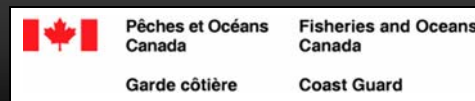


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CANADIAN RESEARCH ICEBREAKER



A project funded by the International Joint Ventures Fund of the Canada Foundation for Innovation in collaboration with the Department of Fisheries & Oceans-Canadian Coast Guard



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Canadian consortium of 27 PIs from 12 Canadian universities and 27 PIs from 5 Federal departments. 66 Arctic experts from 44 institutions in 9 foreign countries. Co-management with Canadian Coast Guard-DFO.

CFI Canadian Icebreaker Project (\$27,7M)

1. Reactivation (\$2,8M) + \$2,8M from DFO-CG
 - Engines, boilers, navigation, cranes, electric.....
2. Scientific modifications (\$12,77M)
 - Moon pool, Dynamic positioning, Internal communications, laboratories, winches, A-frames.....
3. Scientific equipment pool (\$8,76M)
 - EM300 Multibeam, EK60 echosounder, Shipborne ADCP, mooring equipment (ADCPS, current meters, traps), lab equipment, ROV, plankton nets, ice camp support..
4. Operation costs (\$5,55M)
 - Part of shiptime cost for scientific projects conducted on ship



- Name: NGCC Amundsen
- Ice class: Arctic class 3
- Overall length (m): 98.15
- Breadth (m): 19.50
- Draft (m): 7.16
- Displacement (t): 8 090
- Power (kW): 11 155
- Propulsion: 6 Diesel electric generators 2950hp (18000 hp diesel)
- Shaft horsepower: 13960 hp (15000 with overload)
- Cruise range (nm): 15 000 @ 14 knots
- Maximum speed: 16.5 knots
- Officers and Crew: 9 and 22
- Science berths: 46



- Deck cranes: 4
- Helideck/hangar: Yes
- Helicopter: BO 105
- Internal dry & wet labs (sq m): 300
- External lab vans: 8 (110 sq m)
- Hydraulic A-frames: 2
- Scientific winches: 5
- Acoustic well: Yes
- Internal moon pool: Yes
- Dynamic positioning (azipod thrusters): Installed in 2005
- Launches/barges: 3
- Fiber optics Internal communications network





MVP300

733 Zodiac

8 Ton Deck cranes

Lab containers

AFT labs

CTD-Rosette deployment area, A-frame, 40 hp winch

60hp Winch

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10 ton A-frame & 500hp winch

Barge

Halftrack

Helodeck

Moonpool, acoustic well & EM300 sounder

Paleo/benthos labs

Pêches et Océans Canada / Fisheries and Oceans Canada

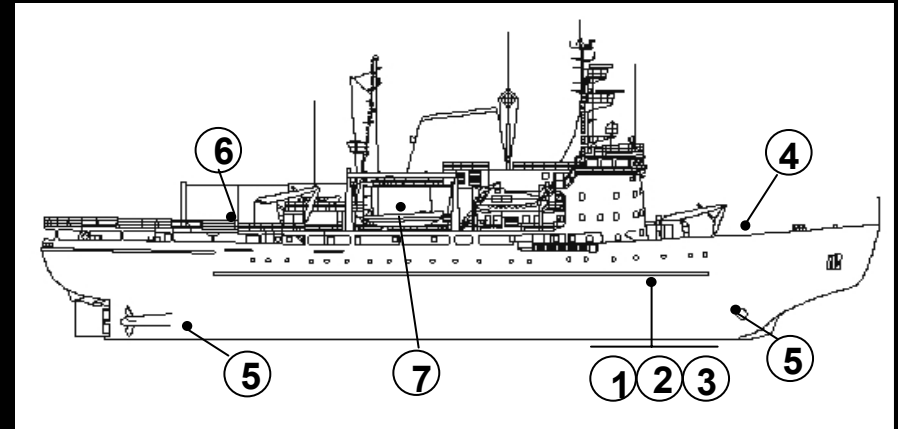
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Scientific modifications to the ship

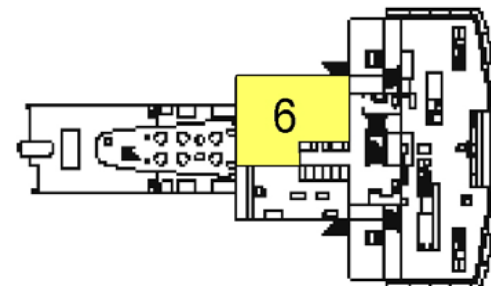


1. Internal moon pool & CTD Rosette room
2. Acoustic well
3. Bottom mapping multi-beam system EM-300
4. 10-ton capacity winch and A-frame
5. Dynamic positioning system, Azipod thrusters
6. Fast launch Miranda Davit and Zodiac Launch
7. Scientific landing barge
8. Internal communication network
9. Internal laboratories





