



Regional Class Research Vessel (RCRV)



FIC Meeting
November 30, 2017
Brian Midson

Principal Characteristics

Length Overall	193' – 0"
Length on Design Waterline	178' – 0"
Beam	41' – 0"
Depth, Baseline to Main Deck	19' – 0"
Design Draft	12' – 6"
Total Installed Power, Continuous.....	2,685 bkW
Propulsion	(2) dual propeller Z-Drives
Bow Thrusters.....	350 kW flush mounted, 280 kW retractable azimuthing thruster
Sustained Speed, Calm Water.....	12 knots
Estimated Maximum Speed, Calm Water.....	12.5 knots
Range, Sustained Speed	5,400 nm
Endurance	25 days
Displacement at Design Draft	1,492 LT
Lightship Weight (estimated)	1,183 LT
Science Payload & Portable Outfit Items	66 LT
Ice Classification.....	ABS C0
Main Lab.....	510 ft ²
Wet Lab.....	385 ft ²
Computer Lab	175 ft ²
Datapresence Center	215 ft ²
Main Deck (aft of the house)	1,930 ft ²
Main Deck (including side deck).....	2,160 ft ²
Side Deck Length.....	70 ft
01 Deck (working area)	600 ft ²
Accessible Science Berth	1 Double Stateroom
Marine Technician Berth	1 Double Stateroom
Total Science Berths (with Accessible & Marine Technician Berths)	8 Double Staterooms
Crew Berths	7 Single Berths, 3 Double Berths
Total Complement	16 Scientists/Marine Technicians, 12 Crew

Tank Capacities

Diesel Fuel at 95%	52,820 gallons
Ballast Water at 100%	71,550 gallons
Potable Water at 100%.....	6,800 gallons
Graywater Holding at 100%	6,200 gallons
Blackwater at 100%	700 gallons
Diesel Exhaust Fluid at 100%.....	3,550 gallons



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- Design “refresh” of earlier Navy-NSF partnership product includes:
 - Dynamic positioning
 - Integrated shallow water Multibeam acoustic and sub-bottom profiling
 - Low Underwater Radiated Noise
 - State-of-the-art science handling systems and high bandwidth communications
 - Environmentally friendly “green ship” technologies
 - “Datapresence” operation model provides real-time, open access, data stream



