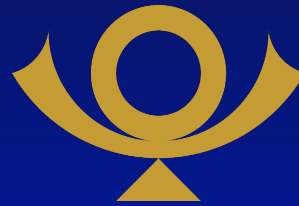


OBS EMPLACEMENT



Ocean Bottom Seismology Laboratory
Institute for Geophysics and Planetary Physics

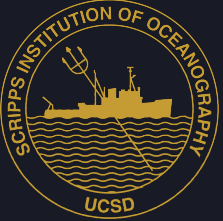
Martin Rapa

Sr. Development Engineer
Scripps Institution of Oceanography
University of California San Diego



Legacy OBS Design

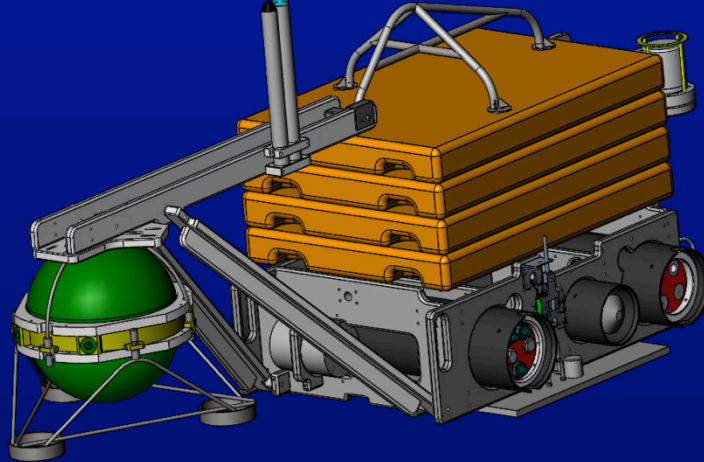




Scripps OBS Design



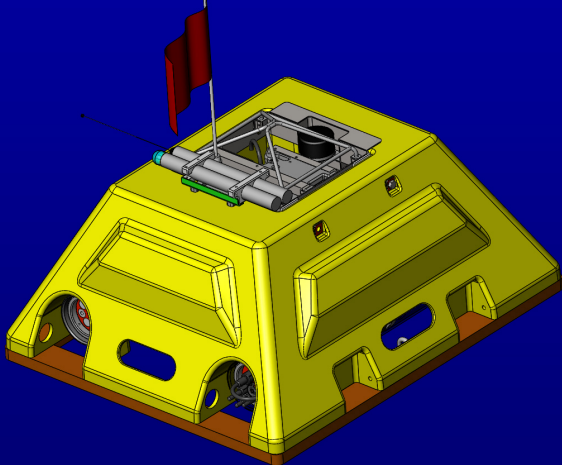
Broad Band



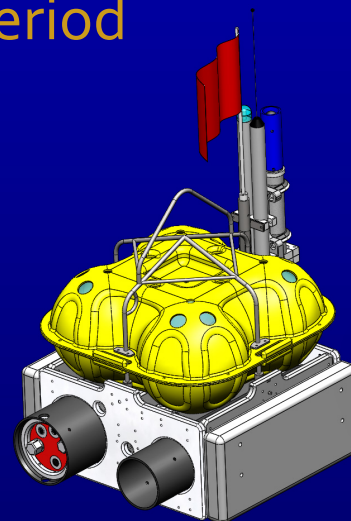
Marge
(for scale)



