


Considerations for new multi-purpose research Vessels?

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26th ERVO

Foras na Mara
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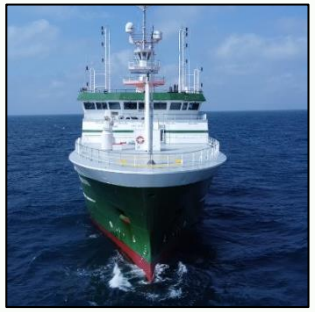
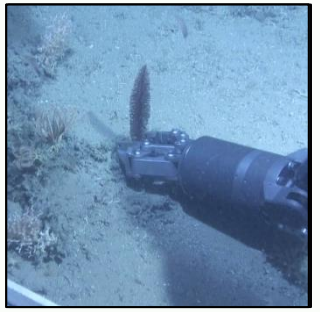




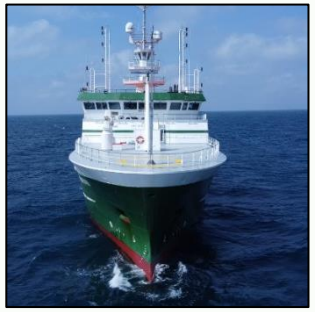



Recent Build

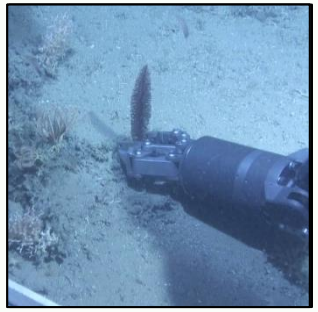
- Project manager for Marine Institute for the RV Tom Crean design and build project
- Vessel designed in 2019 (Skipsteknisk), built and delivered in July 2022 (ARMON, Vigo)
- 52.8 Multipurpose research vessel
- Designed for Hydrographic surveying, fisheries acoustic surveys , Oceanographic surveys, Underwater camera surveys , ROV surveys , UHRS seismic surveys , Buoy / mooring deployment/recovery, Demersal fisheries surveys, seabed sampling/coring , Scientific student training……
- And… supporting autonomous surface and underwater vehicles
- And supporting aerial drones …….

Skipsteknisk

ARMON





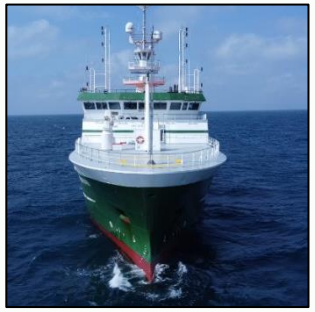



Truly multipurpose

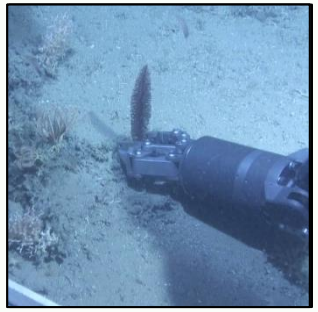
- Tom Crean is a very small vessel to be so “ multipurpose”
- Required careful design to fit all the systems to accomplish this

What has worked really well :

- Relatively big Multifunctional open deck …(Lab containers, large portable winches, LARS systems etc) . Pre drilled and tapped securing points for large portable equipment (NO WELDING!)
- Some multifunction labs e.g wetlab/fishlab with big open access to main deck
- Some dedicated spaces for common operations e,g, CTD hangar , CTD lab

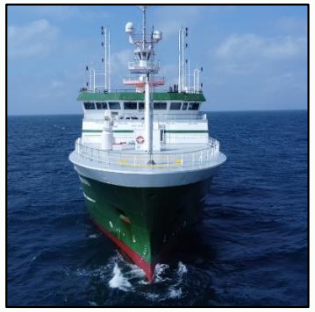




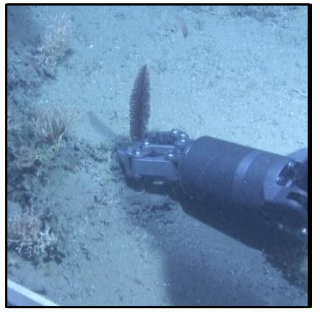



Truly multipurpose

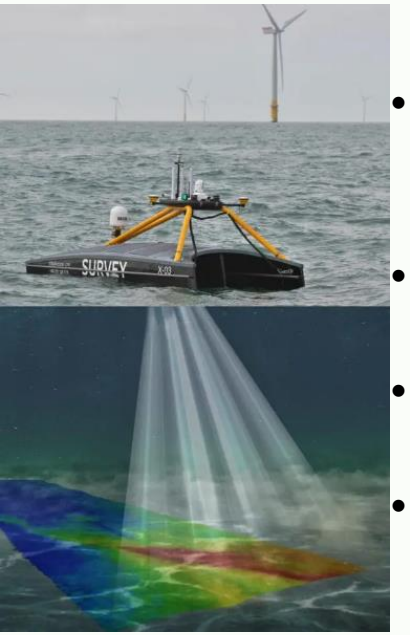
- Multi path routing for cables and wires using double rotating sheaves from winch level winds , allows wires/cables to route over side or aft for multifunctional use.
- Extremely STABLE VESSEL allows complex operations to be completed safely
- 170 degree A frame allows complex recoveries
- Drop keel with capacity for future sensors/transducers
- Dedicated retraction units for USBL / Primary Multibeam
- Large net drums for mooring recoveries



