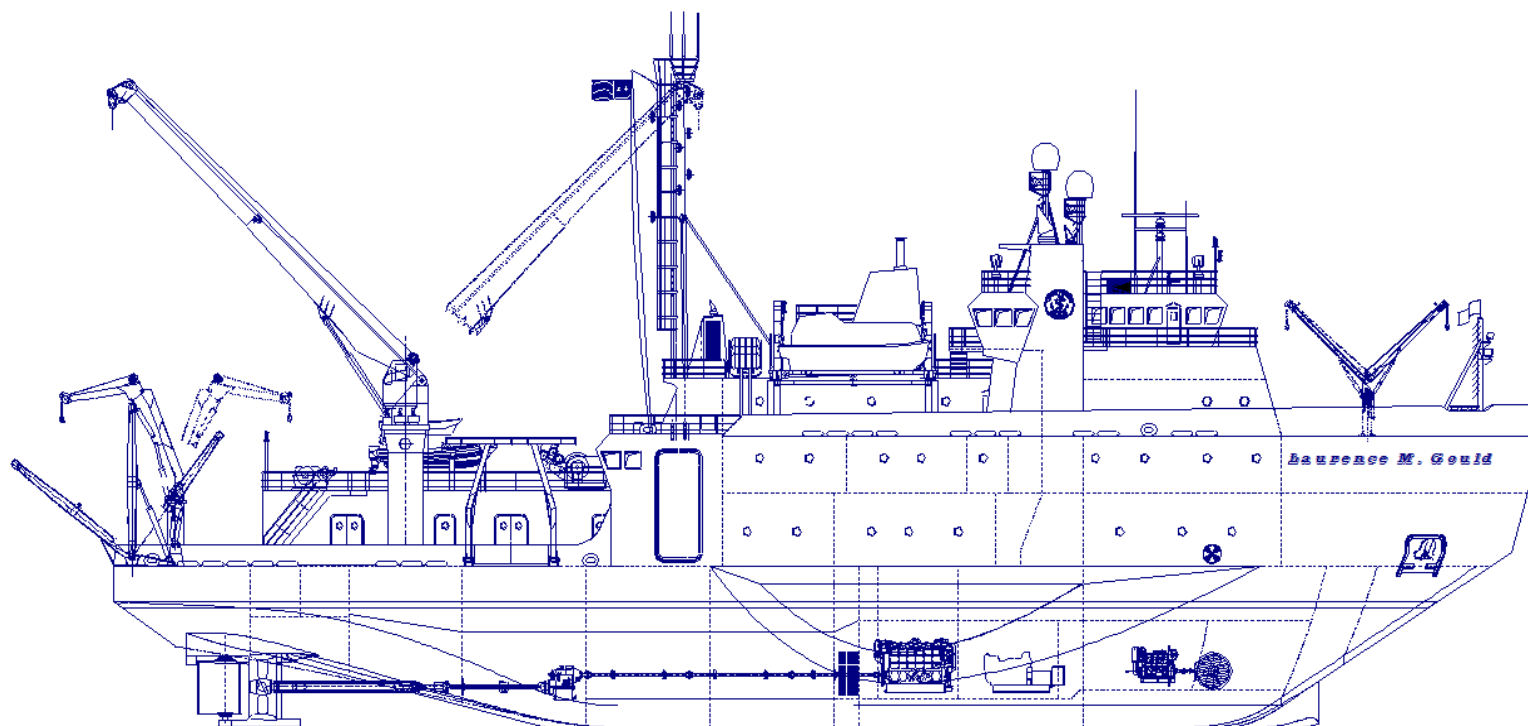

Laurence M. Gould

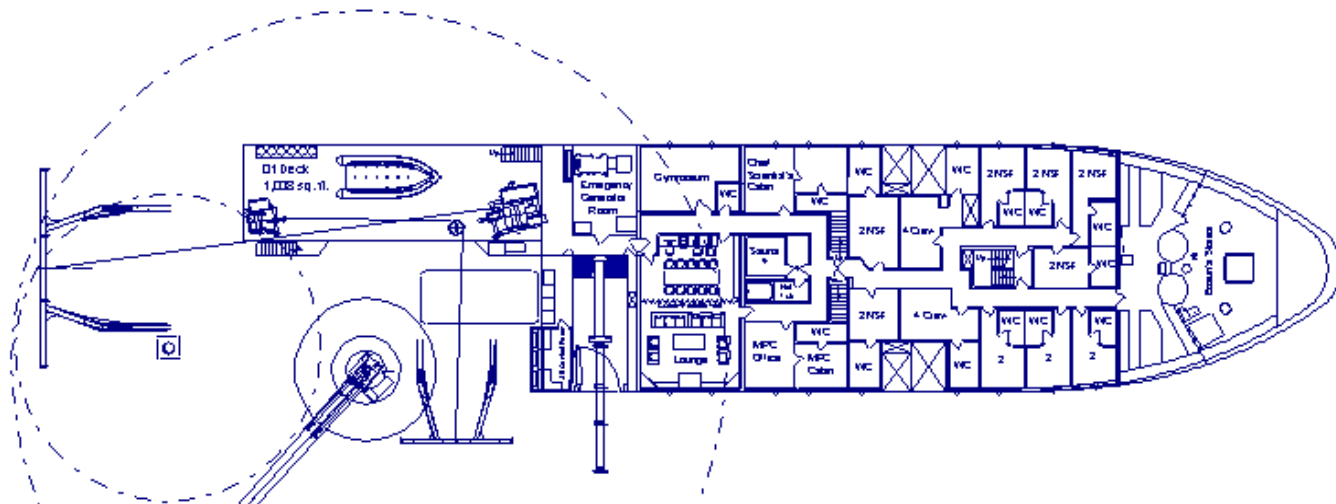
Antarctic Research and Supply Vessel



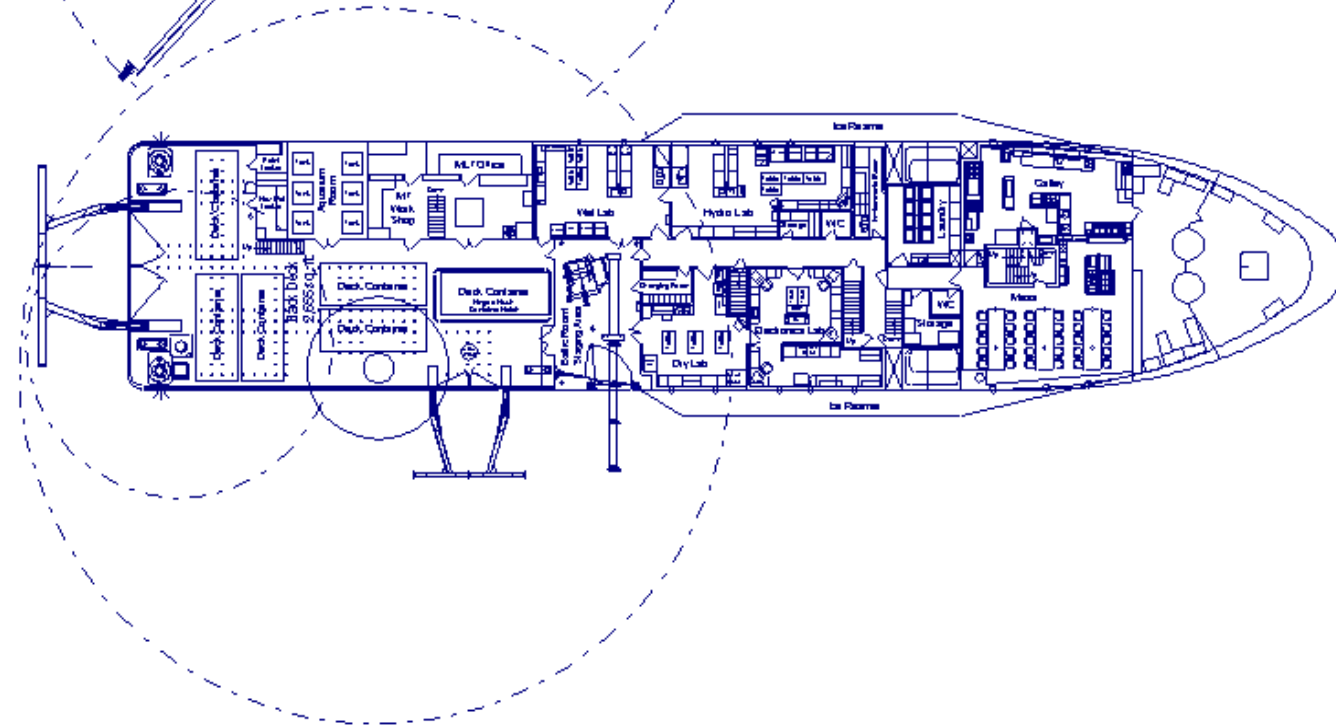
Operated for the
National Science Foundation Office of Polar Programs
by



