‘Holland One to Holland’

An example of successful interoperability

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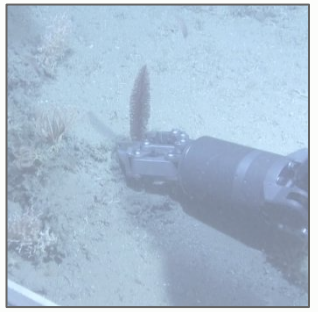
ERVO
11th June 2024





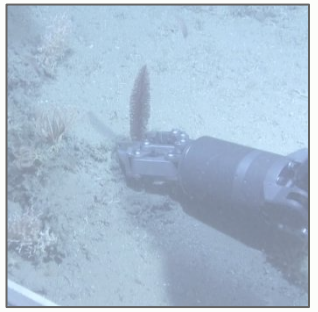



ROV *Holland I*

- Rated to 3000 m depth
- Designed to be deployed from the RV Celtic Explorer but can be deployed from other vessels, i.e., RV Pelagia
- Controlled from a 20’ workshop on the deck of the vessel
- Cameras, Lights, Robotic Arms, Sample Boxes
- Used for Benthos Sampling, Rock Drilling, Instrument Recovery

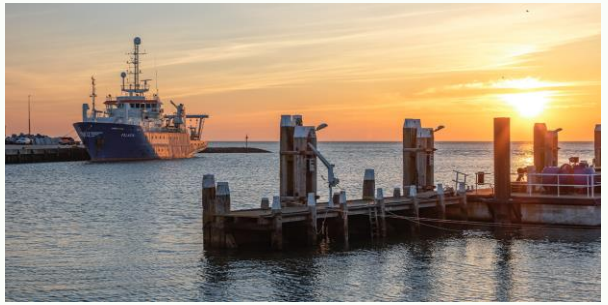






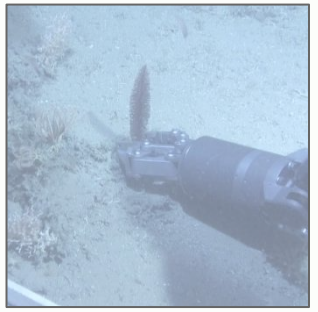

RV Pelagia

- RV Pelagia a 66m ocean-going Research vessel; Pelagia is the flagship of ocean research in the Netherlands, operating year-round in all oceans and seas except for the Polar regions since 1990.
- Vessel is extremely busy its entire life with well over 300 days per annum
- Vessel has a great reputation globally and has undertaken a huge variety of multidisciplinary work all around the globe.
- Very experienced crew .
- Superb technical support facilities in the vessels homeport of Texel










The Job

- In October 2020, NIOZ deployed a half cubic hectometer large mooring array ‘3D-T’ in Liguro-Provençal Basin in the Western Mediterranean – at a depth of 2500 m.
- This array had a network of crossing wires, where at intersections were 45 smaller 2.5 m ring, each mooring a vertical line of 65 sensors.(Total 2925 sensors) *This set-up aimed to provide a three-dimensional view of the development of internal wave and turbulent overturning in the deep-sea*
- In February 2024, MI’s ROV Holland I was required to recover these 45 sensor lines, in addition to the 45 base rings itself.