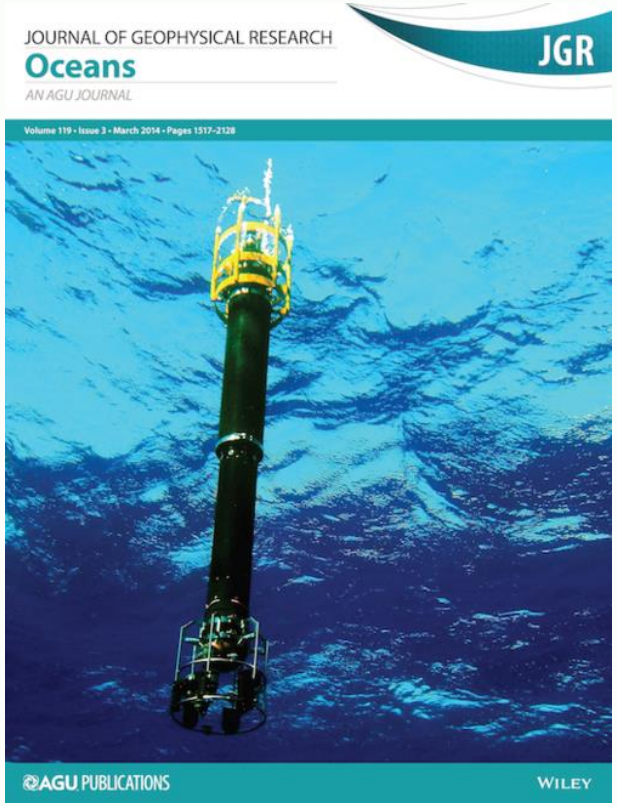


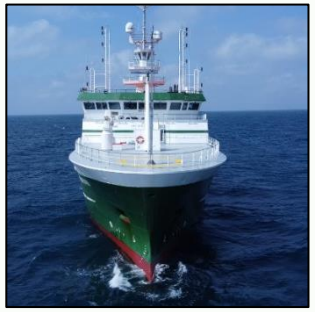



Emerging challenges

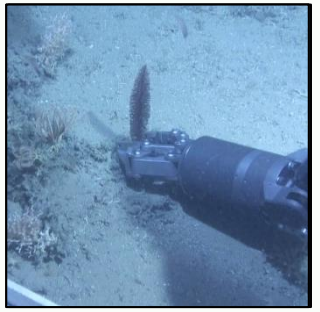


- **AUV operations** : need room for recovery/ deployment and maintenance of complex AUVS
- **Gliders/floats/Air sea interaction profilers**: need access to the waterline to recover these often complex/fragile and awkward systems. Tom Crean waterline step….
- Mostly Need robust /safe launch and recovery for tenders/workboats with small vessel crews to assist
- **ASV'S** : Future will see more use of ASV from "Mothership" RV , with Lars systems , need large deck space, capable cranes/frames to handle
- **DATA Transfer** : Science wants high volumes of Data transmitted to shore from multiple systems and to allow remote operation of science systems so need latest Satellite systems with unimpeded view of sky/satellites
- **Aerial drones :** need space /design to accommodate



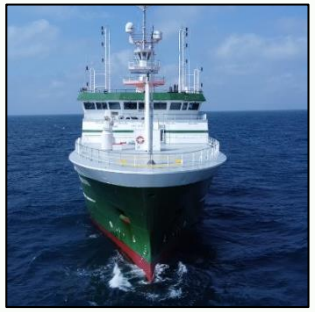




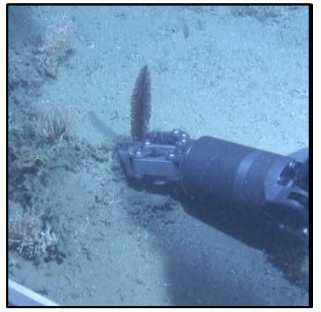



Designing/Building for the future

- RV's have c. 25 – 30 year design life , 3-5 year build and design process so need to think what will be required over 30- 35 years !!!
- Vessels need to be designed and built with capacity for expansion of power/ network / data systems/ Servers/ screens etc. etc.
- Deck space, Stability, power to allow future winches / handling/lars systems
- Spare interior volume for new dedicated labs/ new systems ….
- More cabins, more technicians to support….
- Need to be as efficient as possible , hull form , hotel loads v important
- Supplementary Wind power? Solar power??
- Harbour generator
- Essential to have capability for Shore power








Designing/Building for the future Net Zero?.

- Tom Crean running on 50% HVO successfully (written in design spec)
- Celtic Explorer replacement project delivery 2029/2030
- Biggest question is what is the future fuel ?
- Need to design with fuel storage systems to handle Methanol? Other?
- Designed with ease of replacement of ICE generators at some point when/if solutions emerge
- Bigger/longer is better for future proofing ?

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