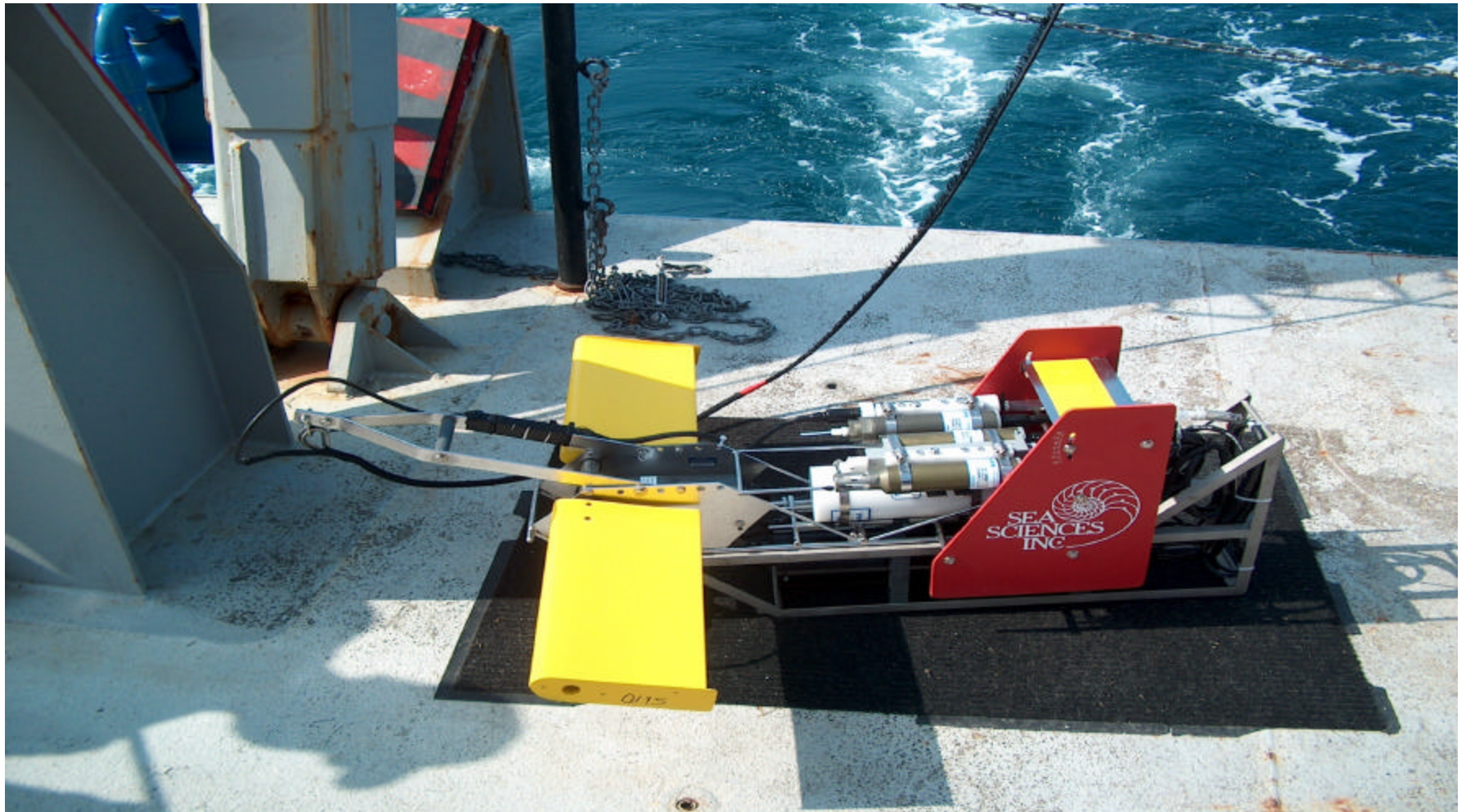