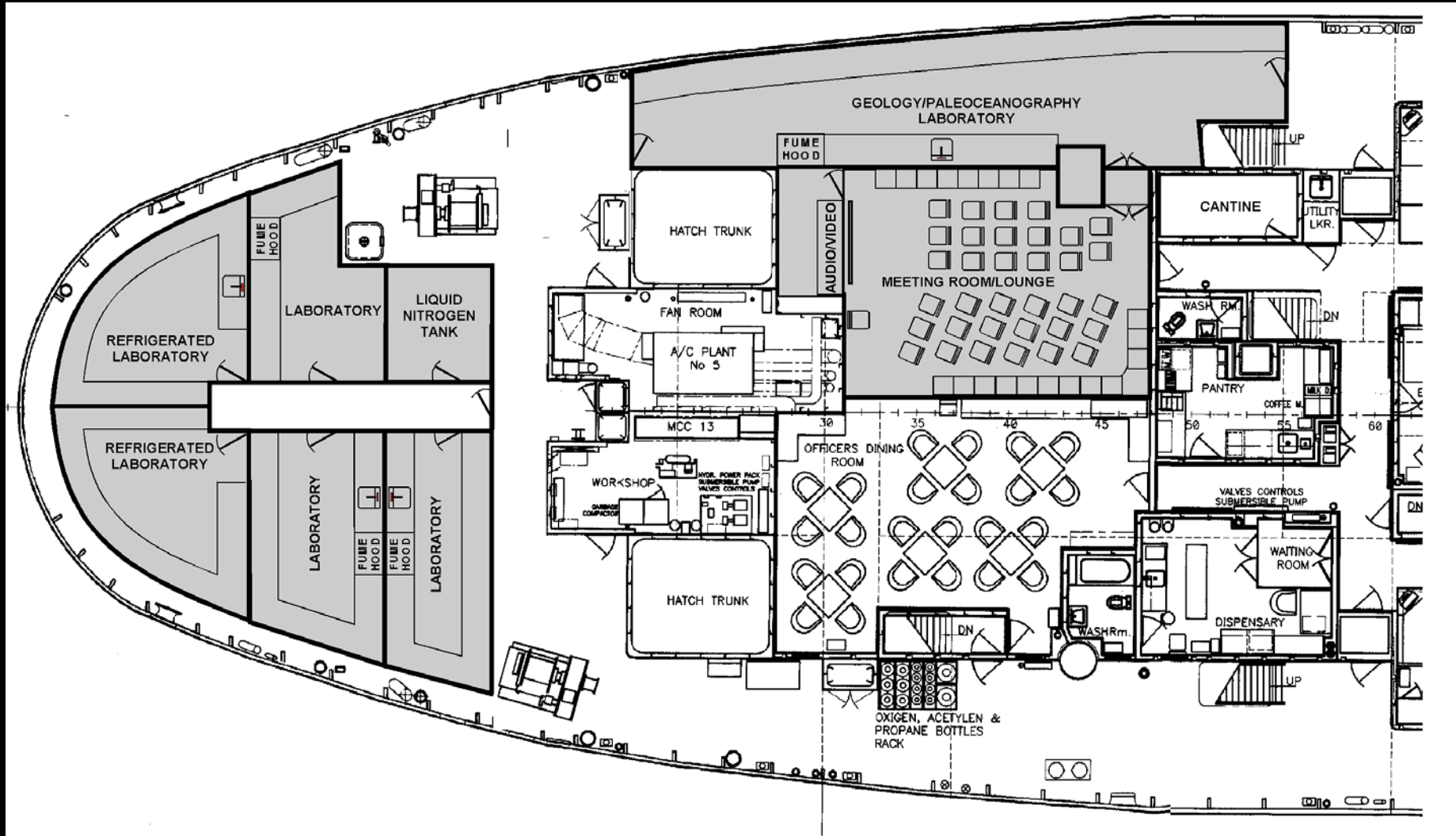
- 1- CTD/rosette room with moonpool & wet lab
- 2- Dry instruments laboratory
- 3- Microscopy room
- 4- Wet & refrigerated laboratories
- 5- Geology/paleoceanography lab
- 6- Dry satellite reception & computer lab



