



# *OFEG-Tech meeting , Kiel 1-2<sup>nd</sup> December 2010*

## *Holland I ROV Operations*

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*Foras na Mara*

**P&O**   
Maritime Services



## “Holland 1” ROV General.

- **Scientific version of the “Quasar” ROV system. 3000m Rated**
- **Consists of ROV, TMS, LARS, Winch, Control van, Workshop and deck equipment.**
- **Delivered in September 2008**
- **2 full survey seasons completed**
- **(6 surveys , 1 Trial)**
- **2009: 26 Scientific dives: 101 hours**
- **2010 51 scientific dives : 205 hours**
- **3 dives to full depth (3000m)**
- **Majority of operations 750-2000m**





## Personnel

- **2009 operations largely completed with contract personnel (eventful year)**
- **2010 full time manager/chief pilot engaged, 2<sup>nd</sup> full time pilot/technician recruited. Contractors used for rest of team**
- **Manning: min 3 for 12 hour operations , 6 personnel minimum for 24 hour operations**
- **Heavy workload for maintenance and operations given small team**



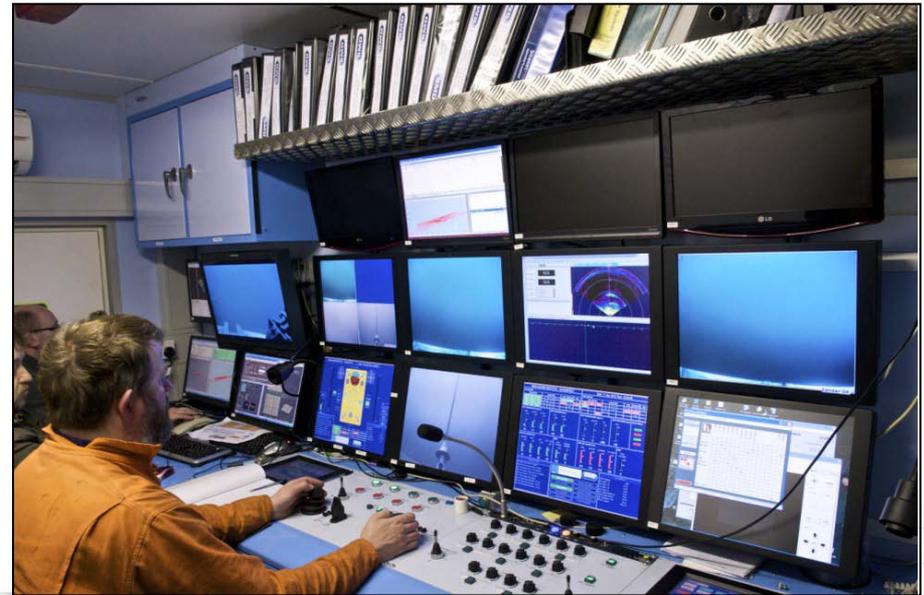
## 2011

- **2 surveys planned for 2011**
- **C. 50 operational days ( summer)**
- **Mobilisation c. 2..5 days, demobilisation c. 1 day (.5!)**
- **System free from August – April typically**



## ROV.

- Up-rated version of the Quasar ROV system. 1<sup>st</sup> Quasar to built by SMD.
- ROV Weight 3.3 Tonnes
- Up to 250kg of payload on the ROV
- Capacity to add additional tooling skids
- Maximum air weight of vehicle up to 6000kg.
- Hydraulic ROV 100hp





## Hydraulic Power.

- **3000v 75kw 4 pole motor driving the hydraulic pump.**
- **Hydraulic pump produces up to 250 bar.**
- **Four lateral and three vertical thrusters Two intelligent 12 way valve packs.**
- **15 litres per minute flow rate.**
- **Flow can be controlled on individual functions.**
- **One high flow function up to 40 litres per minute**
- **Issues : Oil leaks, Oil contamination, handling oil (lots)**