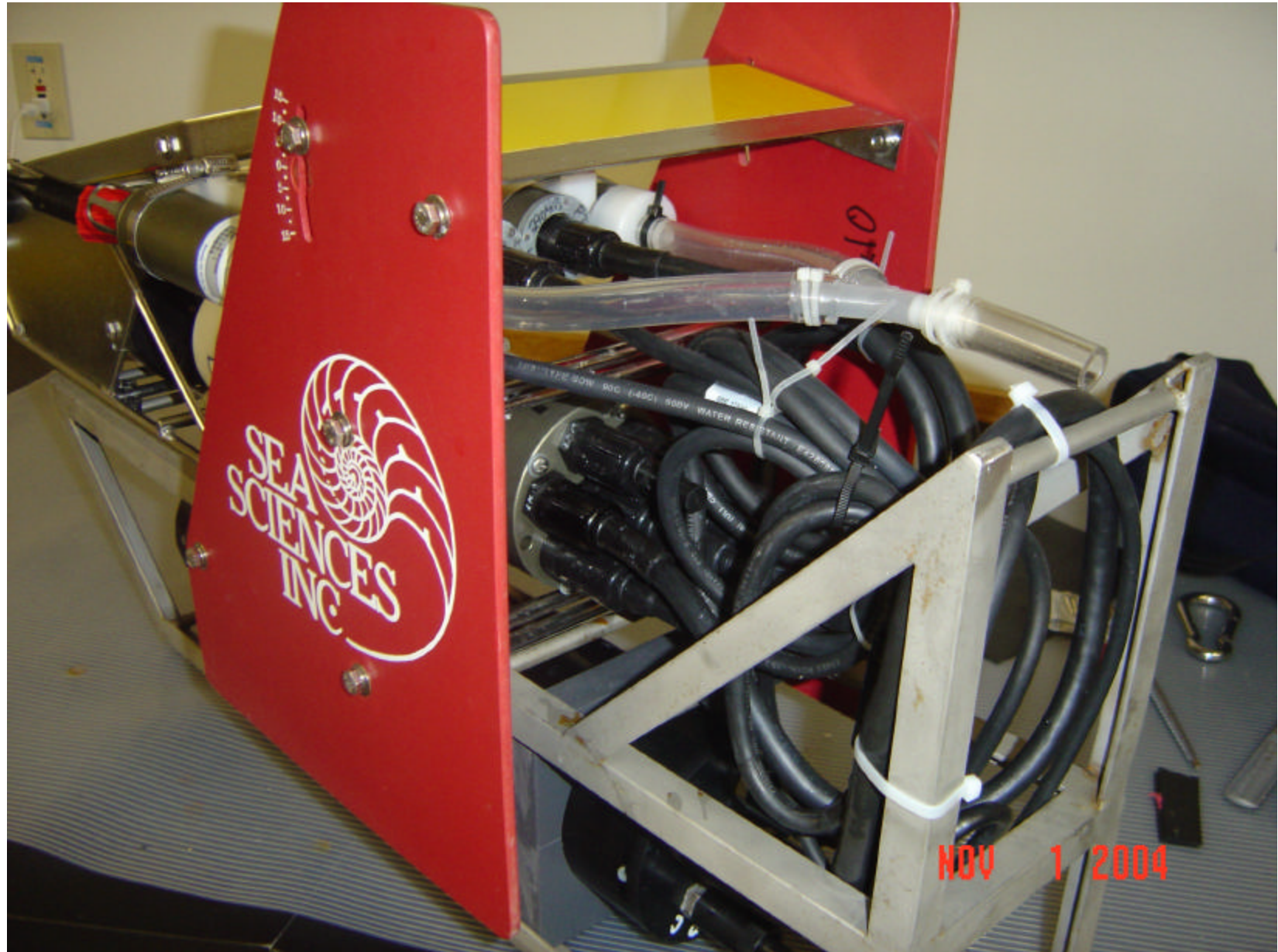


