A zero-emission hydrogen hybrid research vessel: Coastal Class Research Vessel (CCRV)

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CCRV project progress

Preliminary engineering, design, review, and construction preparation

- 2021: Scripps issued RFI and RFP for design
- 2022: Preliminary engineering and design
- 2023: Engineering review, HAZID workshop
- 2024: Preliminary design complete, regulatory *Approval In Principle* by ABS

Assembly

- Solicitation for shipyards expected Q4 2024
- Shipyard selection, conduct final design
- Vessel assembly

Commission and operate

- Commissioning & science verification trials

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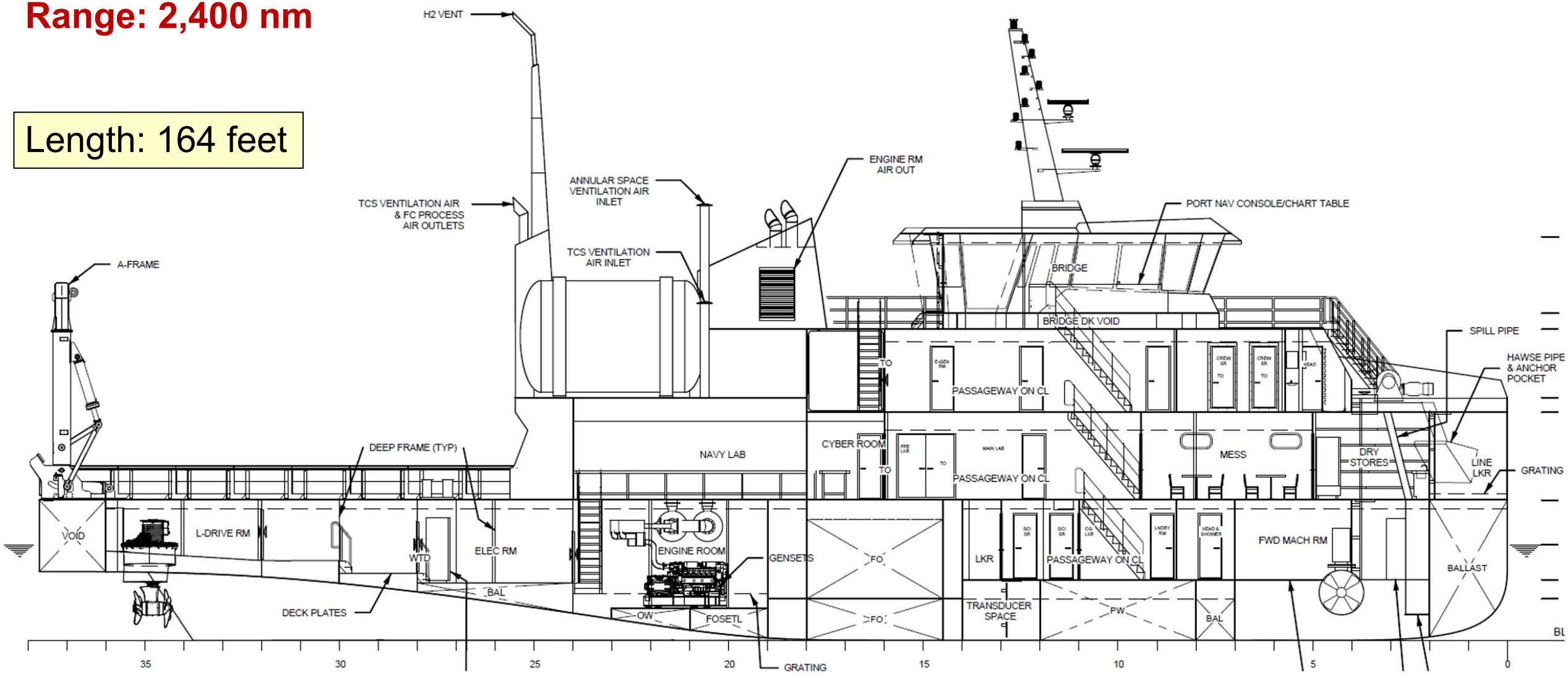
CCRV project news

- ARCHES selected by Department of Energy as one of seven Hydrogen Hubs in the US, at the $1.2 billion level. CCRV selected by ARCHES as a Tier 1 project, at $20 million level.
- UC currently negotiating with ARCHES on flow-down Terms & Conditions from DOE.
- **Complete**: Request for Proposal (RFP) for shipyards to conduct the final design and assembly of CCRV. RFP will be released as soon as subrecipient agreement (above) is signed, with a plan to have shipyard under contract within 165 days (90-day bidding, 30-day selection, 45-day contracting).
- A bunkering method is being developed in parallel, involving truck delivery of liquid hydrogen to the vessel using a portable manifold system.
- Received ***Approval in Principle*** (AIP) from the American Bureau of Shipping (ABS) for the vessel's preliminary design.
- Received a draft of the USCG letter for ***Preliminary Approval*** of CCRV hydrogen system design. There was nothing surprising in USCG's comments.
- Chart Industries in now under contract to start front end engineering development (FEED) of the hydrogen gas systems for CCRV.

Inboard profile: Hybrid hydrogen/methanol concept

Range: 2,400 nm

Length: 164 feet



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Vessel characteristics

Length overall	49.9 m (164 feet)
Beam	11.0 m (36 feet)
Range (hydrogen)	400 nm
Range (diesel)	6,500 nm
Range (methanol)	2,400 nm
Endurance	11 days
Cruising speed	10 knots
Azimuthing thruster power	Two L-Drives, 500 kW each
Crew berths	US: 7 International: 9
Scientist berths	US: 16 International: 14
Students	40 (on day trips)
Station keeping	Dynamic positioning
Main crane	2,400 lbs SWL
Stern A-Frame	21,000 lbs SWL
Side Frame	10,000 lbs SWL
Winches	Trawl, CTD/Hydro
Scientific instrumentation: ADCPs, multibeam echosounder, subbottom profiler, midwater imaging sonar, flow-through seawater system, broadband internet, motion reference system	

70% of CCRV missions will be zero emissions using liquid hydrogen fuel

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