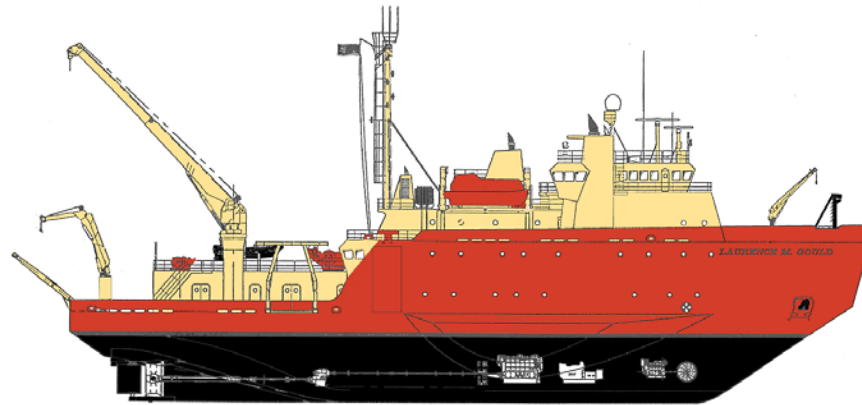
Under a charter with
Offshore Service Vessels LLC



01 Deck



Main Deck



The ARSV *Laurence M. Gould* is operated by Leidos ASC on a long-term charter from Offshore Service Vessels LLC. ASC staffs the vessel with a charter representative to coordinate cruise planning and scheduling, and a technical staff to support science operations. Offshore Service Vessels LLC provides the vessel master (captain), ice pilot, and crew.



Built in 1997, the *Gould* is 230 feet long, ice-strengthened, and rated Ice Class ABS A1, which means it is capable of breaking one foot of level ice with continuous forward motion. The vessel is a multi-disciplinary research platform designed for year-round polar operations and can accommodate up to 37 researchers and staff for missions lasting up to 75 days. The *Gould's* primary missions are to support research in the Antarctic Peninsula region and to re-supply and transport personnel and cargo between Palmer Station and South American ports.

The *Gould* was named in honor of Laurence McKinley Gould, polar explorer, geologist, teacher, and president of Carleton College. He was second-in-command on Admiral Richard E. Byrd's first Antarctic expedition of 1929-30. During that expedition, Byrd established the base camp at Little America from which his team explored the continent, including flights over the South Pole. Gould, an international figure with 25 honorary degrees, and a principal architect of the Antarctic Treaty, died in 1995 at the age of 98. That same year, the National Science Foundation initiated the charter for the services of this ice-strengthened vessel to further its studies and knowledge of the Antarctic Peninsula and Southern Ocean.

ARSV *Laurence M. Gould*

Principal Features and Technical Information

General		
Vessel Owner	Offshore Service Vessels LLC	
Address	Galliano, Louisiana	
Builder	North American Shipbuilding, U.S.A.	
Year of Construction	1997	
Chartered for	Leidos ASC	
Address	Centennial, Colorado	
Classification	Ice Class ABS A1	
Flag	U.S.A.	
Principal Dimensions		
Length Overall	230 ft	70.2 m
Length Between Perpendiculars	212 ft	64.7 m
Breadth (molded)	46 ft	14.02 m
Breadth (with ice reamers)	56 ft	17.1 m
Draft	18 ft	5.49 m
Depth	25.75 ft	7.85 m
Lightship Weight	2755 LT	2799 t
Deadweight	1025 LT	1041 t
Loadline Displacement	3780 LT	3841 t
Gross Tonnage	2966 (international)	
Loadline Displacement	3780 LT	3841 t
Main Propulsion Machinery		
Shafts		
Number of Shafts	2	
Total Shaft Horsepower		
Open Water	4576 HP	
Ice Operations	3900 HP	
Main Engines		
Number of Engines	2	
Manufacturer	Caterpillar	
Model	3606	
Propellers		
Variable Pitch in Kort Nozzles		
Number	2	
Diameter	8.6 ft	2.65 m
Rudders		
High Lift	2	
Generators		
Number	3	
Rating	700 kW	
Manufacturer	Caterpillar	
Model	3508	
Emergency Diesel Generator		
Number	1	
Rating	500kW	
Manufacturer Model	Caterpillar	3408
Cruising Range	12,000 miles	
Endurance	75 days	
Tank Capacities		
Fuel	245,400 gallons	
Fresh Water	37,385 gallons	
Sewage and Wash water	12,142 gallons	
Ballast	322,218 gallons	
Accommodations		
Crew	16	
Scientist and Staff	28	
Berthing Van Capacity	9	
Total	53	
Over-The-Side Handling Equipment		
Cranes		
Main Crane	13.5 ton	60 ft reach
Aft Knuckle Crane	3.5 ton	20 ft reach
Forward Auxiliary Crane	1/2 ton	

ARSV *Laurence M. Gould*

Principal Features and Technical Information

A-frames			CTD Pressure Sensor	Paroscientific	410K-105
Stern A-frame	10 metric tons	7.5 m clearance	Dissolved Oxygen	Sea-Bird	SBE 43
Starboard A-frame	5 metric tons		CTD Pump	Sea-Bird	5T
Baltic Room Telescoping Boom	5 metric tons		Fluorometer	Wet Labs	ECO-FL
Winches			PAR	Biospherical Instruments	QSP-200L4S
DUSH 5 Hydrographic Winch (Baltic Room)	10,000 m of 0.322 in. electro mechanical cable		PAR	Biospherical Instruments	QSP-2300
DUSH 4 Winch (2 Interchangeable Drums)	One drum with 9,000 m of 1/4 in. wire	One drum with 6,000 m of 0.322 in. conducting wire	Temperature	Sea-Bird	3-02/F
DUSH 11 Winch (Interchangeable Drums)	One drum carries 7,300 m of 9/16 in. torque balanced mechanical wire	One drum carries 5,000 m of 0.680 in. coaxial cable	Temperature	Sea-Bird	3plus, 6,800 m
Deck Tugger Winch	3/8 in. mechanical wire		Transmissometer	WET Labs	C-Star
Deck Utility Winch	1/4 in. mechanical wire		XBT (auto launcher) / XCTD	Sippican MK-21	
Mooring Winch	Interchangeable between vessels		Diving Equipment		
Streamer Winch	Interchangeable between vessels		Dive Compressors (1 on board)	Bauer	Fills to 3,000 psi
Water-Column-Sampling Equipment			Dive Van (for storage/setup of dive equipment)	20 x 8 x 8.5 ft	
Blake Trawl	5 ft		DAN (Divers Alert Network) Oxygen Kit		
Otter Trawls (2)	18 ft	30 ft	Water Purification Equipment		
Isaac Kidd Midwater Trawl	1 m		E-pure Four Holder System	Barnstead	Type I water quality (ultrapure), 2L/minute
Flat Trawl	35 ft		Reverse Osmosis & De-ionized (DI) Water System	Aqua Solutions Aqua-1 Compact	Type II water quality (analytical grade DI)
MOCNESS	1 m		Underway Seawater System		
Tucker Trawl, opening/closing	3 nets		Description:		
Conductivity Temperature Depth (CTD) Sensors			The seawater system supplies seawater to the Aquarium Room, Wet and Hydro labs. Green strand piping, a non-metallic, chemically resistant material, is used throughout the system to minimize algae and bacterial growth. It also maintains its structural integrity under low temperatures. Large diameter piping and a minimum of 90° turns help prevent frazil ice formation in the system. The seawater system is also equipped with a centrifugal ice-strainer/de-bubbler.		
Description:			Three Intakes		
The Sea-Bird 911+ offers real-time operation via sea cable telemetry, includes a solid state memory module, and has a maximum depth of 6800 m. The CTD is mounted on a 24-bottle General Oceanics rosette. Five, 12, and 30L bottles available.			Main	At Skeg	
Altimeter	Valeport	VA-500	Secondary	At Moon Pool	3 ft above keel
Conductivity	Sea-Bird	4M (6,800m)	Tertiary (used mainly for removing ice)	At Moon Pool	below water line
Conductivity	Sea-Bird	4-02/O	Surface Seawater Sampling Equipment		
Conductivity	Sea-Bird	4C	Fluorometer	Wet Labs	ECO-FL
CTD Fish	Sea-Bird	SBE 9+	Micro Thermosalinograph	Sea-Bird	45
			Transmissometer	Wet Labs	C-Star 25 cm