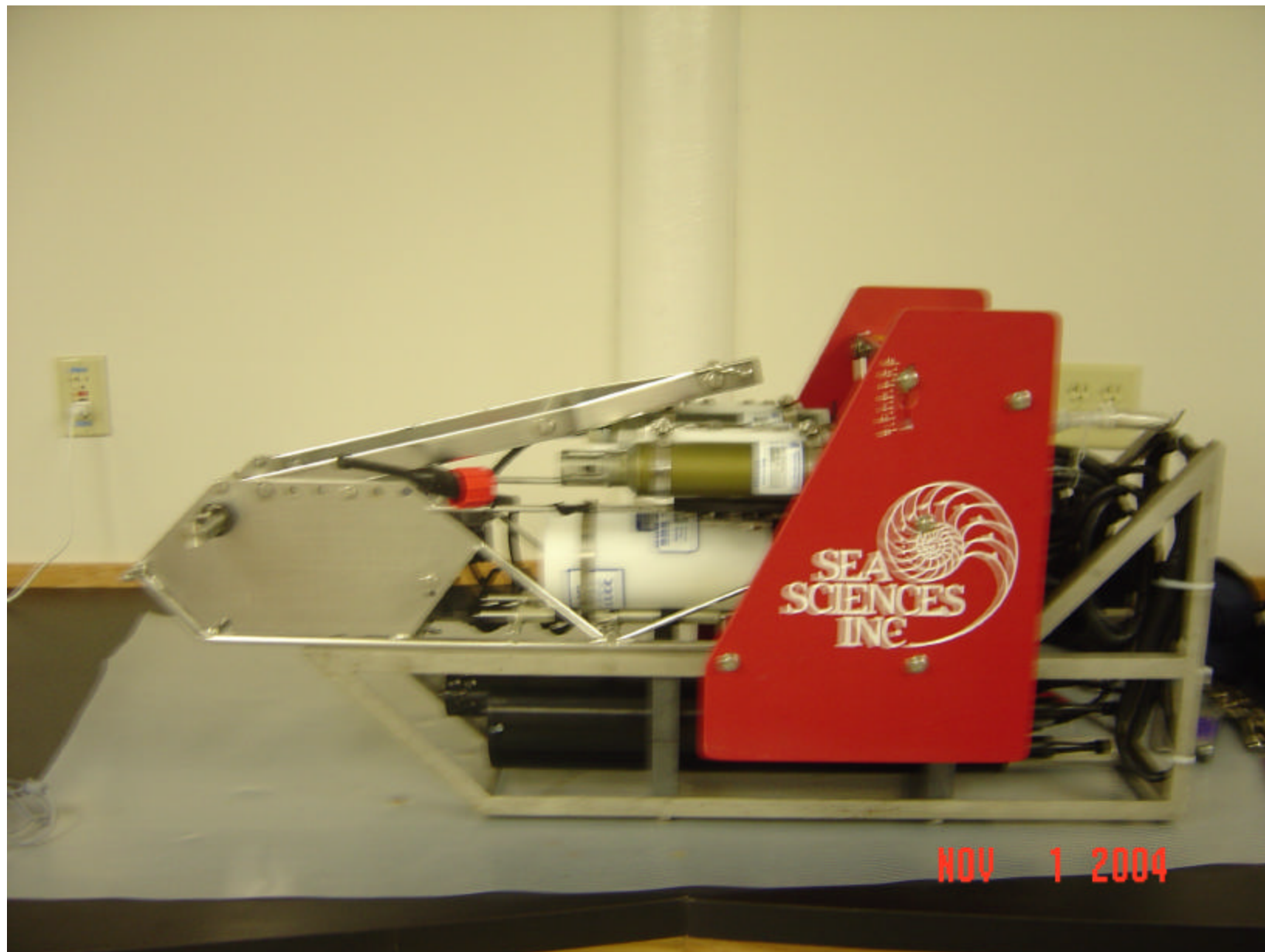
Sea Sciences ACROBAT model LTV-50X



Description

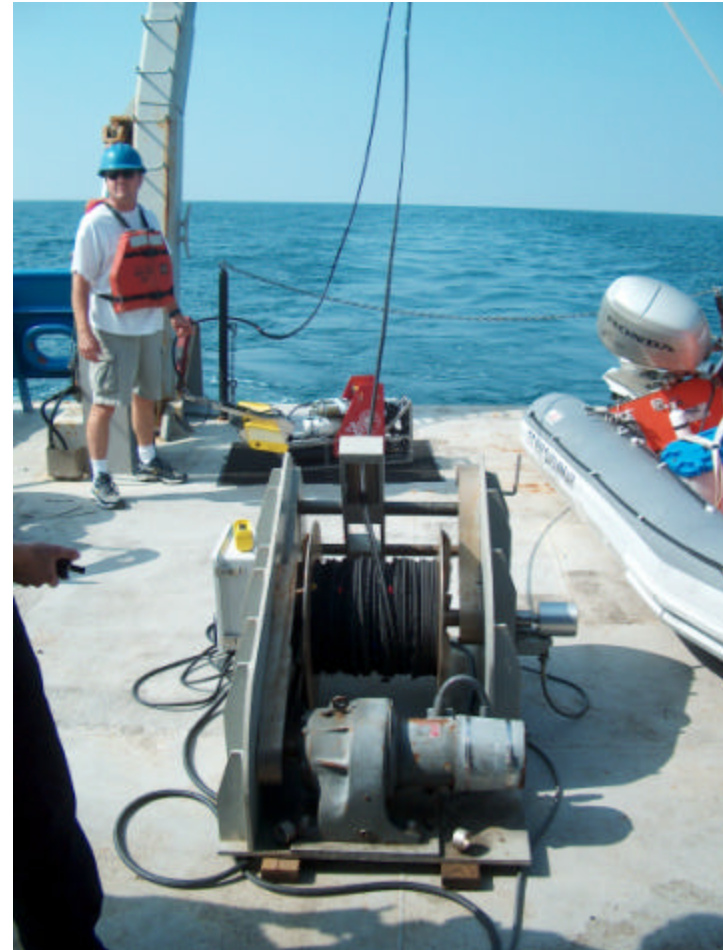
- Designed to be towed behind powered vessels.
- For use in shallow water (<50 meters).
- Capable of transmitting real-time data.
- Allows integration of multiple instruments.