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Scientific modifications

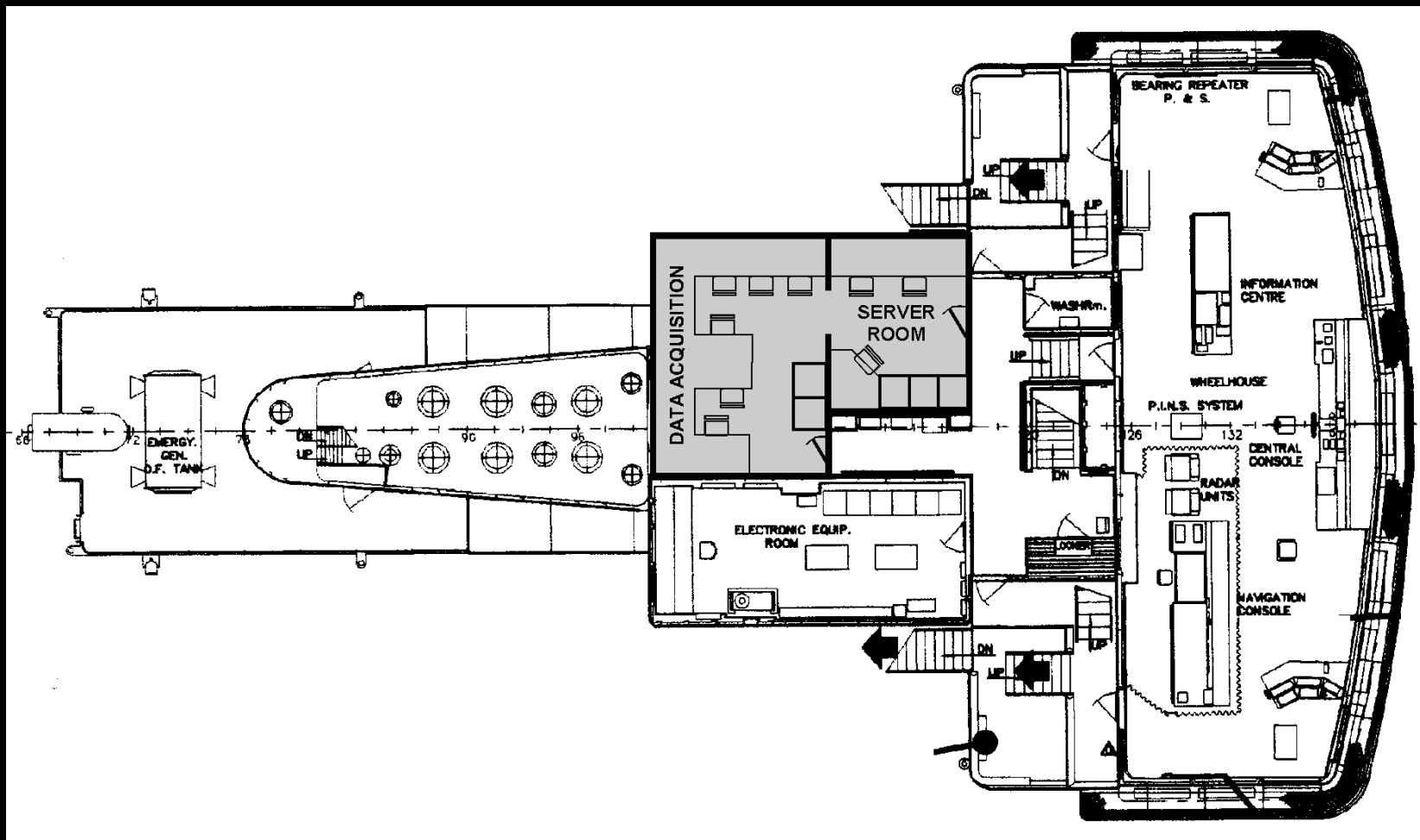


AFT Labs & conference room

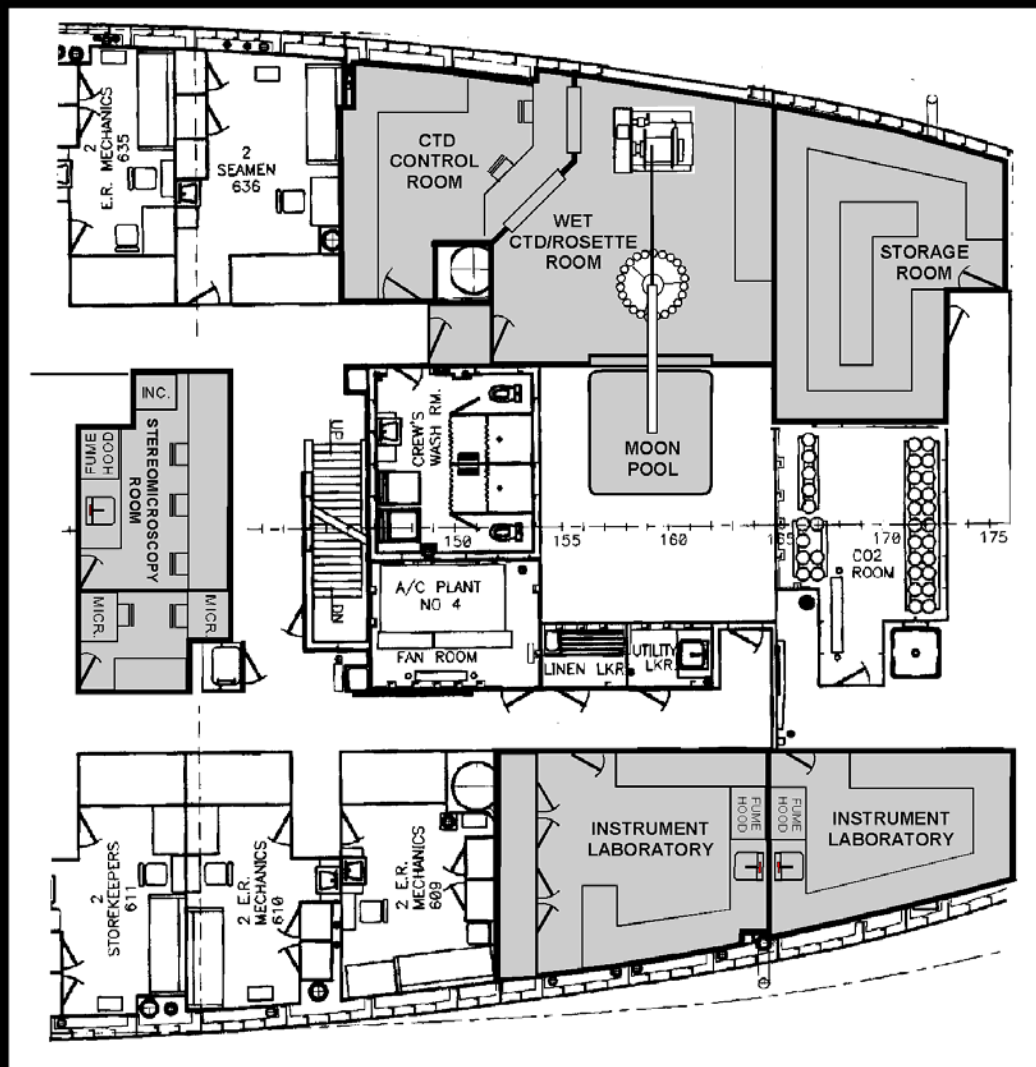
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Scientific
modifications