ARSV *Laurence M. Gould*

Principal Features and Technical Information

pCO ₂ Equilibration System	Lamont-Doherty Earth Observatory		PIR (pyrgeometer)	Eppley	PIR
Aquaria and Deck Incubators			PSP (pyranometer)	Eppley	PSP
Aquaria	6 Fiberglass	1000L Xactic Tanks	PAR Radiometer	Biospherical Instruments	QSR-240/P
Deck Incubator	3 Plexiglas	UV Transparent	PUV (underwater)	Biospherical Instruments	PUV-2500
Bottom-Sampling Equipment			GUV (mast)	Biospherical Instruments	GUV-2511
Dredges			Time & Navigation System		
Deep-Sea Rock Dredge	Scripps Institute of Oceanography		Position, Attitude, Heading GPS	SeaPath	330
Small Chain Dredge, Rock Dredge	Kahl Scientific		Time & Frequency Standard	Microsemi	Syncserver S600
Large Chain Dredge, Rock Dredge	Kahl Scientific		GPS	Garmin	GA29
Coring Equipment			Communications Equipment		
Description: The vessel can be equipped with several coring devices for vertical sediment sampling.			Inmarsat	Cobham	Sailor 500 (Fleet Broad-band)
Box Corer	Ocean Instruments		Inmarsat	Cobham	Sailor 100GX (Global Xpress)
Jumbo Piston Corer	Woods Hole Oceanographic Institute		Iridium	Motorola	SC4000
Grab Sampler	Smith-MacIntyre		VHF		
Gravity Corer			Sailor	RT146	Bridge to Bridge
Kasten Corer	State University of New York/Ocean Instruments		Sailor	RT2048	Main
Mega Corer	Mark I		Sailor	RM2042	Watch Receiver
Standard Piston Corer	Woods Hole Oceanographic Institute		VHF (Handheld)		
Sonar Systems			Sailor	SP300	
Acoustic Doppler Current Profiler (ADCP)	RD Industries	150 kHz Narrow Band VM-150	Sailor	T2130	
ADCP	RD Industries	OS-38	The LMG is Global Maritime Distress Safety System (GMDSS) compliant. This means that there is automatic and complete redundancy for each mode of communication for ship to ship and ship to shore. These systems are provided and maintained by the vessel owner, Offshore Service Vessels LLC.		
3.5 kHz Sub-Bottom Profiler	Knudsen	3260 Chirp, 10 KW	Computers and Networking		
12 kHz Bottom Tracker	Knudsen	3260 Chirp, 10 KW	Support Windows, Macintosh and Linux operating systems. There are usually four to six computers available for general use in the E-Lab and in the O1 Lounge.		
Chirp Sidescan Sonar / Sub-Bottom Profiler, towed	Teledyne Benthos	SIS-1625, max. depth: 2000 m	Network	200 LAN drops throughout ship, including cabins	
Meteorological Sensor Suite			Email	Transmitted every 30 minutes via satellite	
Humidity/Wet Temperature	Rotronic	HygroClip HC2-S3	Size Restrictions	10 MB incoming and outgoing	
Anemometer	Gill	Wind Observer II Ultra-sonic			
Barometer	Vaisala	PTB210B			

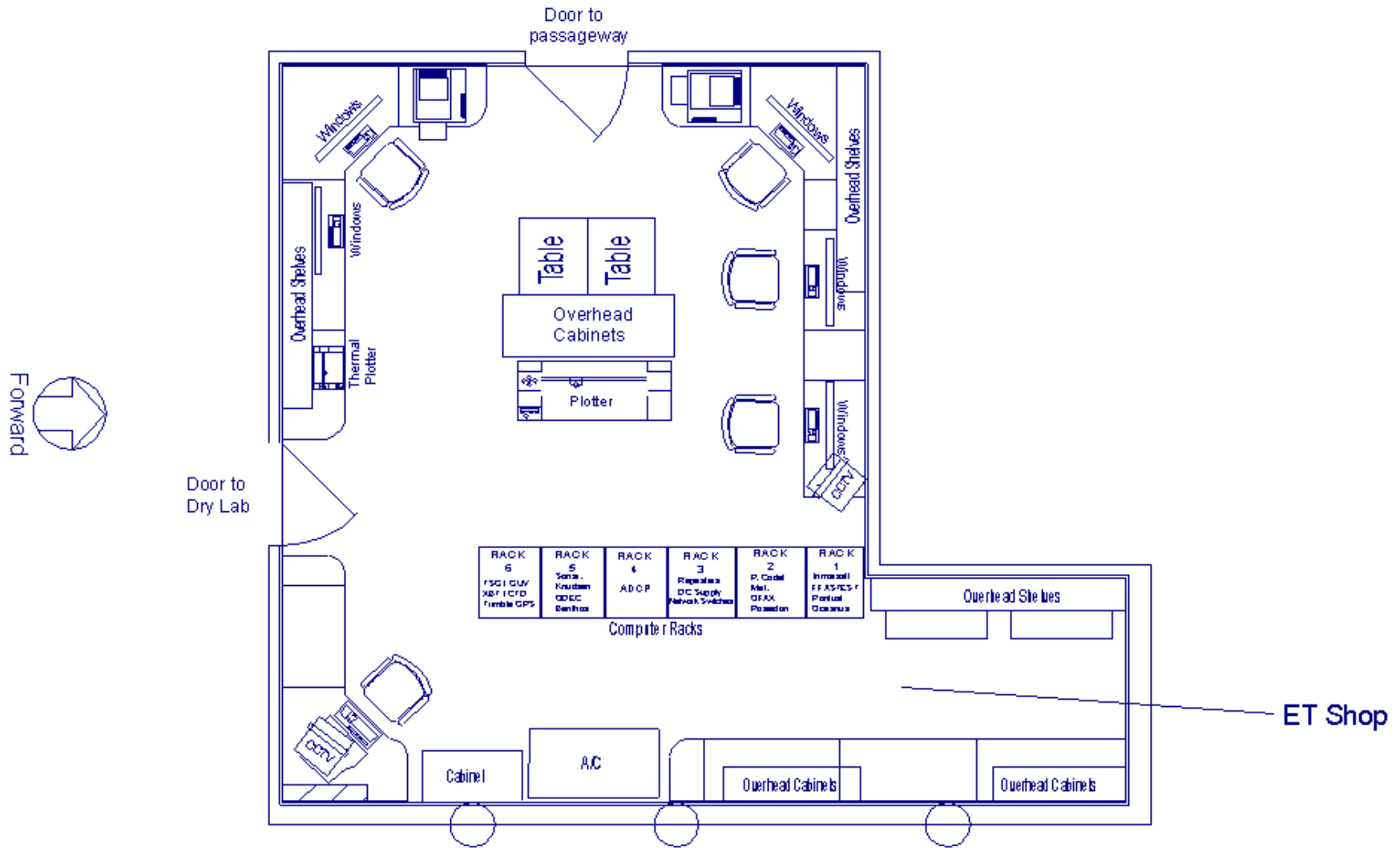
ARSV *Laurence M. Gould*

Principal Features and Technical Information

Space Allocation	NOTES
Scientific Laboratory Spaces	
Wet Lab	425 sq. ft
Hydro Lab	526 sq. ft
Dry Lab	356 sq. ft
Electronics/ Computer Lab	460 sq. ft
Aquarium Room	270 sq. ft
Environmental Room	48 sq. ft
Microscope Room	25 sq. ft
Science Workshop	380 sq. ft
Changing (Mud) Room	58 sq. ft
Baltic Room/Scientific Changing Room	427 sq. ft
Exterior Main Deck	
Deck tie down points are located at 2 ft centers on the main deck	
Lower Deck	
Scientific Storage	Four 20 ft containers
Science Vans	
Radioisotope Vans	2 vans 20 x 8 x 8 ft
Freezer Lab	2 vans 20 x 8 x 8 ft
Garage/Trace Metal Clean Lab	1 van 20 x 8 x 8 ft
Recreation / Leisure Spaces	
Lounge / Library	670 sq. ft
Gymnasium	196 sq. ft
Sauna / Jacuzzi	144 sq. ft