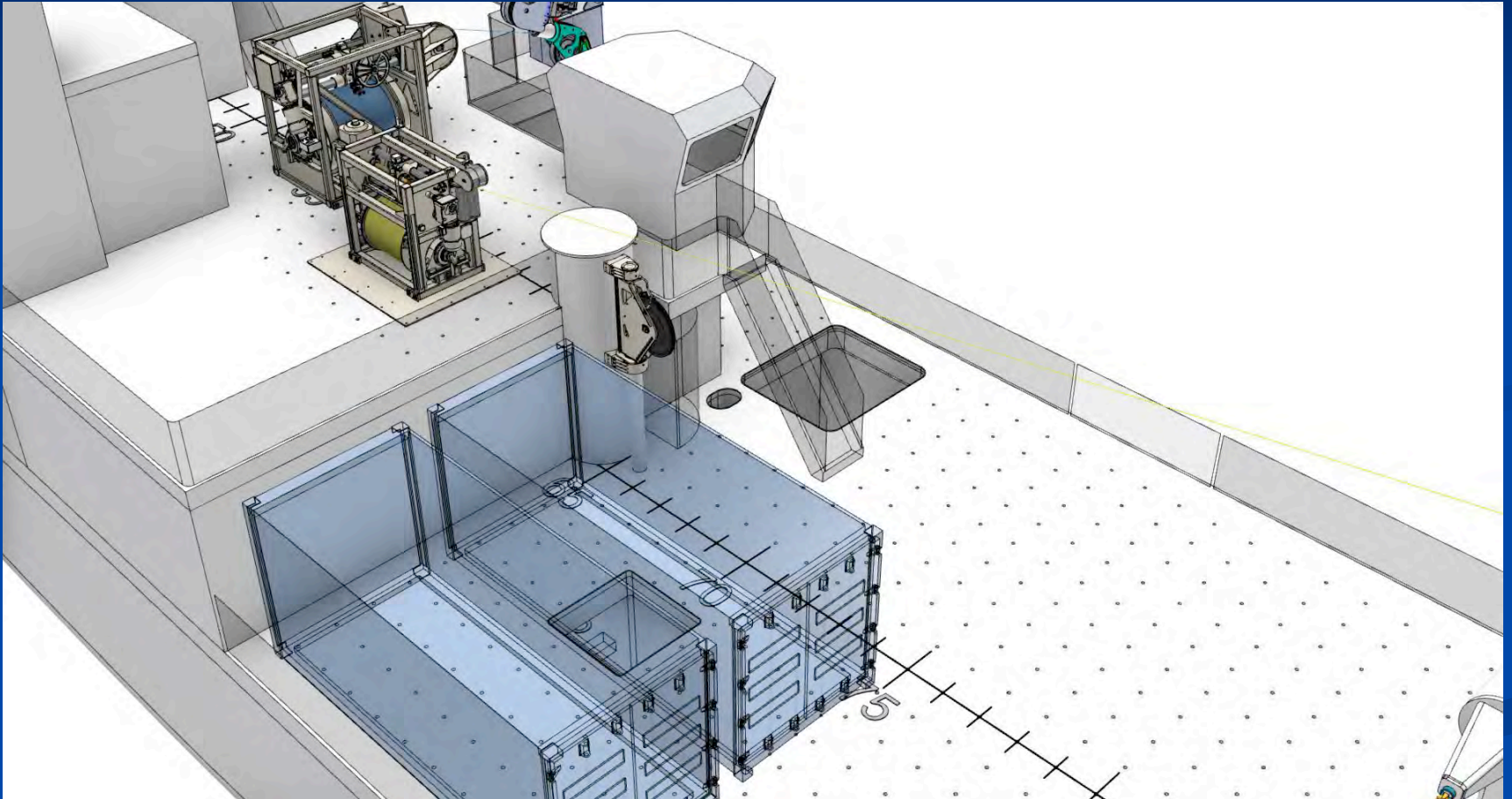


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