Data acquisition & server/printer room

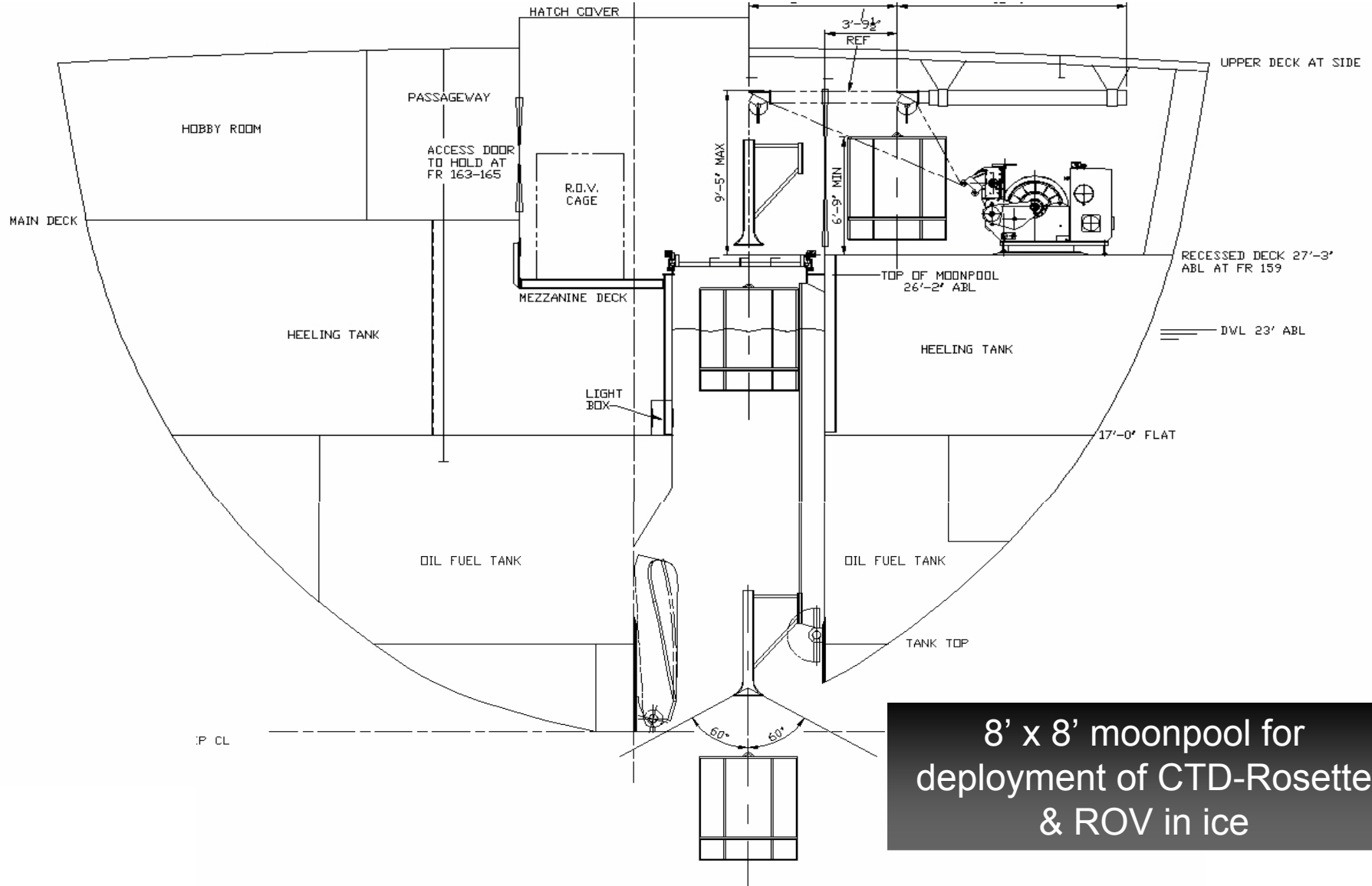


Forward Labs & winter rosette room & moonpool

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Scientific modifications

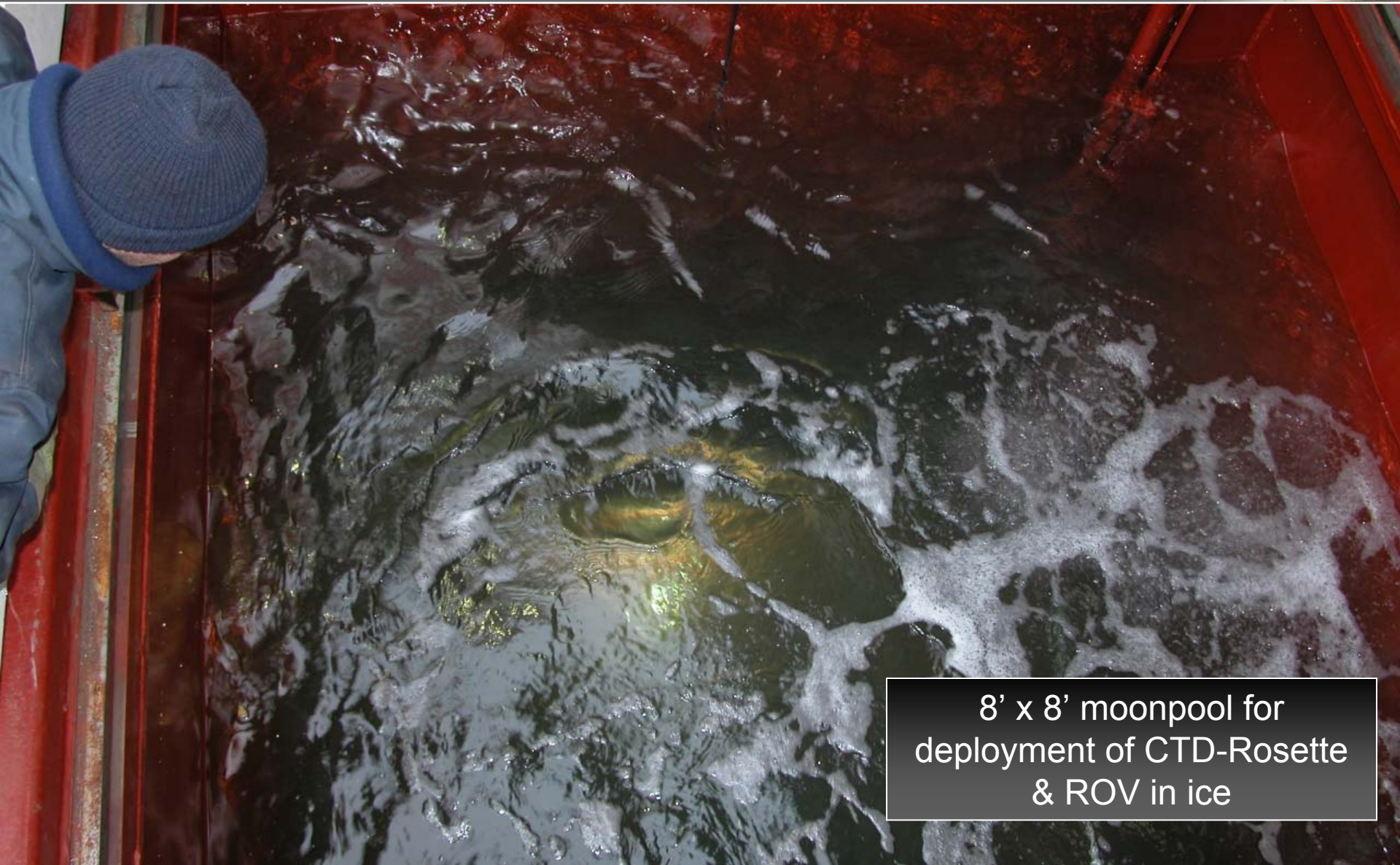


8' x 8' moonpool for deployment of CTD-Rosette & ROV in ice

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Scientific
modifications



8' x 8' moonpool for
deployment of CTD-Rosette
& ROV in ice

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Scientific
modifications