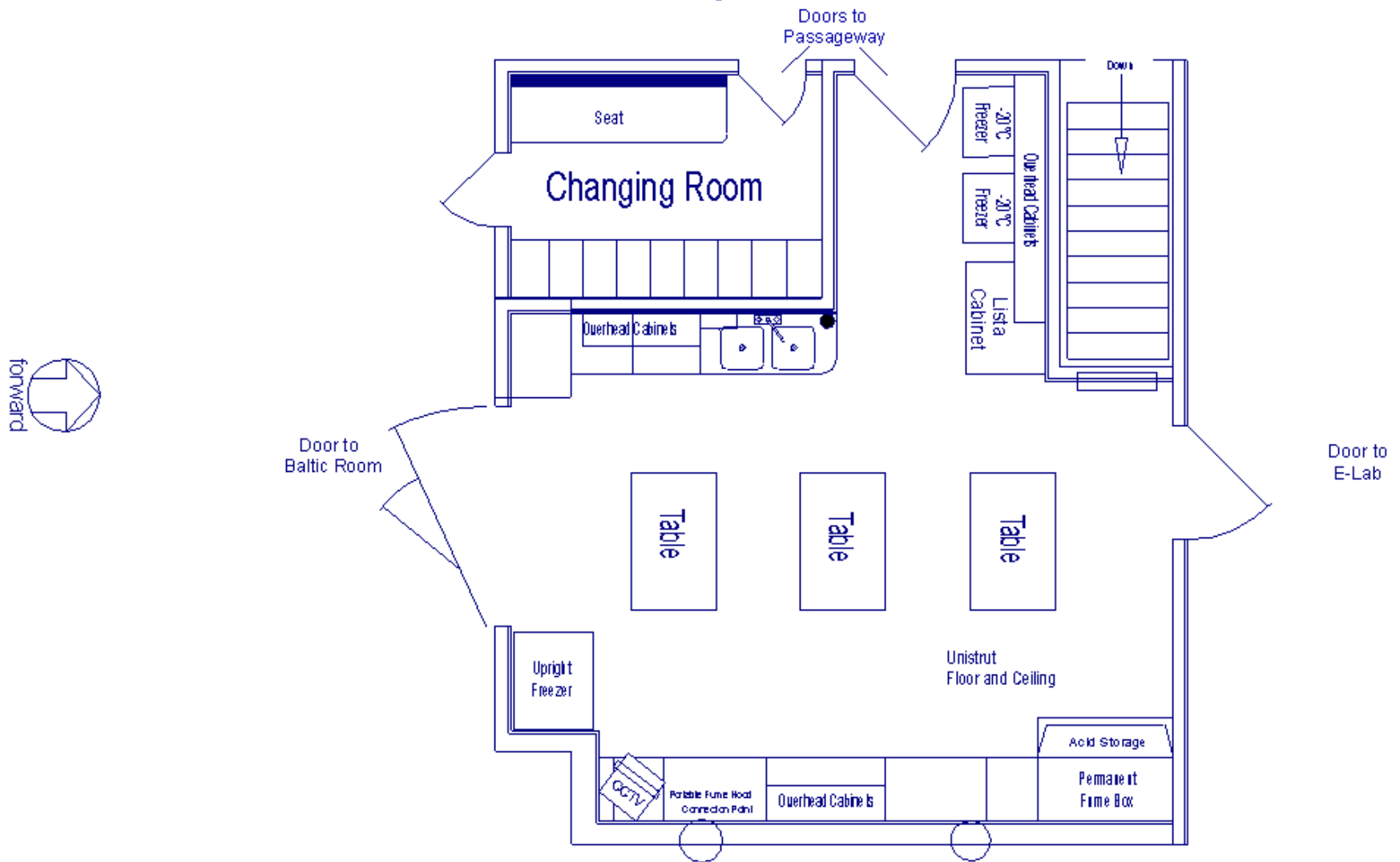
Electronics Lab

460 sq. ft.

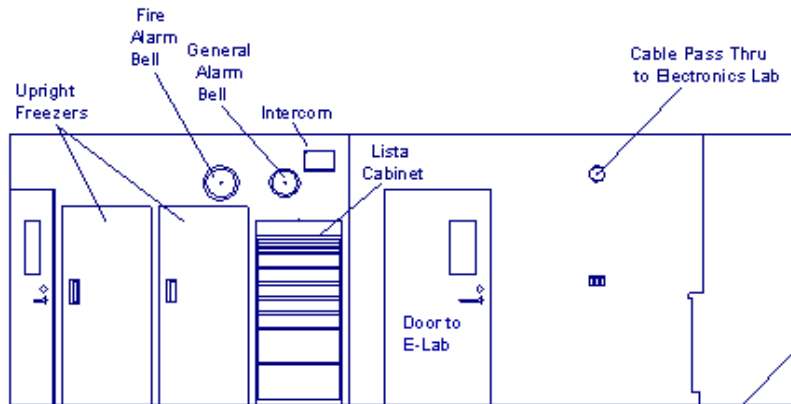


Dry Lab

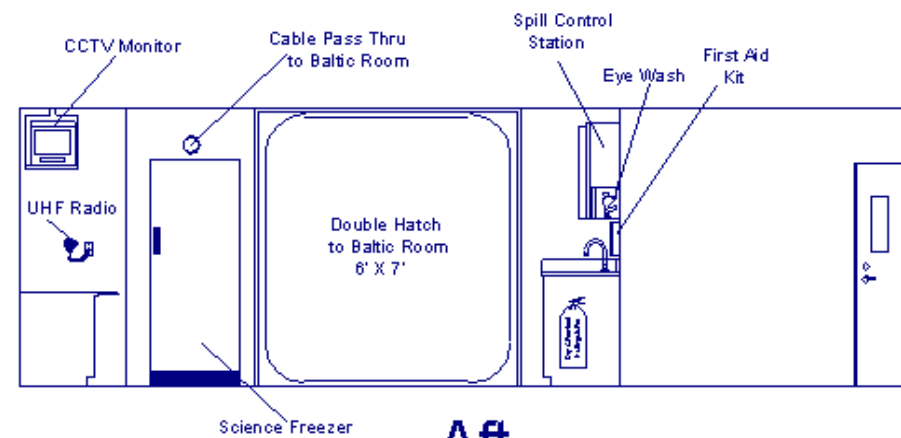
356 sq. ft.