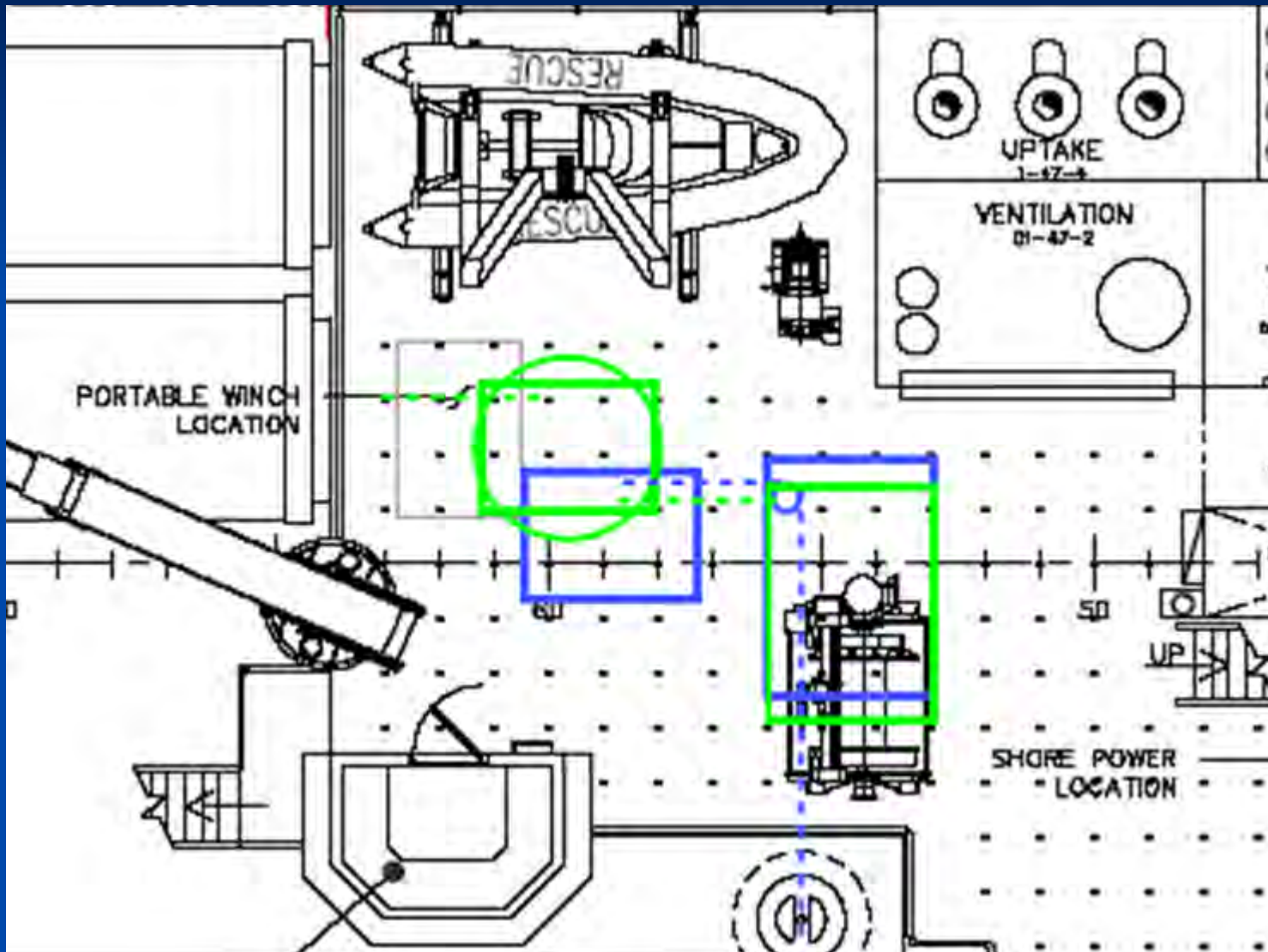


