

SHIP'S EQUIPMENT AND CAPABILITIES

1. General

Length Overall:	86' 03"	Propulsion:	One Caterpillar 3508TA diesel, 775 BHP; reverse red. gear 4.07:1; kort nozzle; 5.5 SS 4-blade prop.
Waterline:	78' 04"	Aux. Power:	One Caterpillar C4.4: 86 KW, 3φ-208 v, 110 v.
Beam:	23' 04"		One Caterpillar C4.4: 76 KW, 3φ-208 v, 110 v.
Molded Depth:	13' 05"	Tankage:	Fuel: 5,200 gals
Draft, DWL:			Freshwater 3,000 gals
Forward	10'03"		Sewage 5,200 gals
Aft	11' 09"	Accommodations:	
Displacement			4 crew
DWL	275 Ltons		6 scientists + 1 marine tech.
Lightship	227 Ltons	Science Areas:	Workdeck: 800 sq. ft.
Admeasurement:	<200 GRtons		Wet Lab: 200 sq. ft.
Speed:			Dry Lab: 400 sq. ft.
Cruising:	9 knots		
Maximum:	10 knots		
Range:	21 days		
Endurance:	21 days		

Owner: The University of Minnesota
Operator: The Large Lakes Observatory
Built: 1985
Home Port: Duluth, Minnesota
Cellular phone: (218) 390-7501
Marine Superintendent: (218) 726-7826

2. Winches and Wire Rope

- SeaMac 220H, ship hydraulics with a drum holding ~700 meters of ½" 6/19 wire.
- SeaMac 310H, ship hydraulics with a drum holding ~500 meters of ¼" 6/19 wire.
- SeaMac 305H, ship hydraulics with a drum holding ~600 meters of .322" EM wire.
- SeaMac 210H, ship hydraulics with a drum holding ~500 meters of ½" 6/25 wire.

3. Deck Equipment and Capabilities

- Deck Crane M95-20A3 (DMW) capable of lifting 1500 lb. at 33 ft.
- A-Frame (Hydraulic) 5 ton capacity, 13.5' vertical clearance, 7.5' horizontal clearance, 6' off-board reach, 4' in-board reach
- Power capstan (Electric) 2 ton capacity
- Anchor windlass (Hydraulic) 500 ft. chain

4. Laboratories

- a. Wet Lab- main deck, 10 x 22 ft., counters, clean and utility power lines, sink, hot and cold potable water, continuous flow of sea water can be provided.
- b. Dry Lab- lower deck, 21 x 22 ft., counters, electronics racks, clean and utility power lines, communication and computer links with pilot house, Millipore DirectQ3-UV clean water, fume hood, safety shower.
- c. Laboratory Van- back deck, 10 x 10ft., counters, clean and utility power lines, hot and cold potable water, air conditioner, heater, liquid scintillation counter, fume hood.

5. Instrumentation

- a. SeaBird Model 911 plus CTD (deck unit) with D.O. sensor, pH/ORP sensor, Chl-a fluorometer, CDOM, transmissometer, PAR sensor, and altimeter.
- b. Seabird 32 Carousel with 12 8-liter bottle capacity
- c. Triaxus towed vehicle with 911+ CTD, Chl-a fluorometer, transmissometer, D.O. sensor, and PAR sensor.
- d. Knudsen Model 1602 Echo Sounder with 28/200 kHz transducers, analog and digital output to computers in dry lab, wet lab and pilot house
- e. Applanix POS-MV OceanMaster RM Motion Referencing Unit (Inertial with twin differential GPS)
- f. Teledyne RDI Ocean Surveyor Acoustic Doppler Current Profiler, 150 kHz
- g. Reson Sea Bat Model 7101 Multi-Beam Sonar, 240 kHz, 511 beams, 150 deg swath width, with side scan.
- h. Underway sea surface water data with a meteorological sensor suite, temperature sensor, Chl-a fluorometer, CDOM, transmissometer, SPAR, thermosalinograph, and pCO₂ sensor.

6. Navigation

- a. Two Furuno MFD8 GPS
- b. Furuno NavNet 3D radar, 12kw transmitter
- c. Furuno NavNet 3D radar 6kw transmitter
- d. Furuno Nav-500 Autopilot
- e. Furuno SC-502 Satellite Compass
- f. Furuno FE 700 Sounder
- g. Furuno FA-150 AIS system
- h. Furuno DS-80 Doppler Speed Log

7. Communications

- a. Uniden UM 525
- b. Standard Horizon Infinity
- c. Cellular Telephone and intercom
- d. FleetBroadBand Sailor 500 Satellite communications

8. Other Available Instrumentation

- a. Ocean Instruments Multi-Corer
- b. Benthos gravity corer
- c. Heavy Piston corer

- d. Kullenberg Piston corer
- e. Peterson Grab sampler
- f. Plankton nets
- g. 60' Stauffer midwater trawl with a trawl sonar system.
- h. Geopulse High Resolution Seismic Reflection Profiling System (1-3 kHz)
- i. Bolt Model 600B airguns with 1, 5, 10 and 40" chambers
- j. Edgetech Side Scan/CHIRP system.
- k. bbe FluoroProbe III
- l. Satlantic ISUS V3 Nitrate analyzer
- m. McLane WTS-LV (Large Volume Pumps)
- n. McLane Paraflux Mark78H-21 Sediment Traps

9. Priorities and Procedures

Equipment use priorities

1. NSF funded projects on the Blue Heron
2. Non-NSF funded projects on the Blue Heron
3. NSF funded projects by LLO investigators on other lakes
4. NSF funded projects on other vessels
5. Non-NSF funded projects on other vessels

Plans to use the shared-use equipment must be outlined in the P.I. Cruise Plan Form. Equipment may be unavailable (due to maintenance or use of the equipment by other investigators) therefore the principal investigator must contact the marine superintendent about his/her desire to use shared-use equipment prior to submission of the Cruise Plan Form.