Dry Lab Elevations

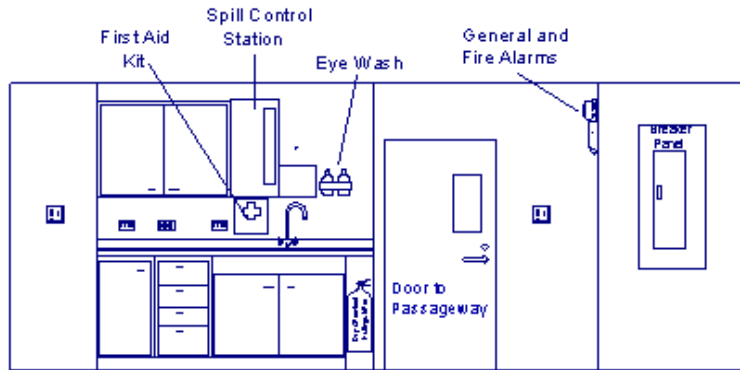


Forward

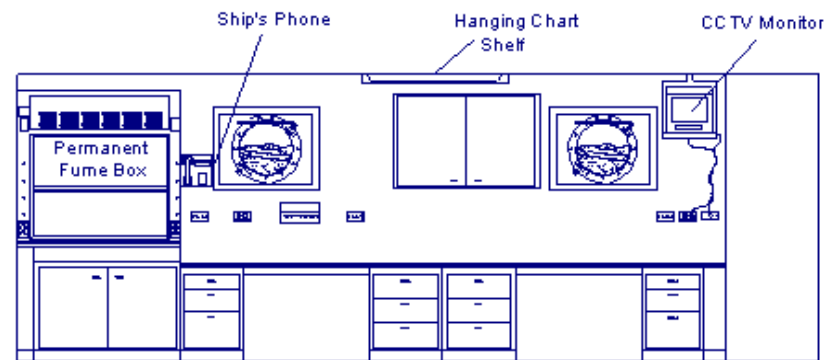


Aft

Dry Lab Elevations



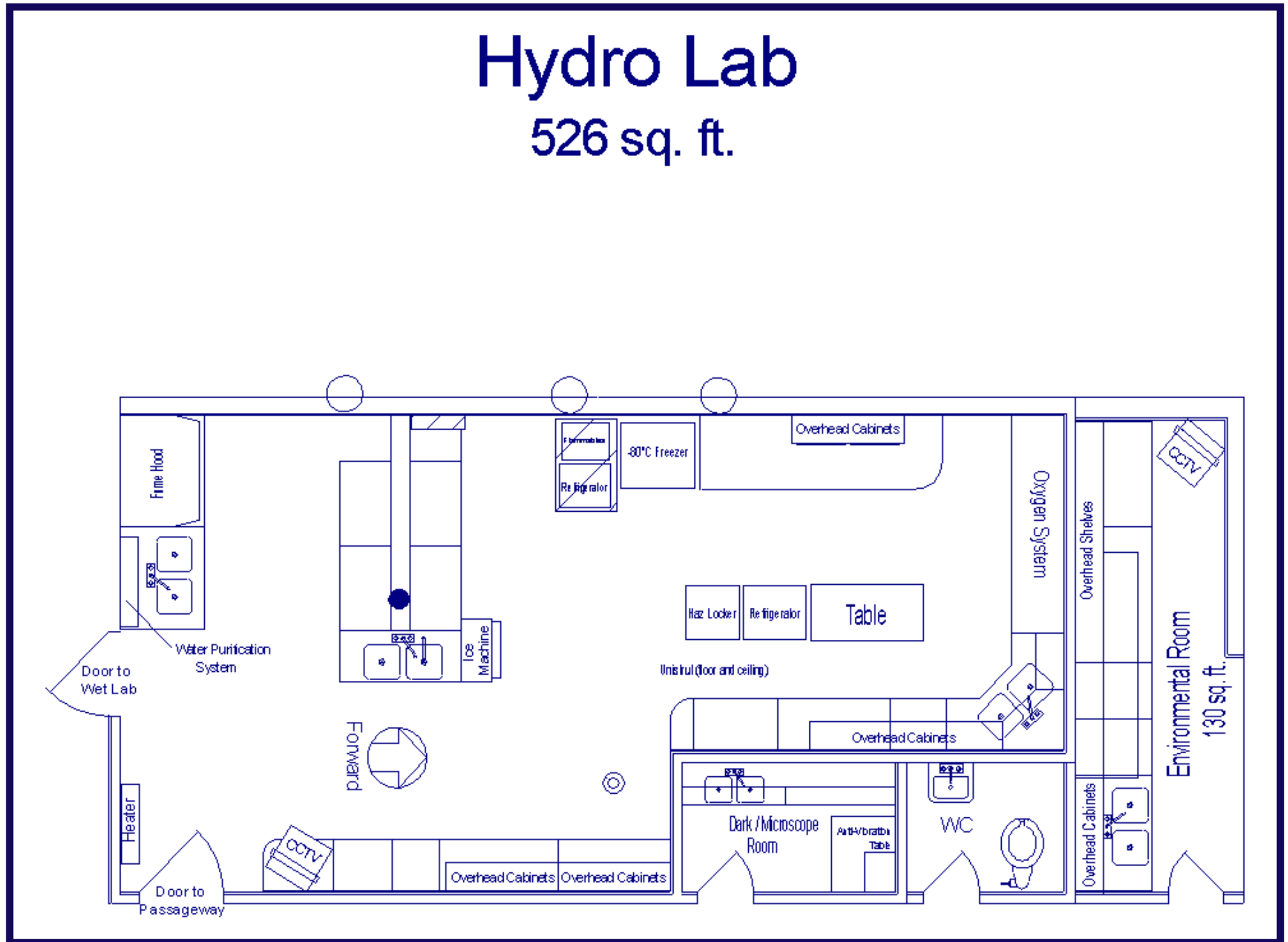
Port



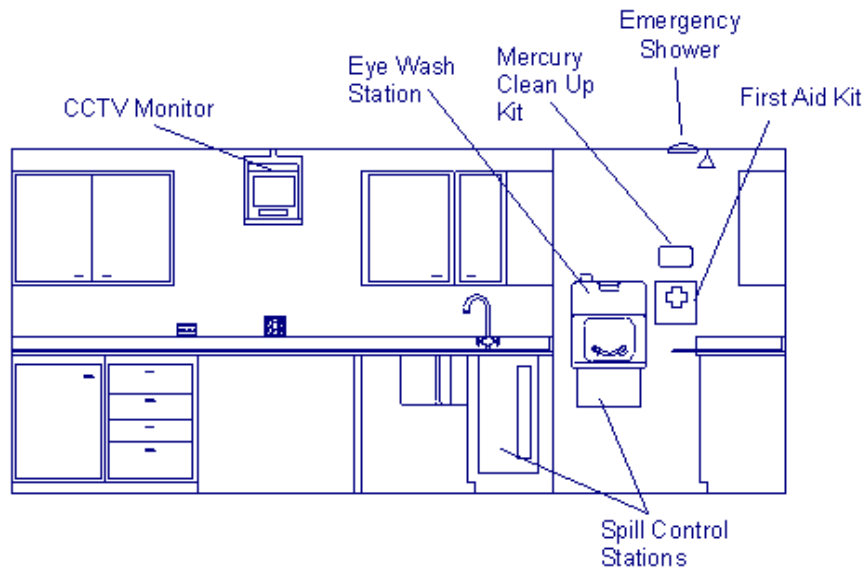
Starboard

Hydro Lab

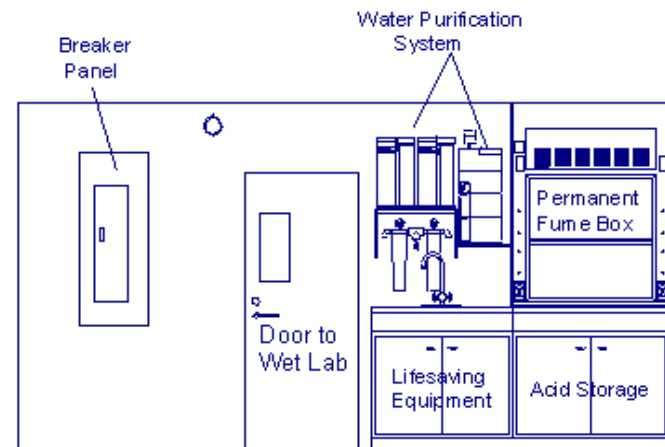
526 sq. ft.