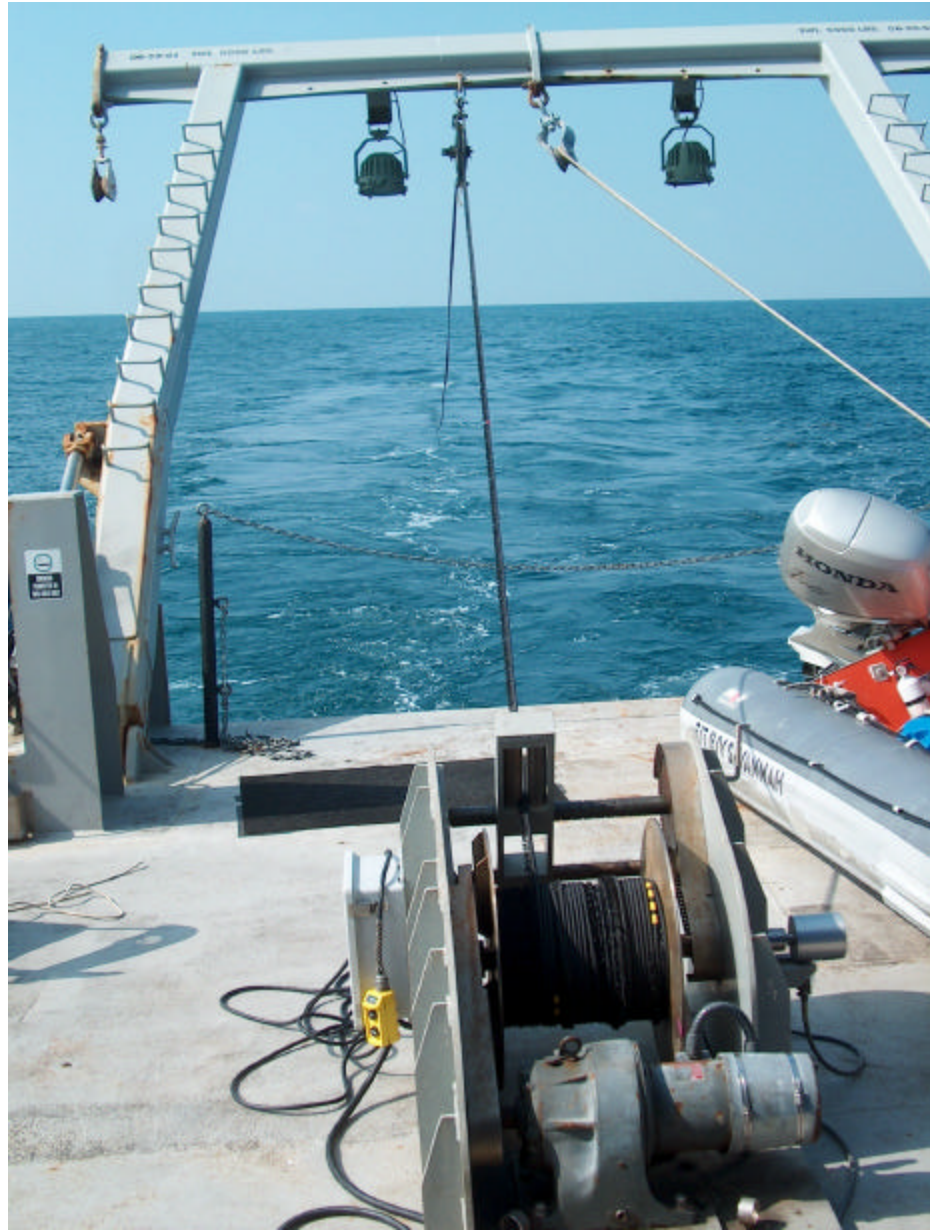




Deployment

- Small winch with directional speed control.
- 10 conductor sea cable.
- Two computers for “flight” control and data collection.
- Easy to deploy with two people.