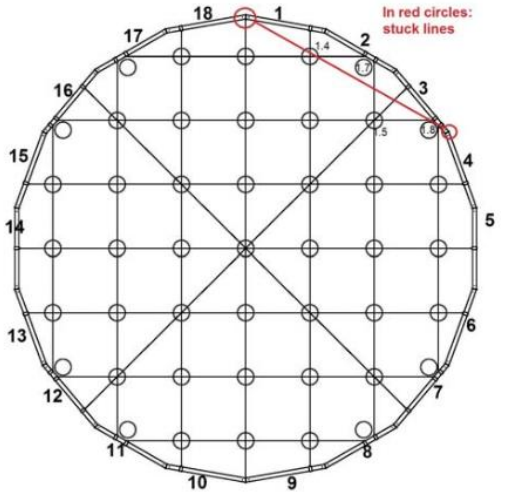
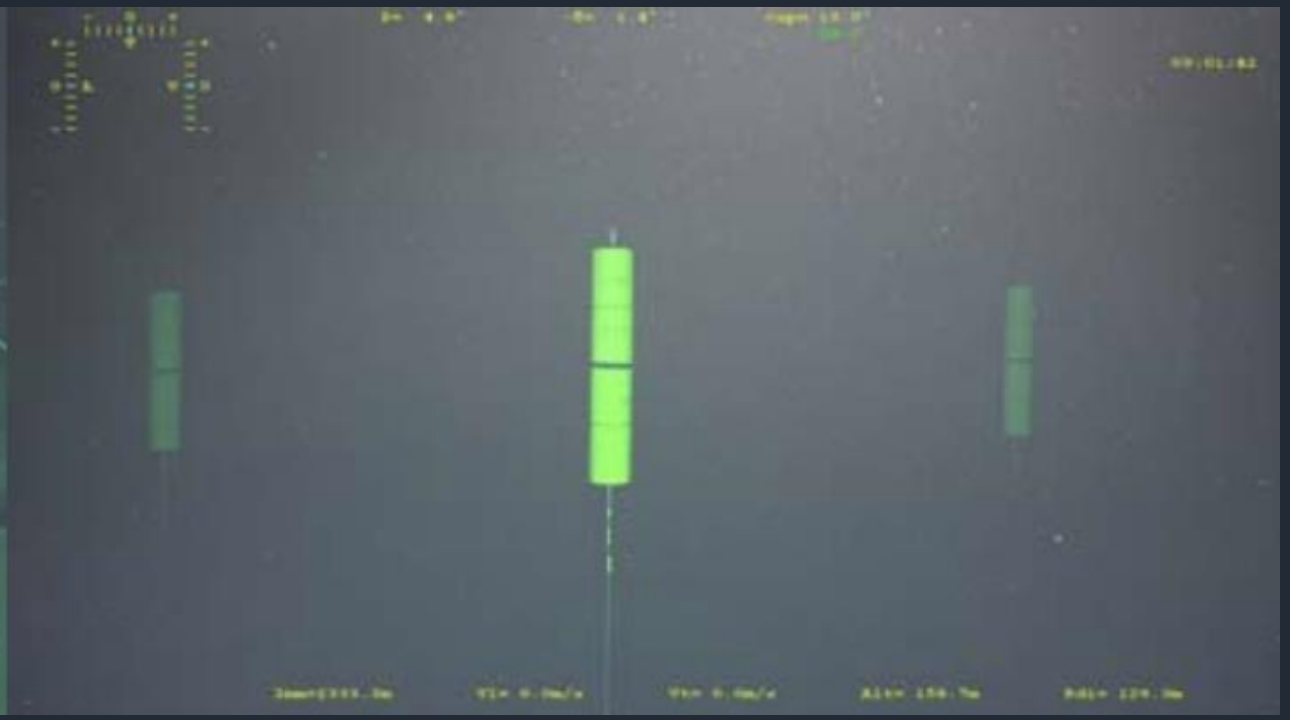
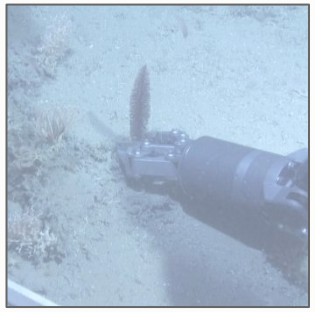


Figure 15. Schematic of large ring with the stuck drag-parachute lines sketched in red.





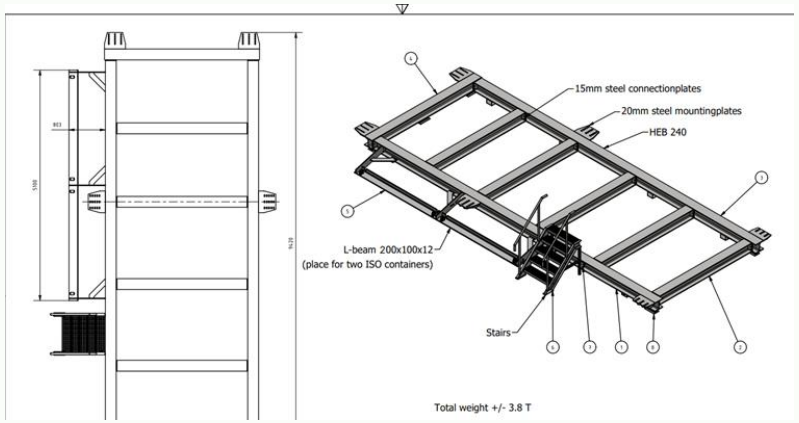





Planning

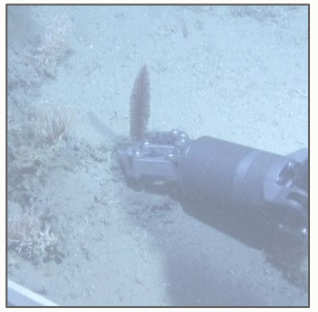
- Initial online meetings were with between NIOZ and MI to established logically requirements and technical specifications required of Holland I.