Hydro Lab Elevations

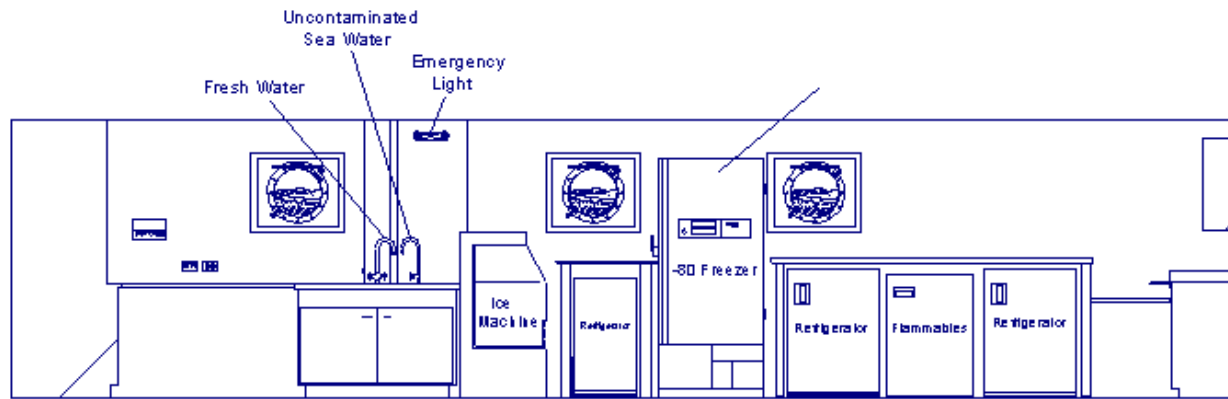


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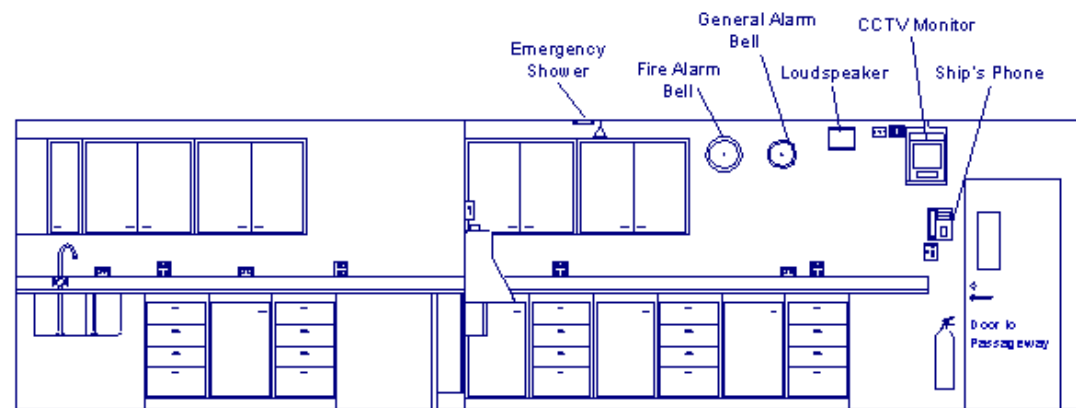


Aft

Hydro Lab Elevations



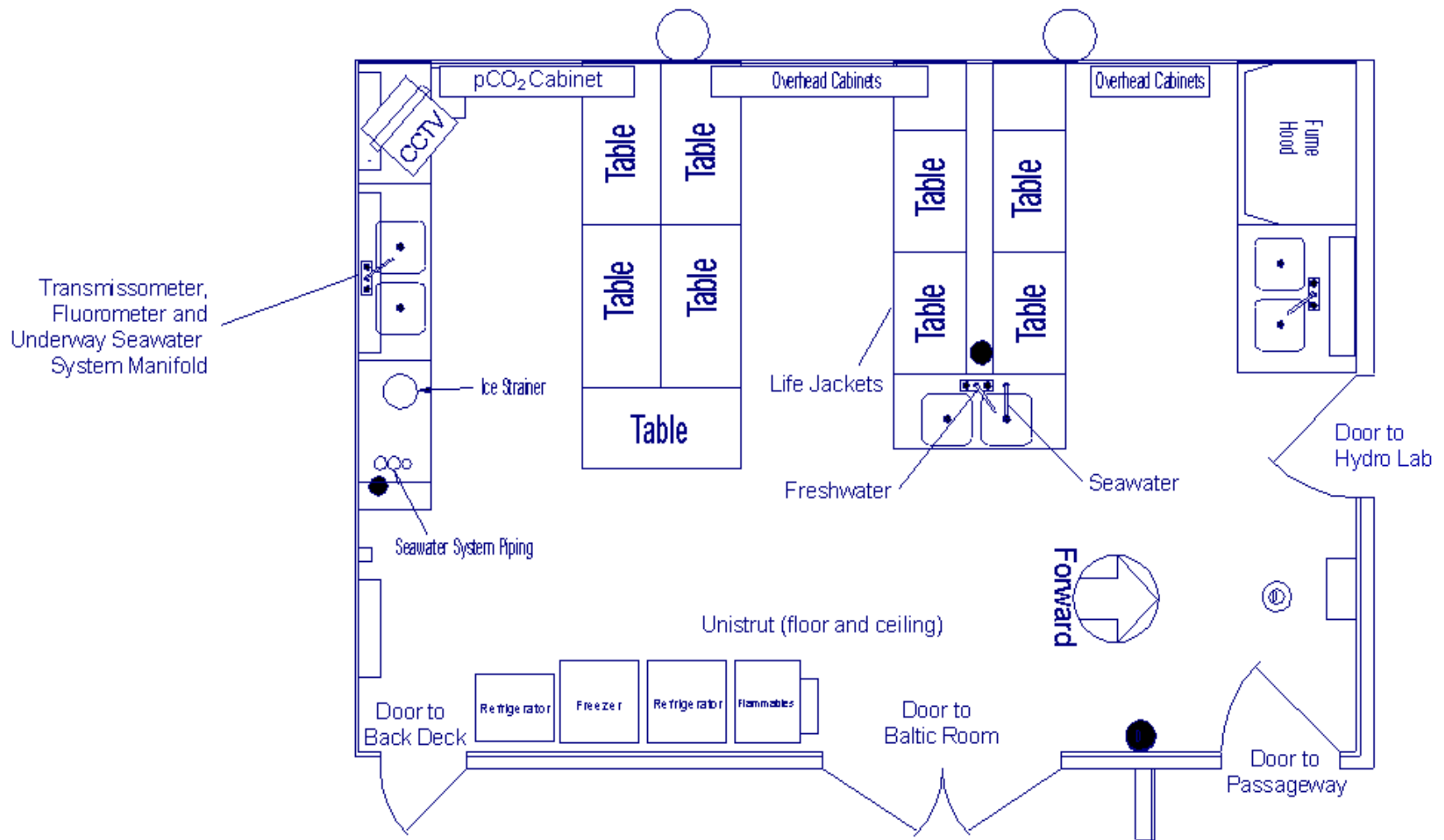
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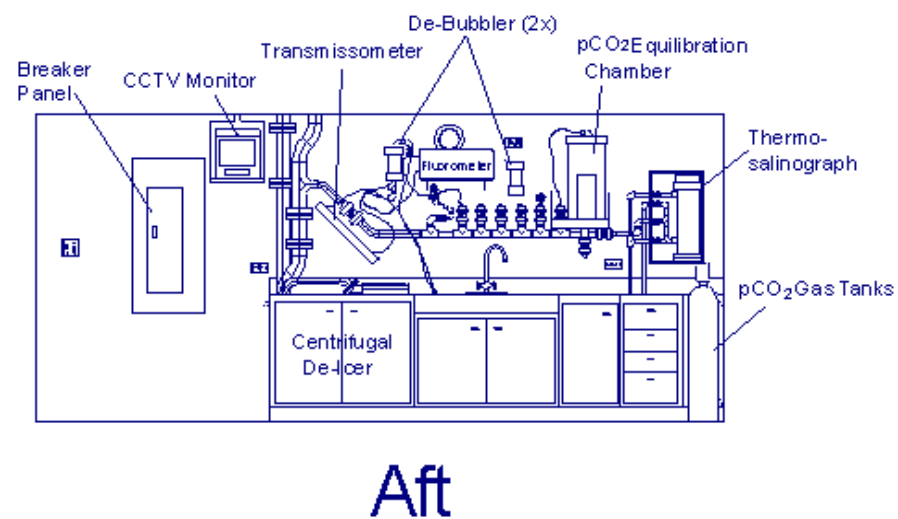
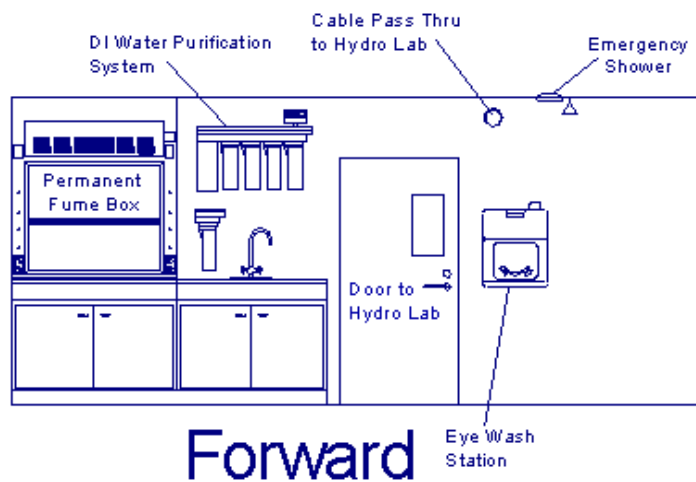
Starboard

Wet Lab

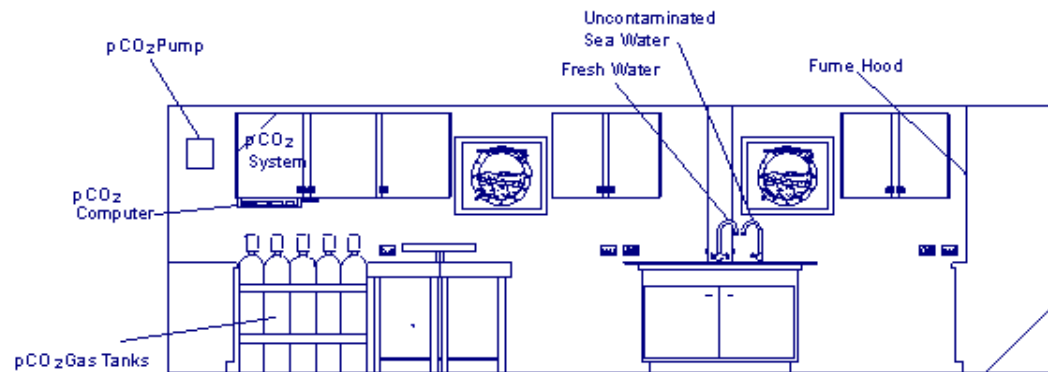
425 sq. ft.