Frequency drive allows winch speed control



Control Box

- Power input for Acrobat and SBE 25
- Acrobat depth controls.
- Data I/O



Use on R/V Savannah

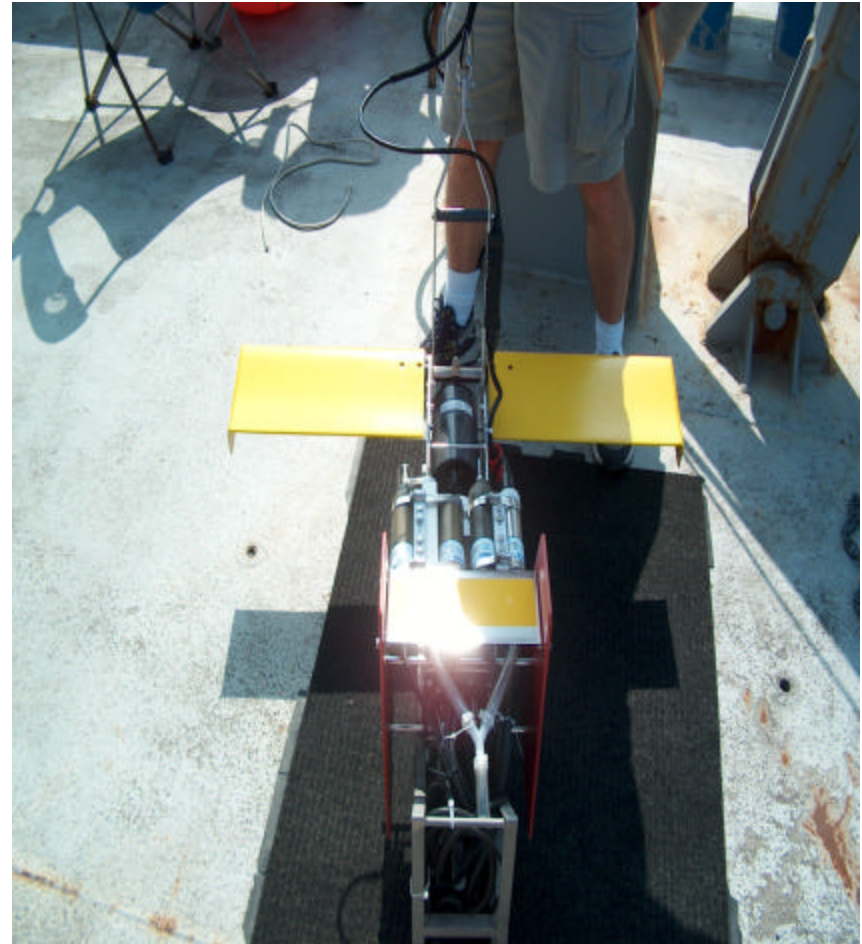
- Larger wings added for greater depth and weight capacity.
- Satlantic nutrient sensors
- Fluorometer
- PAR
- Transmissometer