12 Interior laboratories (cold rooms)



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Scientific
modifications

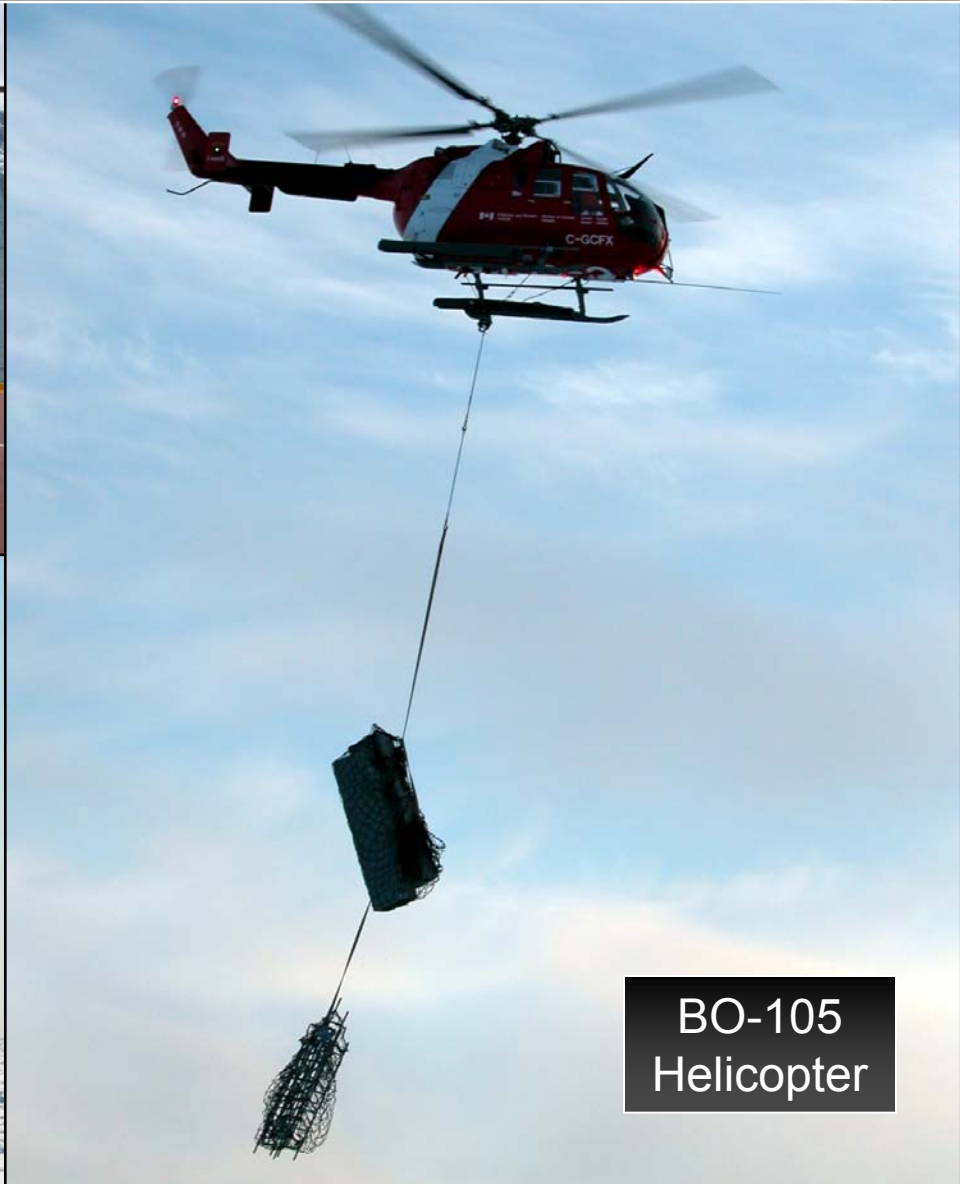


Zodiac Hurricane 7.33m
with Fast launch Miranda Davit

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Scientific modifications



BO-105
Helicopter

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Scientific modifications



Scientific landing barge
Winch, galleys & heated cabin

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Scientific
modifications