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Winch	HW-200-T90	HW-500-T90
		
Capacity	2,000 m 0.322" EM cable	7,000 m 0.322" EM cable
Footprint	1300 mm x 1300 mm	1600 mm x 1900 mm
Weight (w/o) wire or foundation	5,620 lb	12,080 lb
Weight w/ wire and foundation	7,810 lb	18,245 lb
Vertical moment of the winch	108 ft-LT	257 ft-LT
Percentage of V_{max} for Science Mission Loadout	10%	24%
Remaining Science Mission Loadout weight	46.51 LT	41.85 LT
Center of remaining Science Mission Loadout	20'-7"	19'-3 3/4"

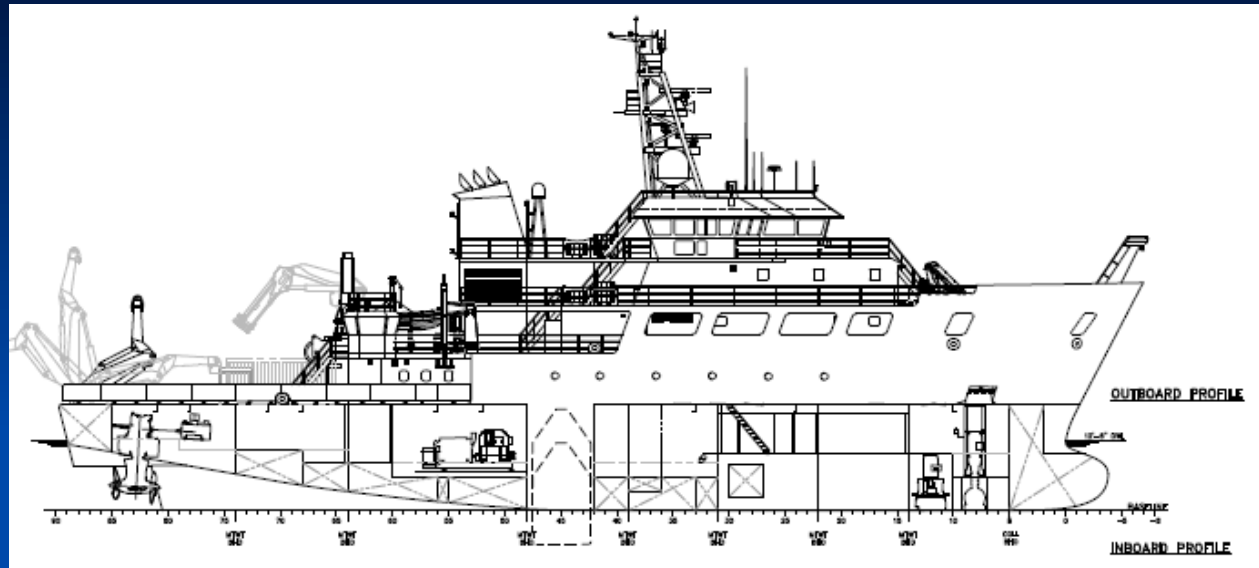


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- Construction – started in July 2017
 - US Congress includes \$121.88 M in FY 2017 NSF budget for RCRV
 - OSU Contract with Gulf Island Shipyards for one ship, and options for two more
 - Design Verification and Transfer, 10 months
 - Keel Laying for RCRV-1, May 2018
 - Deliveries in 2020, 2021 and 2023
 - One year of sea trials and science verification before operations commence



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■ Operations –

- Oregon State University to operate RCRV-1
- Additional operators, if needed, determined by competition
- Operators involved from DVT through transition to operations
 - Will assist in region-specific requirements
 - Improve vessel familiarity



Community–Driven Science Mission



Sea Change, 2015–2025 Decadal Survey of Ocean Sciences: Science Priorities

- ✓ Sea level change
- ✓ Coastal and estuarine oceans
- ✓ Ocean and climate variability
- ✓ Biodiversity and marine ecosystems
- ✓ Marine food webs
- ✓ Ocean basin formation and evolution
- ✓ Geohazards
- ✓ Subseafloor environment



Features to Enable Science

- Dynamic Positioning, DP-1
- ROV compatible
- UAS Compatible
- Berthing van option
- Six-foot drop keel
- High bandwidth and Datapresence
- Acoustically quiet
- Moral and fitness



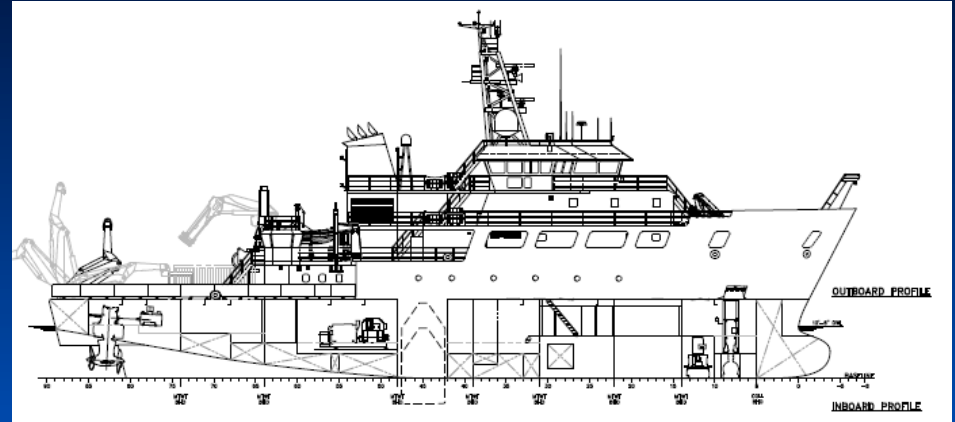
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Green Features

- EPA tier 4 engines
- A biologic marine sanitation device
- A waste heat recovery system
- Low underwater noise
- Variable frequency drives
- Sails and oar-locks



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■ Lessons-learned

- Realistic timeline for construction, particularly DVT
- Risk and associated contingency following risk realization
- Transition to operations, full year of trials following delivery
 - Crewing
 - Science and infrastructure support gap