## Video Capability.

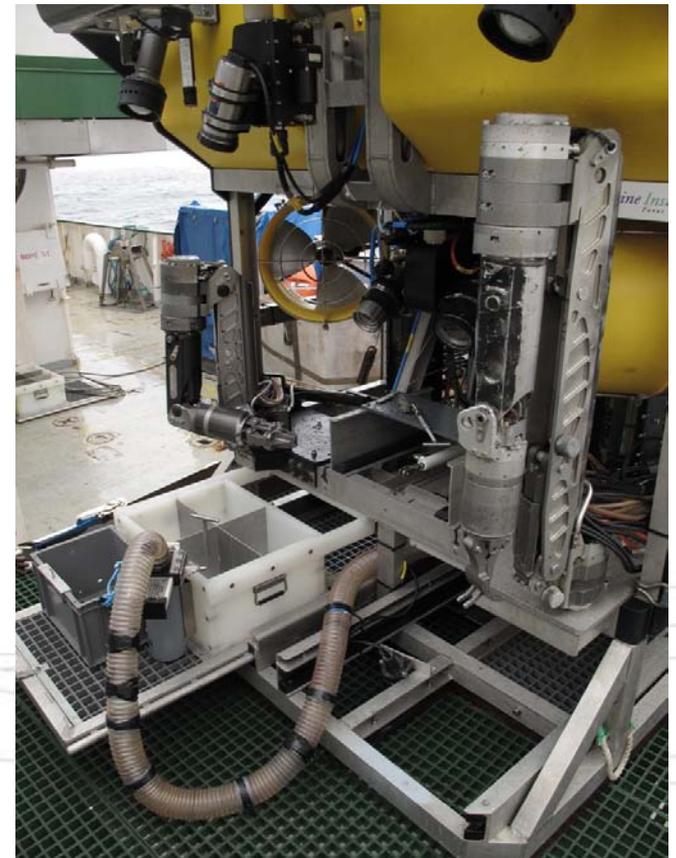
- 1 Dedicated high definition video channel using Kongsberg HDTV
- 1 Stills camera
- 7 video channels.
- DVD for standard definition video
- HDTV Currently recorded to Sony HD tapes.
- Issues : Time coding, copying, data analysis issues
- Fitting out with capability to record direct to Hard disk in PRORES 422 format to allow simple copying , back up,archival of data





## Lighting.

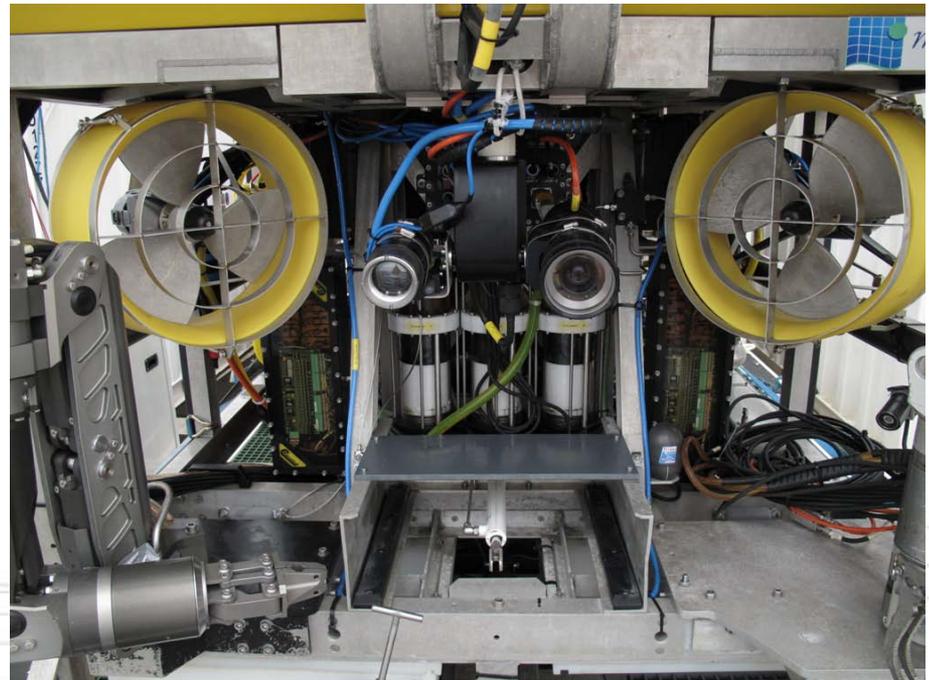
- **Two HMI 12000 lumen lights currently fitted.**
- **Up to 12 dimmable Halogen lights**
- **Currently making the transition to LED lighting working in conjunction with Cathx Ocean for a complete lighting solution.**
- **HMI's expensive , LED c. 30% of cost of HMI's**
- **LED's sensitive to voltage fluctuations**