Available in all cabins & labs

- Internal communication system
- Ethernet network access
- Close circuit camera system
- Bell ExpressVu High Speed data download & TV

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Pool of Scientific Equipment Attached to the Ship

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Scientific Equipment



Moving Vessel Profiler MVP300
equipped with SBE911+ CTD

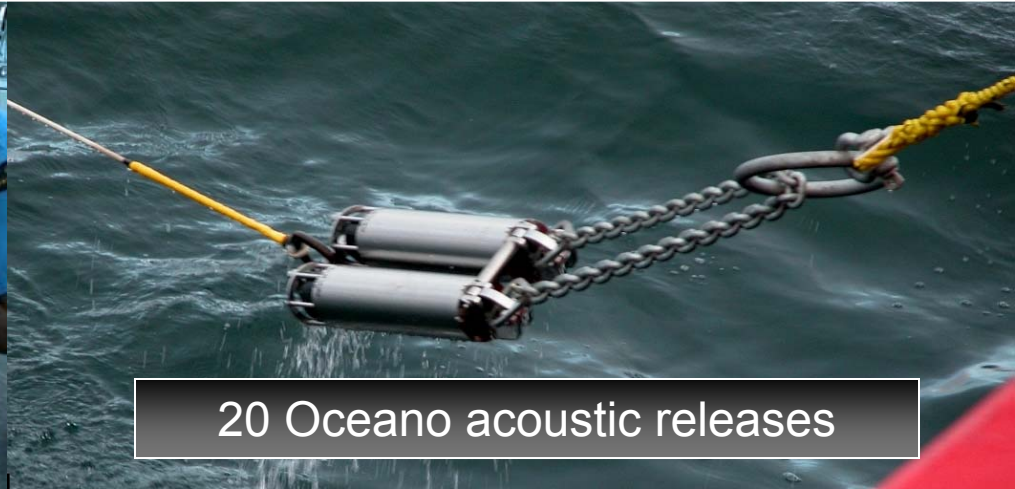
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Scientific Equipment