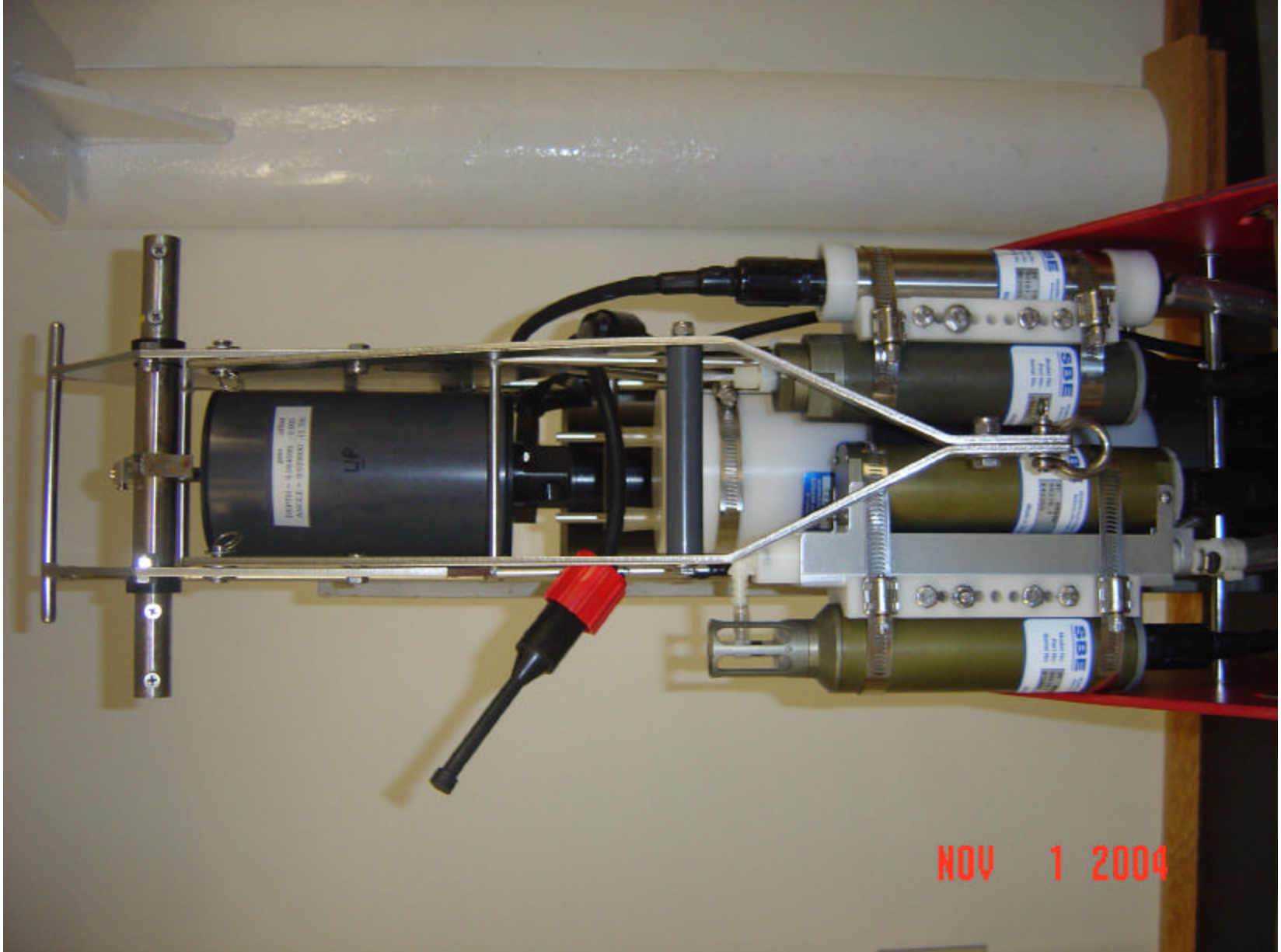


CTD

- SBE 25 integrated with Acrobat.
- Conductivity
- Temperature
- Depth

- Device allows external voltage inputs for added instruments.



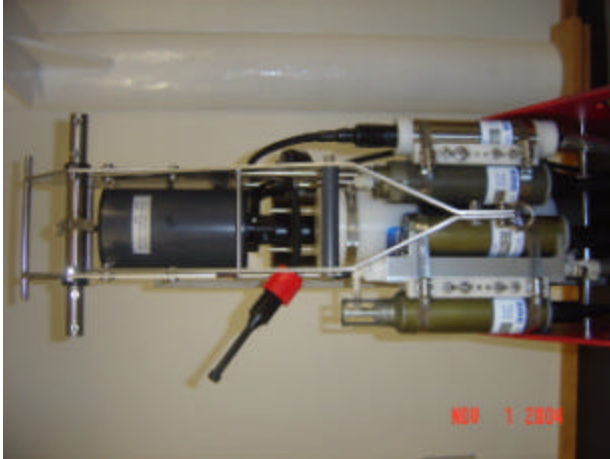


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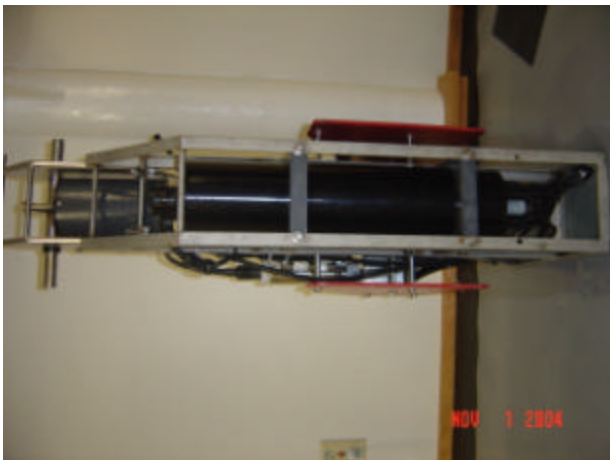
Data Collection

- Acrobat is able to profile the water column while moving horizontally. This allows for a three dimensional water profile.
- On average 4 cycles from top to bottom can be done within 1 kilometer.





- SBE 25
- Acrobat pressure sensor



- Nutrient sensor
- Added frame on lower side of Acrobat (manufactured locally)

Flight control

- Hand control module for manual flight.
- Pressure sensor allows software to control acrobat automatically.
- Feed from ship gives software depth and GPS location.
- Wing angle display allows user to control descent rate.