- MI visited Pelagia in Netherlands to discuss operations in person and to identify challenges – this visit was very beneficial.
- Designed base adaptor frame to adapt to Pelagia twist locks and allowed Holland one to be simply bolted down (no welding!)
- Decision to rent a 600Kva Generator in Toulon as Ships power not thought to be large enough
- Detailed examination and planning of data feeds and communication details/requirements



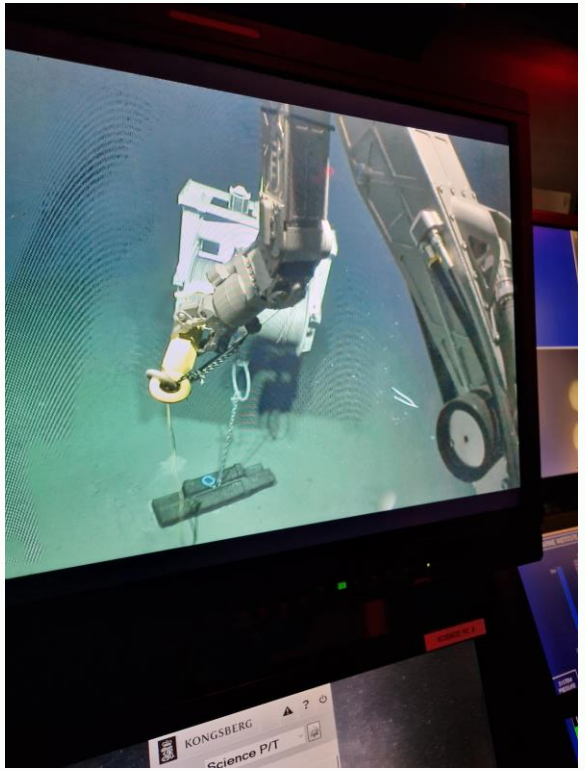






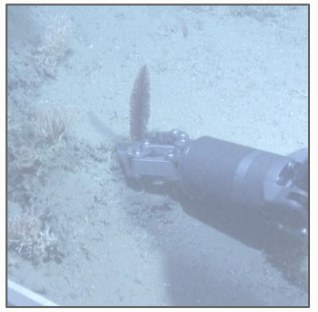

Challenges to Overcome

- Transport of ROV, Winch, Operations Centre and ancillaries required 3 lorries (2 x outsize loads) – logistically demanding
- Frame constructed to accommodate Holland I shipped separately to Toulon .
- Pelagia not equipped with DP but with experienced crews…..NOT an issue
- Issues with power – external generator was hired in, but failed during operations so the ROV had to be powered using “outside the box thinking “
- Separate mooring deployed “outside of circle” with bespoke arrangement for clipping hook onto array with ROV for recovery
- Large Mooring Array broke away while hauling back due to eye failure