ORE Floatation



20 Oceano acoustic releases



12 Workhorse
ADCPs



20 Aanderaa RCM-11
environmental probes

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Scientific Equipment



10 PPS3/3 Technicap sediment traps (12 cups)
2 PPS5/5 Technicap sediment traps (24 cups)



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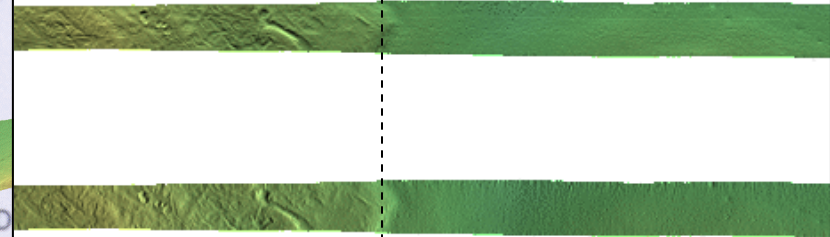
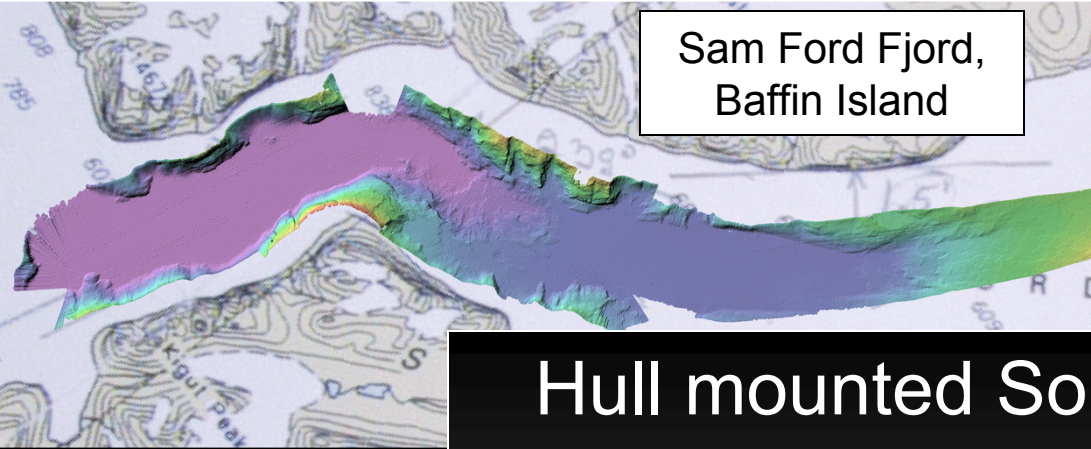
Scientific Equipment



2 Seabird Carousel Rosettes
each with SBE911+ CTDs



Sam Ford Fjord,
Baffin Island



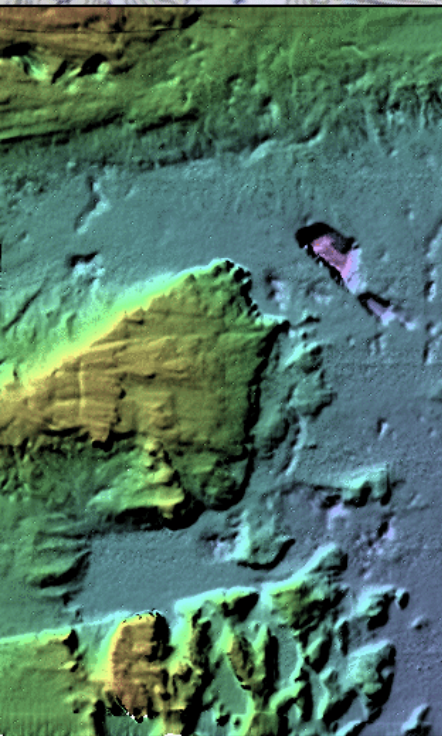
Hull mounted Sounders:

SIMRAD EM300 multibeam sounder

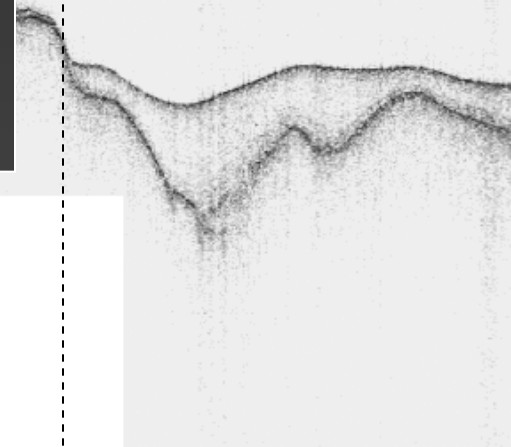
Knudsen K320R 3.5 kHz subbottom profiler