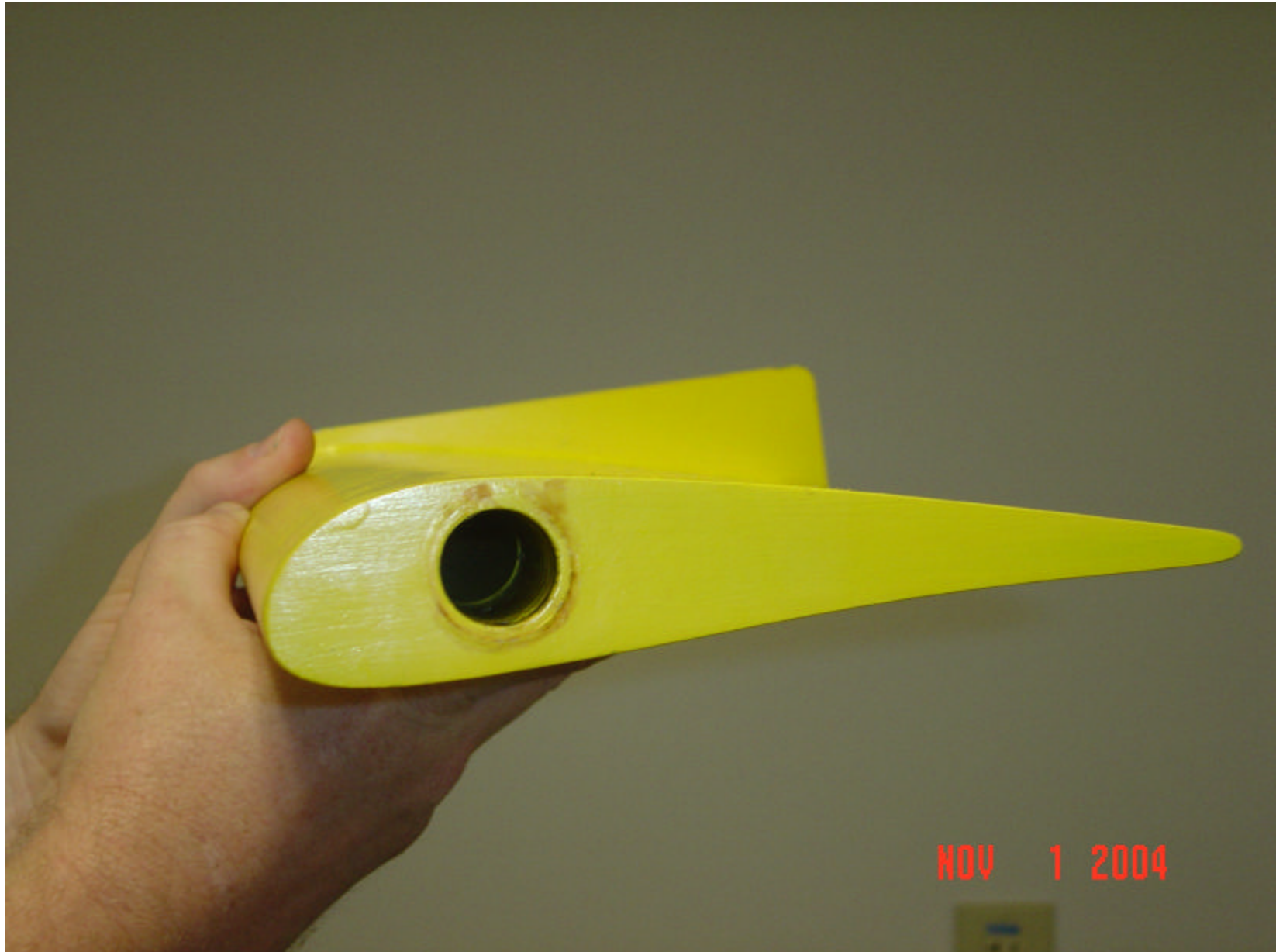
Manual Control

- Simple to use.
- Changes wing angle quickly.