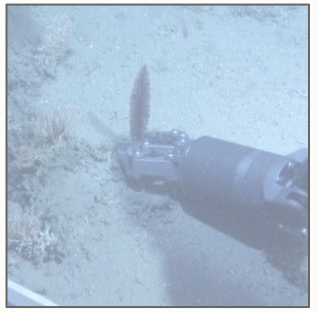





Loading Out



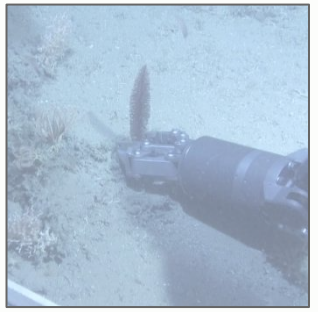




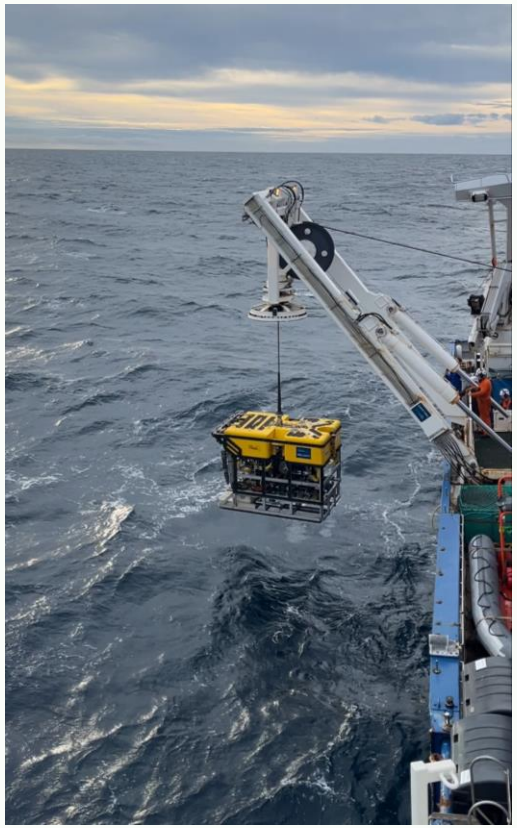

Mobilisation

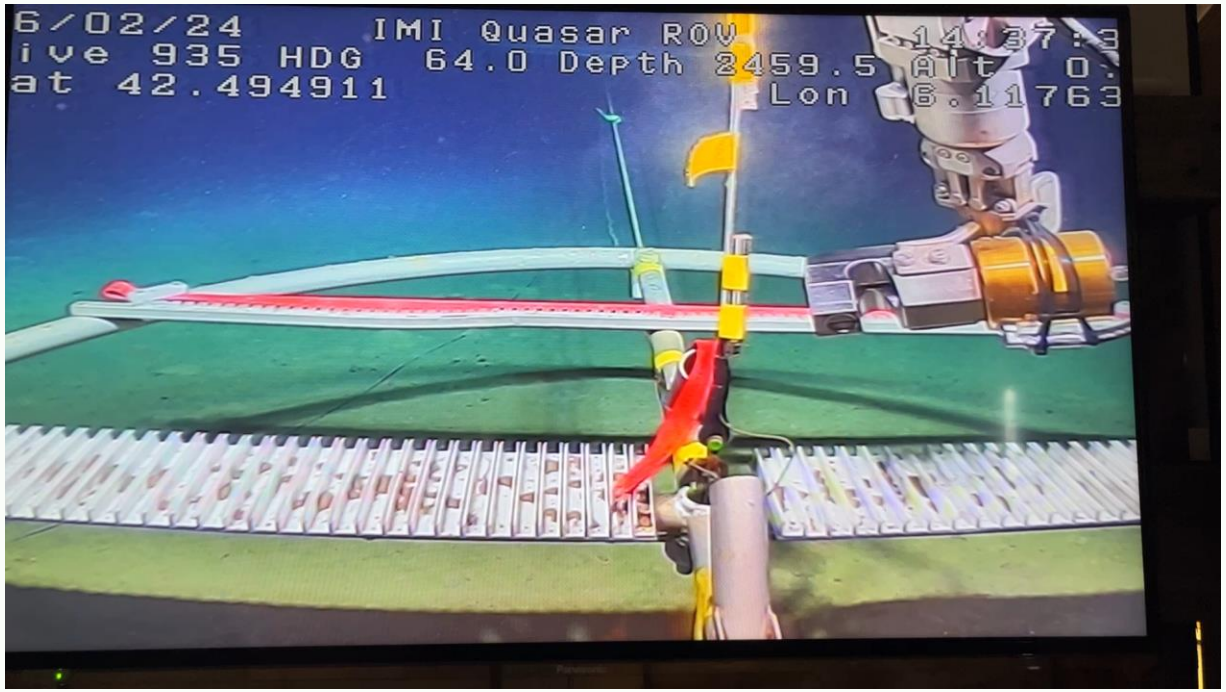






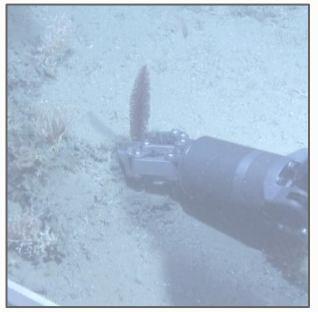

Operations




6/02/24 IMI Quasar ROV 14:37:3
ive 935 HDG 64.0 Depth 2459.5 Alt 0.
at 42.494911 Lon 6.11763








Operations


"Phase-1 recovery of all 45 lines was flawlessly accomplished in 2.5 days, daytime-operation only, under moderately good weather conditions. Phase 2 was done within 1 day, and involved ROV making 35 steel-cable cuts and connect to the cut grid to a custom-designed recovery-mooring that was deployed from the Pelagia. Cooperation between ship's crew and ROV-team was a pleasant and professional experience, which made the above excellent result possible."

Dr. Hans van Haren (Chief Scientist; Senior Physical Oceanographer NIOZ)

Foras na Mara
Marine Institute