electro-Motive Division
  - Model: EMD-567C, V-12
  - Rated power: 1,200 hp
- Reduction gear
  - Quantity: 1
  - Manufacturer: Lufkin Marine Gear
  - Type: 3.22:1 Ratio, 2 speed ahead single astern
- Propeller
  - Type: Fixed pitch
  - Quantity: 1
  - Manufacturer: Columbian Bronze
  - Diameter: 64 in.
  - Blades: 4

Freshwater System

- Storage capacity: 7,300 gal.
- Normal consumption: 600 gal./day
- Maximum production: 2,400 gal./day
- Brominator
  - Manufacturer: Everpure
- Evaporator
  - Type: Waste Heat Recovery
  - Quantity: 1
  - Manufacturer: Maxim Aquafresh HJ50

Pollution Control

- Sewage Waste Control
  - Type: Aerobic Bacterial
  - Manufacturer: Fast, Model 26M
  - Holding capacity: 2 tanks at 354 gallons each (708 gallons total)
- Oily Waste Control
  - Type: Oily water separator
  - Manufacturer: Hapco, HMC1-4
  - Flow rate: 4 gpm
  - Holding Capacity: 200 gallons

Electrical System

- Ship Service Generators
  - Quantity: 2
  - Manufacturer: Detroit Diesel/General Motors 6VT-92
  - Output Voltage: 480 VAC, 60 Hz, 3Ø
  - Power Rating: 270 kW (each)
- Emergency Generator
  - Manufacturer: Perkins, 1000 series, 6 cylinder
  - Output Voltage: 480 VAC, 60 Hz, 3Ø
  - Power Rating: 70 kW
- Electrical Service
  - 460 VAC, 60 Hz, 3Ø
  - 220 VAC, 60 Hz, 3Ø
  - 110 VAC, 60 Hz, 1Ø
  - Power isolation/UPS protection for scientific and navigational equipment.

Communications

- VHF-FM Marine Band Transceivers with Digital Selective Calling
- HF Marine Band Transceivers with Digital Selective Calling
- HF Alarm Watch Radio Receiver (2182 kHz)
- Emergency Position Indicator Radio Beacons (Class 1 and Mini-B)
- Search and Rescue Transponders (X-Band Radar Frequency)
- INMARSAT Standard A Radio Transceiver, with 56 kb high speed data modem
- INMARSAT Standard C Radio Transceiver
- Narrow Band Direct Printing Terminal
- NAVTEX Receiver
- Weather Fax Receiver
- Cellular phone
- E-mail (DELAWARE II's E-mail address is: mailto:Noaa.Ship.Delaware@noaa.gov)
- Portable VHF-FM transceivers
- 2 Personal EPIRBs (aka PEPIRBs)

Acoustics

- Color Video Sounder (50 kHz and 200 kHz)
- Simrad EK-500 Scientific Sounder (12 kHz, 38 kHz and 120 kHz), with BI500 software running on a SUN Workstation
- Color Scanning Sonar
- Acoustic Doppler Current Profiler

Navigation

- Navigation Depth Sounder
- Doppler Speed Log
- X-Band and S-Band Radars, with an ARPA display.
- Global Positioning System (GPS) Receivers
- LORAN-C Receiver
- Gyrocompass

Scientific Equipment

- Scientific Computer System, for data acquisition and analysis
- Satellite Imaging System
- Thermosalinograph
- (3) Hull mounted sea surface temperature probes
- Fluorometer
- CTD Profiler
- Shipboard Environmental Acquisition System (SEAS)
- XBT system
- Digital fish rulers
- Digital fish scales