Comparison of Ocean Class to RCRV

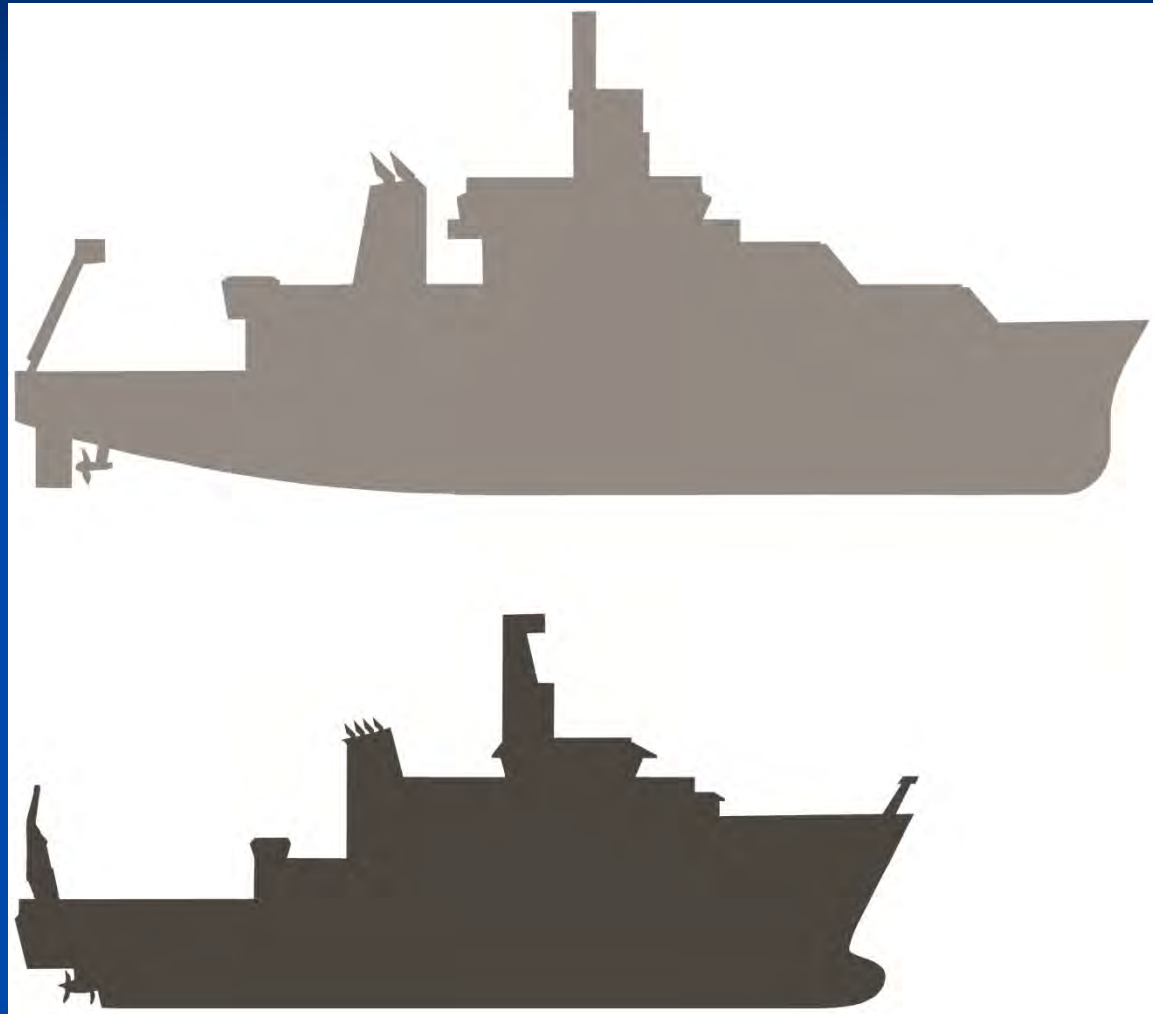


■ Ocean Class (OCRV)

- R/V *Sally Ride*
- R/V *Neil Armstrong*
- 238 ft.
- ~3000 tons displacement

■ RCRV

- 193 ft.
- ~1500 tons displacement





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<http://ceoas.oregonstate.edu/ships/rcrv/>