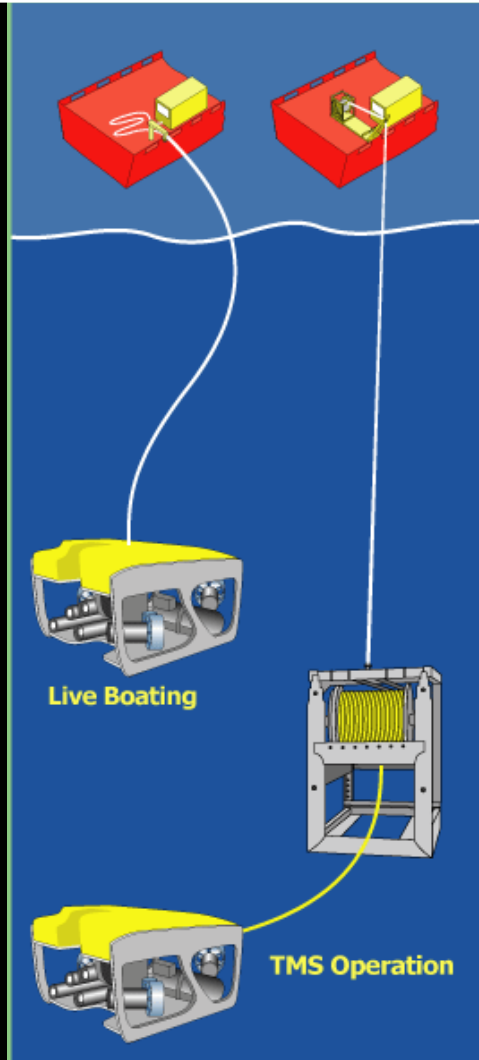
Simrad EK60 scientific echosounder

Shipborn Ocean Surveyer ADCP



CA-18, Amundsen Gulf



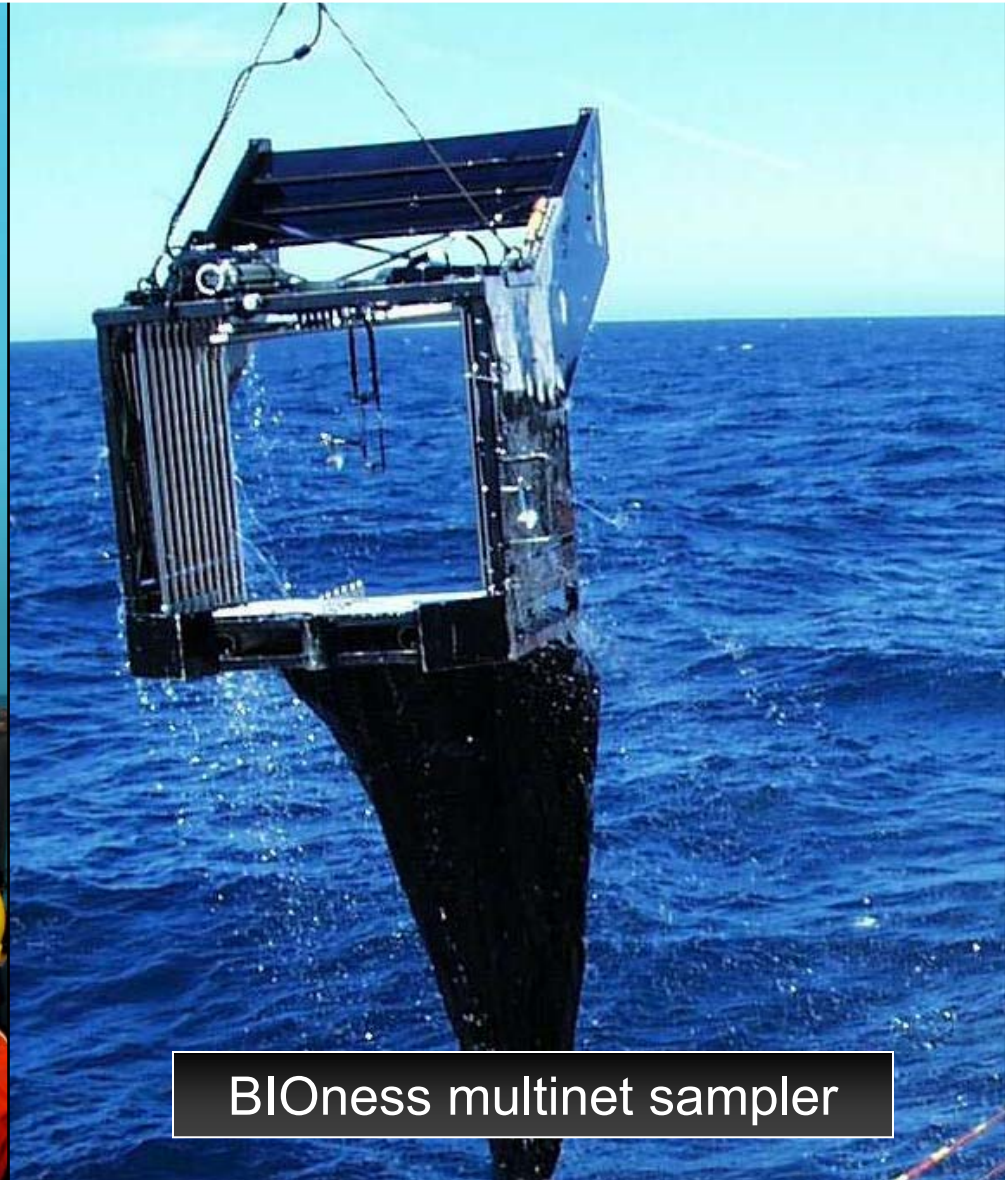


SubAtlantic SuperMohawk ROV
with TMS operation cage





Hydrobios multinet sampler



BIOness multinet sampler



Laboratory equipment:

- Nutrient analyser
- Salinometer
- Scintillation counter
- X-Ray system & darkroom
- Multisensor core logger (gamma)
- Nitrogen plant
- Mili-Q system
- -80C freezers
- Environmental chambers
- Epifluorescence microscope (BX52)
- Stereoscopic microscopes (MZ16)





On-ice logistics :

- 2 parcoll arctic shelters
- 3 heavy duty snowmobiles
- 3 regular touring snowmobiles
- 1 BR180 halftrack vehicle
- 3 Honda 5Kw diesel generators



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www.amundsen.quebec-ocean.ulaval.ca



The CCGS *Amundsen* in the Northwest Passage, on transit to conduct the Canadian Arctic Shelf Exchange Study (CASES), its first scientific mission. Within the CASES project, the icebreaker will spend the entire year in the Mackenzie Shelf/Amundsen Gulf area.

Follow the expedition at: