

RVIB Nathaniel B. Palmer

Principal Features and Technical Information

Over-the-Side Handling Equipment			Conductivity Temperature Depth (CTD) Sensor		
Cranes			The Sea-Bird 911+ CTD system 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 sampler. 5, 12, and 30L bottles are available.		
Bow Crane	5,000 lbs	30 ft reach		Make	Model
Main Crane, forward	20,000 lbs	40 ft reach	Altimeter	Datasonics	PSA-916D
Telescoping Main Crane	50,000 lbs	60 ft reach	Conductivity	Sea-Bird	4-02/O
Manufacturer of all cranes	Appleton Marine		Conductivity	Sea-Bird	4C, 6800 m
A-frames			Conductivity	Sea-Bird	4M, 6800
A-frame on Fantail (20 tons)	18 ft horizontal reach	30 ft vertical reach	CTD Fish	Sea-Bird	SBE 9+
A-frame on Starboard Side (20 tons)	13 ft horizontal reach	17 ft vertical reach	CTD Pressure Sensor	Paroscientific	410K-105
Telescoping Boom for Baltic Room	6 ton capacity, 13 ft reach from side of vessel		Dissolved Oxygen	Sea-Bird	SBE 43
Winches			CTD Pump	Sea-Bird	SBE 5
Markey DUSH 911	Deep Sea Trawl Winch, double drum		CTD Pump	Sea-Bird	5T
	9/16-inch mechanical wire (to starboard)		Fluorometer	WET Labs	AFLT
	.680-inch coaxial electro-mechanical (EM) cable (to port)		Pinger 12 kHz	OIS	6000 (6000 m)
Markey DUSH 5-5	Waterfall Hydrographic Winch, double drum		PAR	Biospherical Instruments	QSP-200L4S
	Lower drum carries 10,000 m of 5/16" mechanical wire		PAR	Biospherical Instruments	QCP-2300
	Upper drum carries 10,000 m of .322 conductor EM cable		Temperature	Sea-Bird	3-02/F
Markey DUSH 5	Oceanographic winch in Baltic Room		Temperature	Sea-Bird	3plus, 6800 m
	10,000 m of .322 3-conductor EM cable		Transmissometer	WET Labs	C-Star
Water Column Sampling Equipment			Water-Sampling Bottle	Niskin	Bullister design
Blake Trawl	5 ft		XBT / XCTD	Sippican	MK-21
Otter Trawls (2)	18 ft	30 ft	Uncontaminated Seawater System		
Isaac Kidd Midwater Trawl	1 m	3 frames	The seawater system supplies uncontaminated seawater to the Aquarium Room, Wet Lab, Hydro Lab, Helo Deck, Helo Hangar, and Baltic Room. Green strand piping, a non-metallic, chemically resistant material has been 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 helps prevent frazil ice formation in the system. The seawater system is also equipped with a centrifugal ice strainer/de-bubbler.		
Flat Trawl	35 ft				
MOCNESS (2)	1 m	10 m			
Tucker Trawl (opening/closing)	3 nets	1 m			
Optical Plankton Counter					

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Uncontaminated Seawater System (continued)			Bottom Sampling Equipment (continued)		
Three Seawater Intakes			Kasten Corer		
Main	At Stern Thruster	6 in. diameter	State University of New York/Ocean Instruments		
Secondary	At Moon Pool	6 in. diameter	Mega Corer		
Tertiary	At Center of Hull	2.5 in. diameter	Mark I		
Surface Seawater Sampling Equipment			Deep Sea Rock Dredge		
Fluorometer	Turner	10-AU-005	Scripps Institute of Oceanography		
Thermosalinograph	Sea-Bird	SBE-45	Grab Sampler		
Transmissometer	WET Labs	C-Star	Smith-MacIntyre		
Digital Remote Temperature Sensor	Sea-Bird	SBE-38	Seismic Instrumentation		
pCO ₂ Equilibration System	Lamont-Doherty Earth Observatory		Seismic Data Logger		
Aquaria			Triton Elics Delph		
Two permanent fiberglass tanks, space for four additional Xactic tanks (4' x 4' x4')			Records data in SEG-Y format by converting SEG-2 32 to SEG-Y		
Deck Incubators			Research Vessel Data Acquisition System (RVDAS)		
Number	3		Lamont Doherty Earth Observatory / Raytheon Polar Services		
Material Type	Plexiglas	UV Transparent	Linux-Based Data Acquisition System		
Water Purification Systems			Magnetometer		
E-pure four-holder system	Barnstead	Type I water (ultra-pure), 2 L per minute	Marine Magnetics		
Diamond UV	Barnstead	TOC-free water	Seaspy		
Bottom Sampling Equipment			Digital Benthic Camera, with Strobe		
Dredges			Ocean Imaging Systems		
Small Chain Dredge, Rock Dredge	Kahl Scientific		DSC 10000 Strobe Model: 3831		
Large Chain Dredge, Rock Dredge	Kahl Scientific		GCS-90 Seismic Gun Controller		
Coring Equipment			Syntron		
The vessel can be equipped with several different coring devices designed to take vertical samples of sediment from below the sea floor.			Consists of two components: the SPS-90 Solenoid Power Supply and the GCS-90 Gun Controller		
Jumbo Piston Corer	Woods Hole Oceanographic Institute		Cable-Leveling System (RCL-5 Birds)		
Standard Piston Corer	Woods Hole Oceanographic Institute		Input/Output Inc.		
Gravity Corer			48-Channel Seismic Data Logger		
			OYO		
			Gravity Meter		
			LaCoste & Romberg		
			Air-Sea Gravity Meter		
			Streamers		
			Multi-Channel Seismic Streamer		
			Cable, Oil-Filled, 48 Channels		
			Teledyne		
			Length: 1,200 m, with a 300 m lead-in		
			Single Channel Streamers		
			Geometrics		
			Innovative Transducers Inc. (ITI)		
			Seismic Sound Sources		
			Generator Injector (GI) Seismic Air Guns (6)		
			Seismic Systems Inc.		
			210 cu in. configurable in volume and mode by using volume and port reducers		

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Seismic Sound Sources (continued)		
Bolt Gun 1500 Long Life Airgun	Bolt Technology Corp.	Sizes in cu. in.: 1000, 800, 500, 450, 400, 350, 300, 200, 145, 80
GI Water Gun (1)	Seismic Systems Inc.	15 cu in.
Seismic Air Compressors	Borsig-LMF	1200 scfm, 2000 psi
Sonar Systems		
Acoustic Doppler Current Profiler	RD Instruments	VM-150 Narrow Band
Depth Indicator	DataMarine	VM-150 Narrow Band
3.5 kHz sub-bottom profiler	O.D.E.C.	Bathy 2000W, 8.3 KW
12 kHz bottom tracker	O.D.E.C.	Bathy 2000W
3.5 kHz sub-bottom profiler	Knudsen	320 B/R, 2 KW
12 kHz bottom tracker	Knudsen	320 B/R
EM 120 Multibeam System	Simrad	12 kHz full ocean depth swath mapping
The EM 120 uses a fan of narrow acoustic beams to create a map of the sea floor. Preliminary maps can be produced and plotted almost immediately after a survey is finished.		
Acoustic Doppler Current Profiler	RD instruments	
38, 120 and 200 kHz Fish Finder	Simrad	EK-500
12 kHz PDR (for pinger tracking)	O.D.E.C. / Raytheon	
Towed Bio-Acoustic Sonar	HTI	38 & 120 kHz
Chirp Sidescan Sonar / Sub-Bottom Profiler, towed	Datasonics	SIS-1000, max. depth 1000 m
Diving Equipment		
Dive Compressors (1 on board)	Bauer	Fills to 3000 psi
Dive Van (for storage/setup of dive equipment)	20' x 8' x 8.5'	
DAN (Divers Alert Network) Oxygen Kit		
Meteorological Sensor Suite		
Humidity/Wet Temp	RM Young	41372LC
Barometer	RM Young	61201

Meteorological Sensor Suite (continued)		
Anemometer	RM Young	5106
Precision Infrared Radiometer	Eppley	PIR
Pyranometer	Eppley	PSP
PAR Radiometer	Biospherical	QSR-240
PRR (mast)	Biospherical	PRR-610
GUV (mast)	Biospherical	GUV-2511
PUV (underwater)	Biospherical	PUV-2500
Time Systems		
Rubidium Time Standard Clock	TRAK	8812-11
Time & Frequency Receiver and Clock	Symmetricon	XL-GPS
Navigation Systems		
Gyrocompass (2)	Yokogawa	KM008-E
GPS	Trimble	
GPS	Furuno	
GPS, with heading and attitude (2)	Seatex	SeaPath 200
HF WEFAX	Furuno	DFAX
10 cm Radar (S-band)	Furuno	FAR 2837S
3 cm Radar (X-band)	Furuno	FAR 2822X
HF Radio Direction Finder (RDF)	Simrad	
VHF Radio Direction Finder	Taiyo	TDC338H2 MKI
TeraScan	TeraScan	DL500
The TeraScan is a dual-processing ground station providing high-resolution images of ice, chlorophyll, weather, and navigation. Data are supplied to grantees and NASA.		
Communication Equipment		
The NBP is Global Maritime Distress Safety System (GMDSS) compliant. This means there is automatic, complete redundancy for ship to ship & ship to shore communication.		
Fleet 77	Sailor	Fleet 77+
Inmarsat-C	Sailor	
Iridium Phones	Motorola	9500

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Communications Equipment (continued)		
VHF Radios		
Sailor	RT146	Bridge to Bridge
Sailor	RT2048	Main
Sailor	RM2042	Watch Receiver
HF SSB Radios		
Sailor	SP300	
Sailor	T2130	
Computers and Networking		
Windows, Macintosh, Solaris, and Linux operating systems are available. There are usually 8 to 10 computers available for general use in the E-Lab and 03 Conference Room.		
Network	400 LAN drops throughout ship, including cabins	
E-mail	Transmitted three times daily via satellite. User allotment of 25 KB/day may be used any time during a cruise.	
Individual email size restrictions	100 KB outgoing	75 KB incoming
Space Allocation		
Lab spaces feature recessed unistrut on 2' centers, floor and ceiling, running fore and aft		
Main Deck		
Electronics/Computer Lab	670 sq. ft	
Forward Dry Lab	1150 sq. ft	
Aft Dry Lab	1036 sq. ft	
Hydro Lab	445 sq. ft	
Wet Lab	416 sq. ft	
Bio Lab	460 sq. ft	
Science Coolers	2 @ 86 and 68 sq. ft	
Baltic Room / Staging Area	680 sq. ft	
Aquarium Room	298 sq. ft	
Marine Tech Workshop	142 sq. ft	
Scientific Storage	375 sq. ft	

Space Allocation (continued)		
Electronic Equipment Room	96 sq. ft	
Changing / Mud Room / Darkroom	100 sq. ft	
Lower Deck		
Scientific Storage	170 sq. ft	
Scientific Storage	four 20' containers	
Exterior Main Deck		
Deck tie down points are located at 2 ft centers on the main deck and helo deck		
Science Vans		
Radioisotope Vans	2 vans	20' x 8' x 8'
Freezer Lab Vans	2 vans	20' x 8' x 8'
Garage/Trace Metal Clean Van	1 van	20' x 8' x 8'
Recreation / Leisure Spaces		
Library / Conference Room (03 Deck)	700 sq. ft	
TV Lounge (02 Deck)	510 sq. ft	
Gymnasium (01 Deck)	400 sq. ft	