Wings

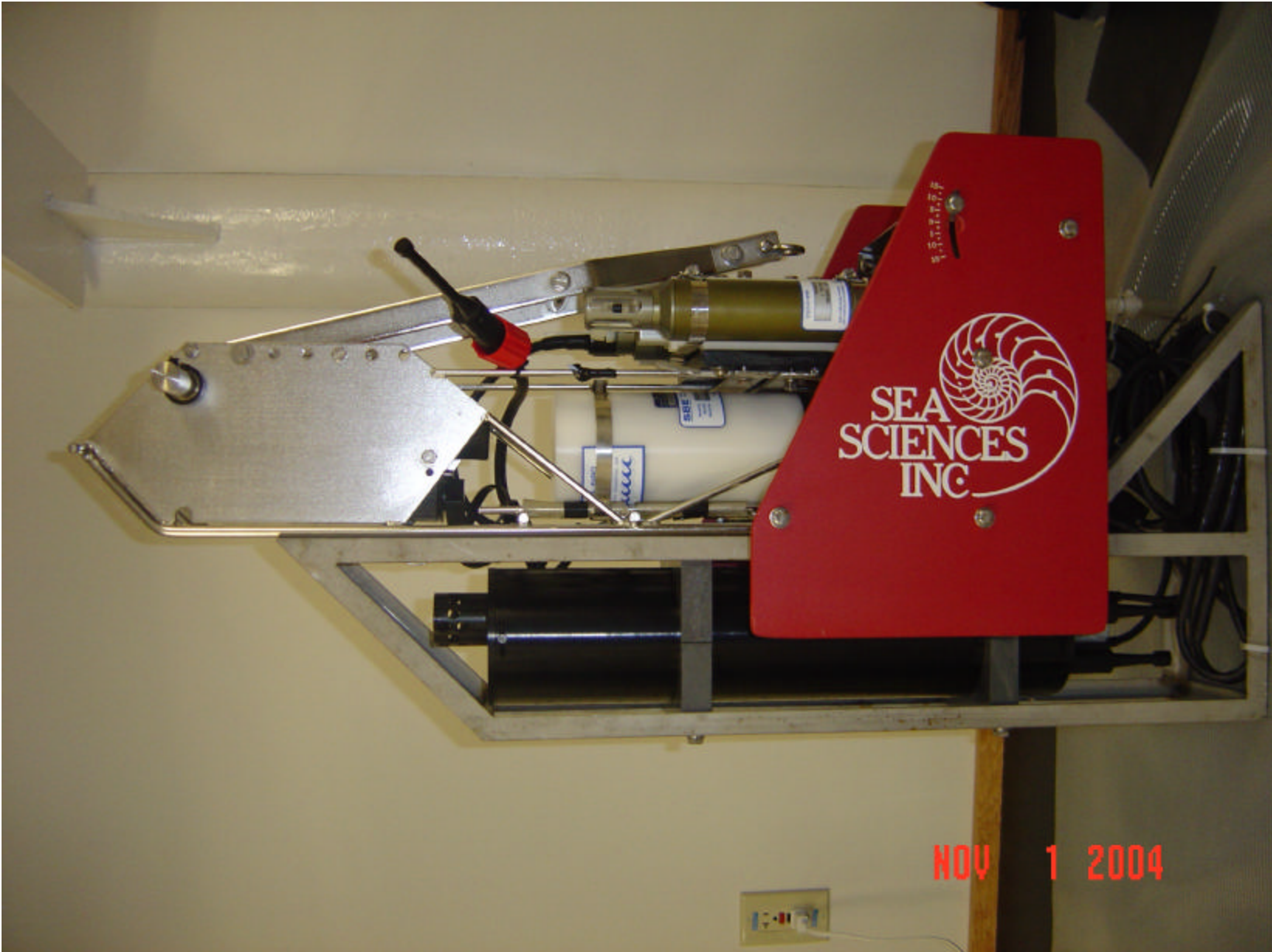
- Wings are designed to create “lift” as water passes over the top of the foil.
- Acrobat will rise to the surface unaided.
- When wing angle is adjusted Acrobat will fly at any desired depth.
- Some trial and error is involved to find the best wing angle to allow travel through out the entire water column.

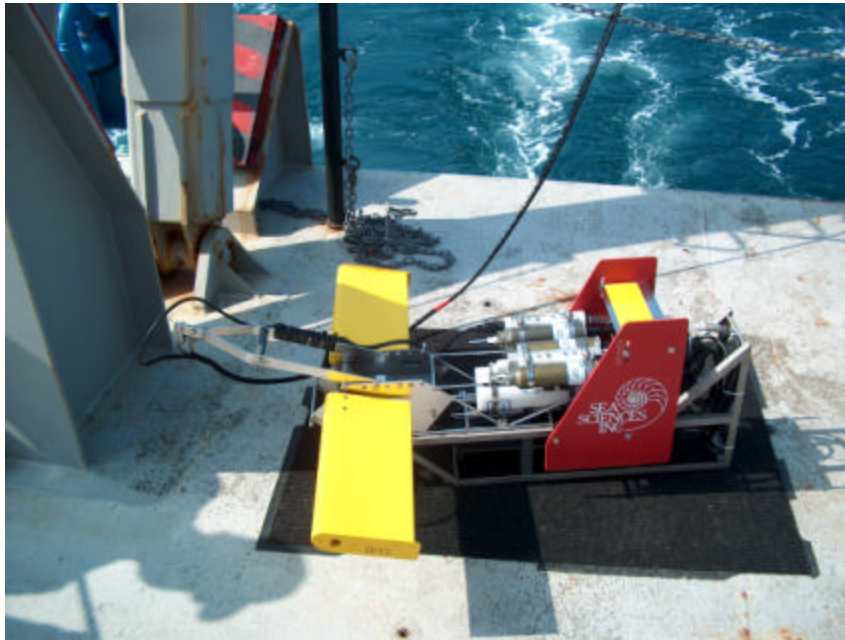


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Required adjustments

- Zero wing angle
- Boat speed
- Cable out
- Wing size





- Easy to deploy from any size vessel.
- Covers more water than a flow through system alone
- Allows numerous instruments to be added.
- Small size. Easy to transport and store.