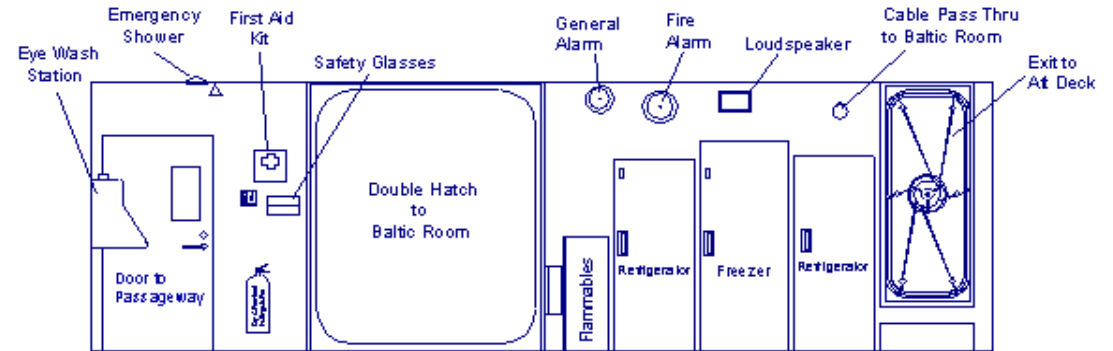
Wet Lab Elevations



Wet Lab Elevations



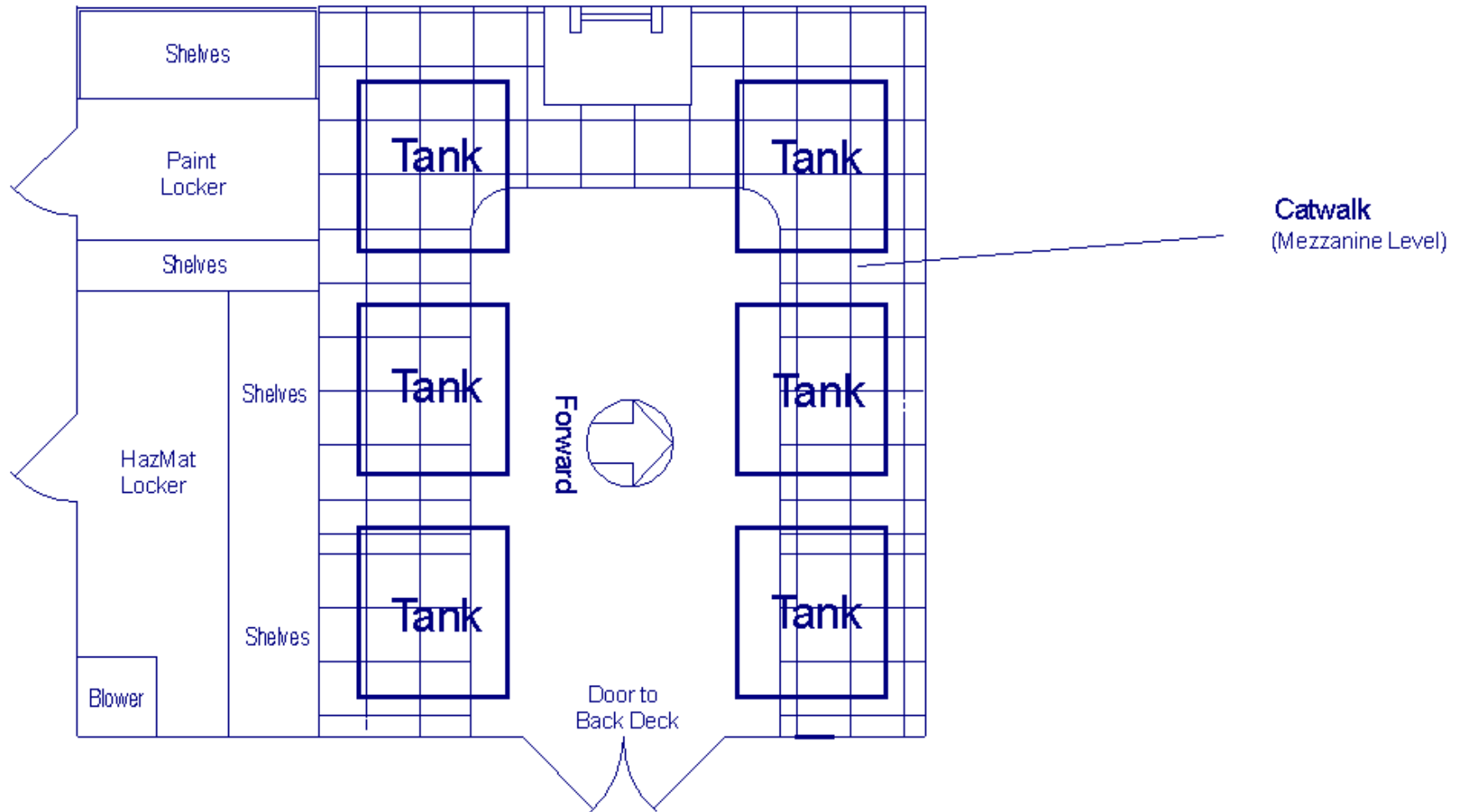
Port



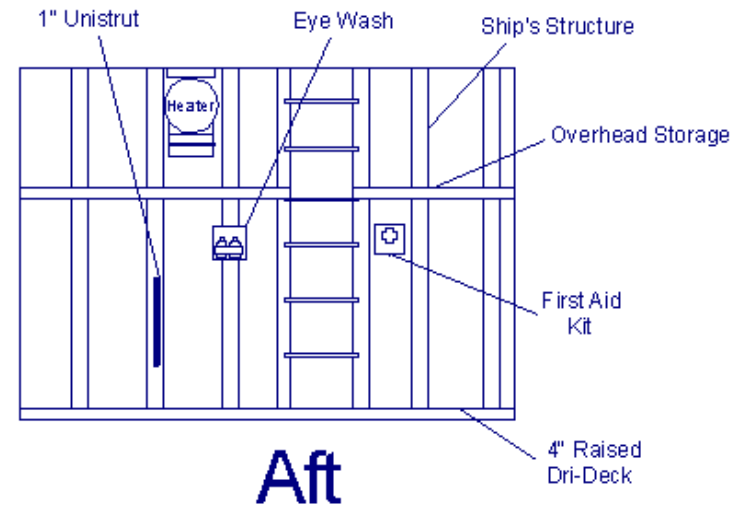
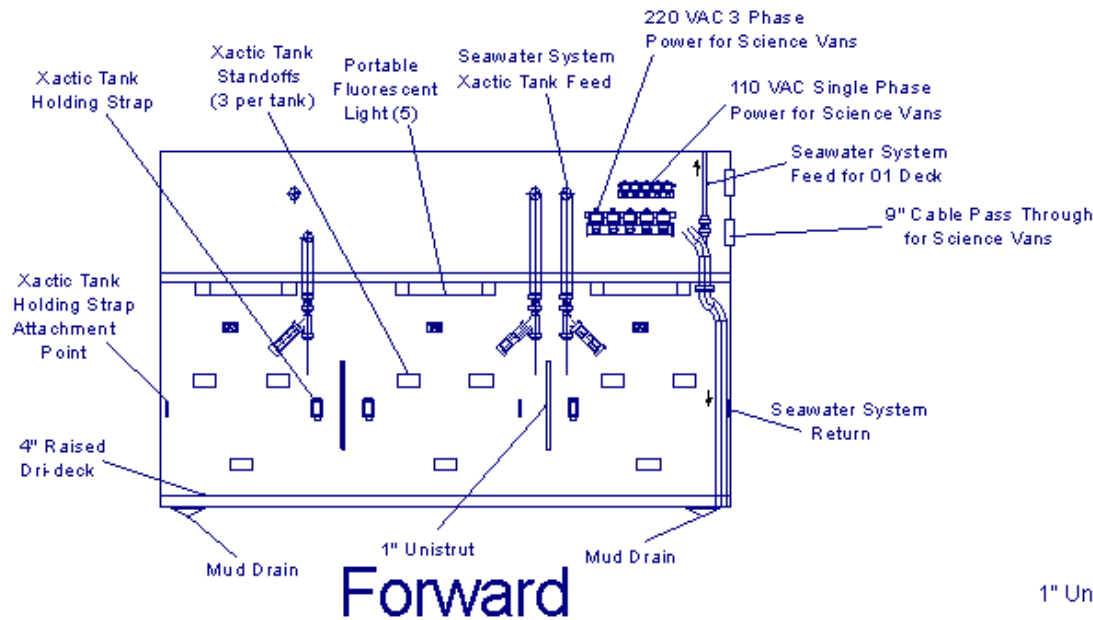
Starboard

Aquarium Room

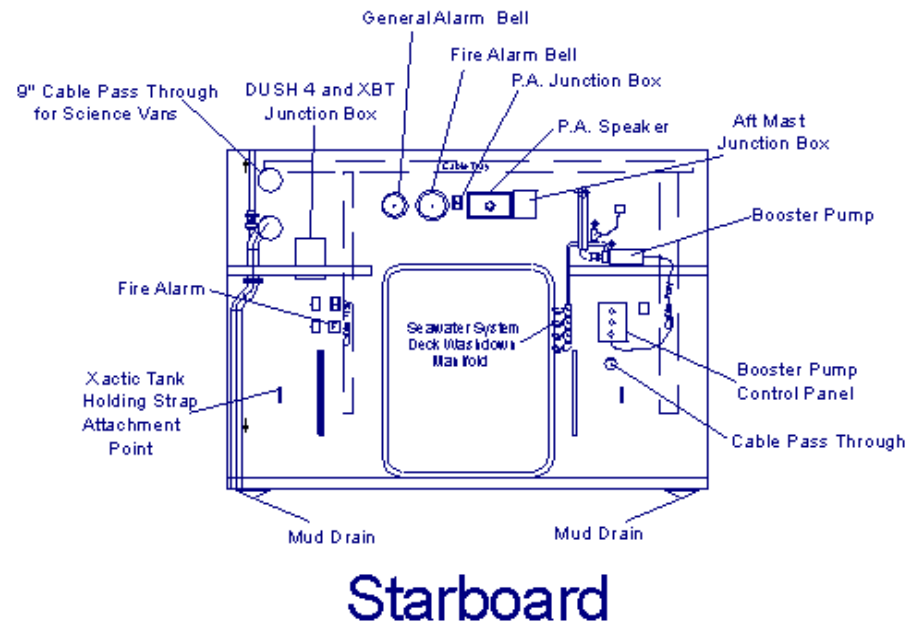
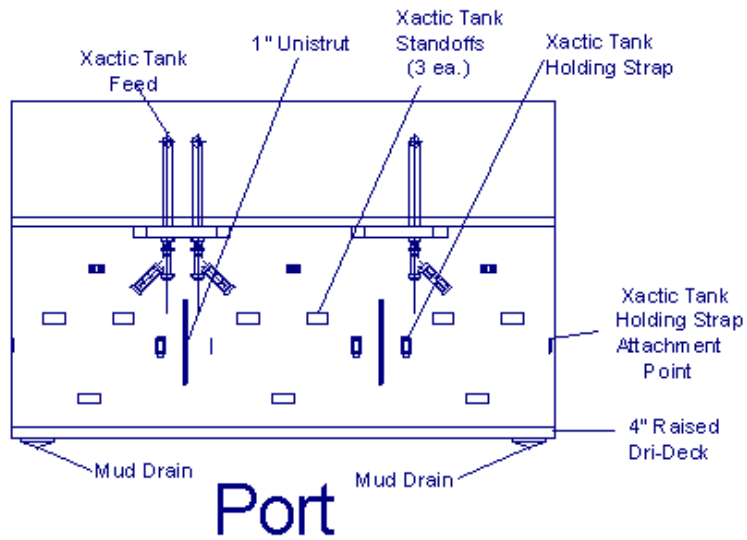
270 sq. ft.

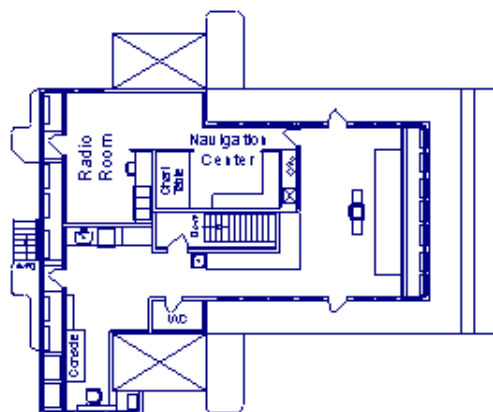


Aquarium Room Elevations

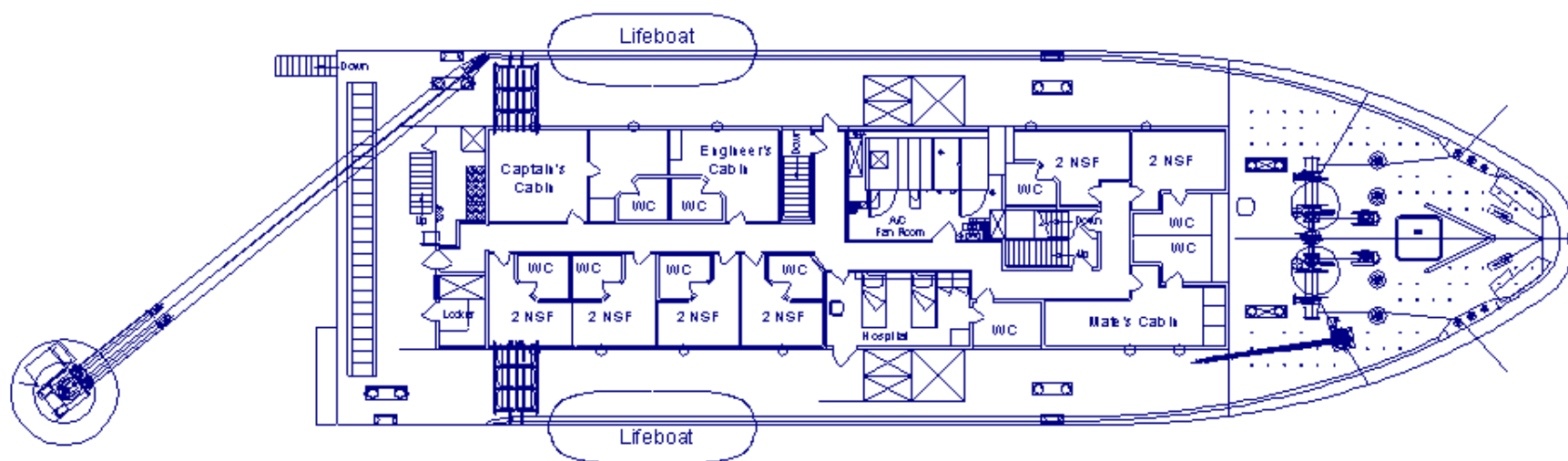


Aquarium Room Elevations





Bridge



02 Deck



ASC-18-220