## Sensors and Standard equipment.

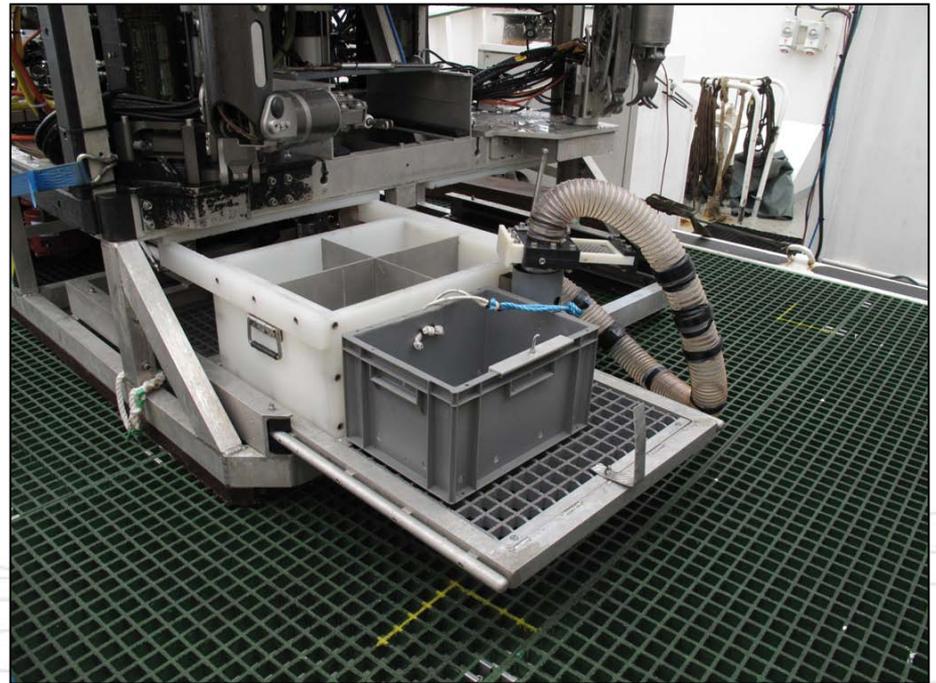
- OA SONAR,
- DVL (Station hold),
- Altimeter,
- Digiquartz depth sensor
- Two manipulators.
- Either two seven function or one seven function and one five function.





## Spare capacity for additional sensors.

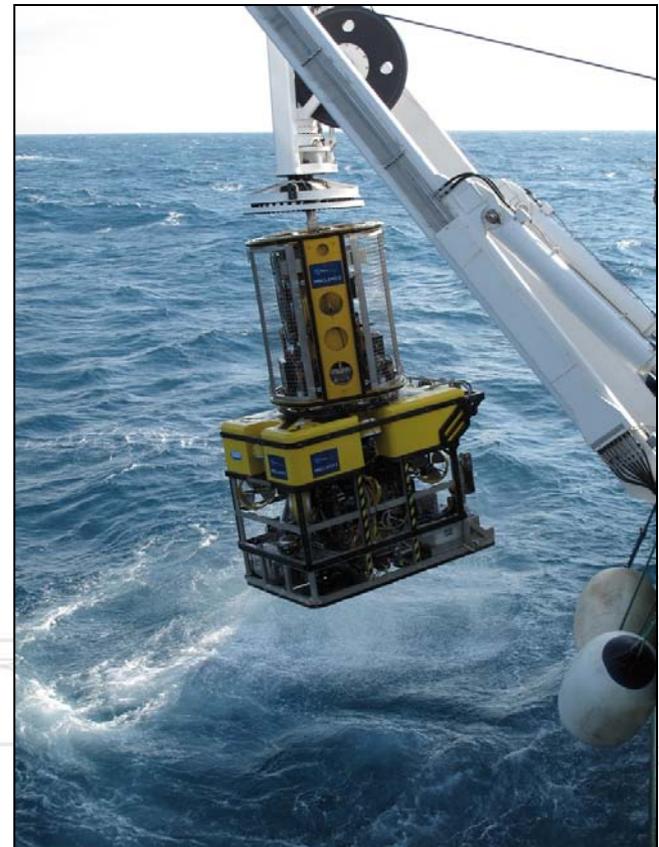
- **1 Ethernet instrument channel for Seabat/multibeam**
- **3 Spare RS232 Channels**
- **6 spare switchable RS232/485 Channels.**
- **7 analogue channels.**
- **System set up for Reson 7160 (Tried April 2010)**
- **Science skid containing sample boxes and suction sampler**
- **Integrated Seabird CTD allows integration with wide variety of instruments**





## TMS.

- **Capable of carrying around 400m of tether.**
- **Power pack 3000v | 1.5 hp**
- **Three cameras.**
- **Two lights**
- **Weight in air 2500kg**
- **Lift termination capacity 12000kg**
- **Issues : Docking in marginal conditions and risk of damage to Tether**





## Free-flying operations

- **Deployment with cable floats trialled in 2010**
- **25 x flotation technologies floats utilised**
- **Successful deployment using float attachment platform requires additional crew**
- **Method available in case of TMS issues or specific requirement**





## Shallow Water Mode/other vessels

- **System operated using soft tether only (400m)**
- **Lock Latch and 20t crane**
- **Ideal for shallow (sheltered) waters**
- **System's own 450kva generator for power**
- **Mobilised in 6 hours!**





## Winch/A Frame

- **Winch capable of holding 3250m of 31.5mm aroured umbilical**
- **Portable hydraulically powered A frame (19000kgs)**
- **Remote operation from ROV shack.**
- **Winch Fully loaded weighs 24000kg.**
- **75kw motor.**
- **Operates well even in shallow water (no cable heating issues to date)**





## Lessons Learnt/ Issues after 2 years operations

- Operating a Full sized work class ROV system from a smaller than normal vessel with a small team .
- Personnel training and retaining regular crew members.
- Tailoring procedures for specific scientific requirements.
- Handling of Data from the HDTV camera system with timecode.
- Developing timelines and communications lines between various groups involved in surveys.