Intermediate Band

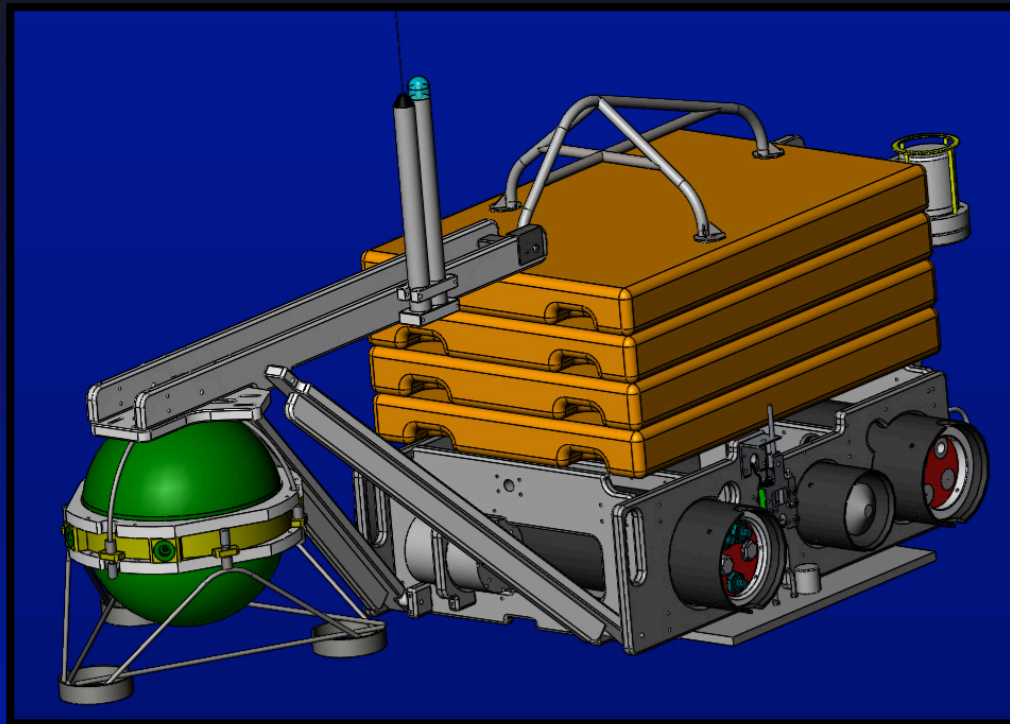


Short Period

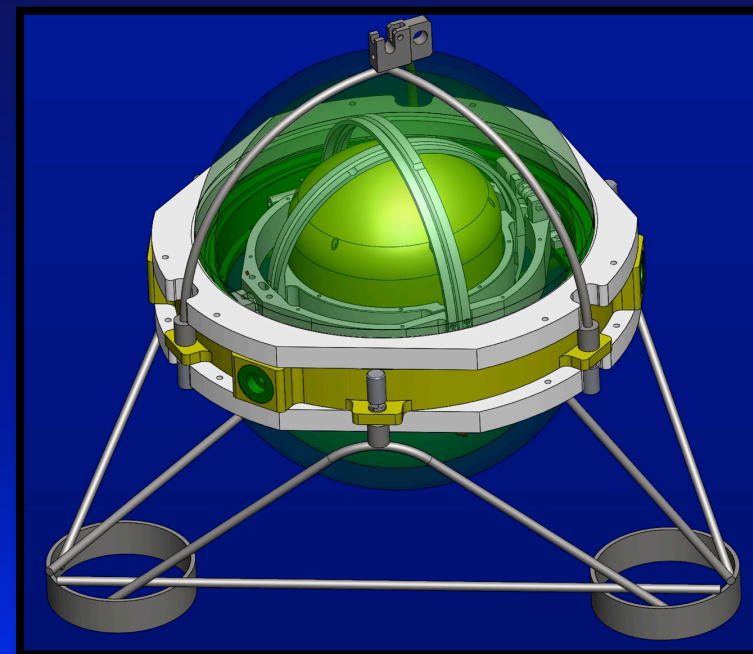


Scripps OBS Design

Broad Band



- Actively Leveled Trillium 240
- Flat response to velocity from 240 s to 35 Hz
- Bearing pressure:
 - ~ 0.55 psi (well settled in soft sediment)
 - ~ 4.0 psi (sandy bottom)



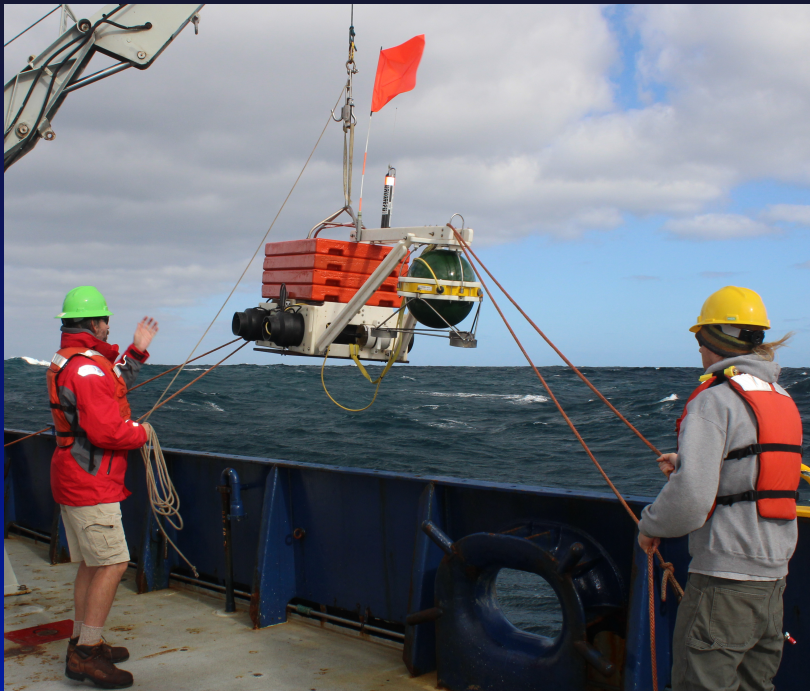


OBS Design

Broad Band

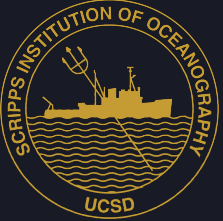


SIO



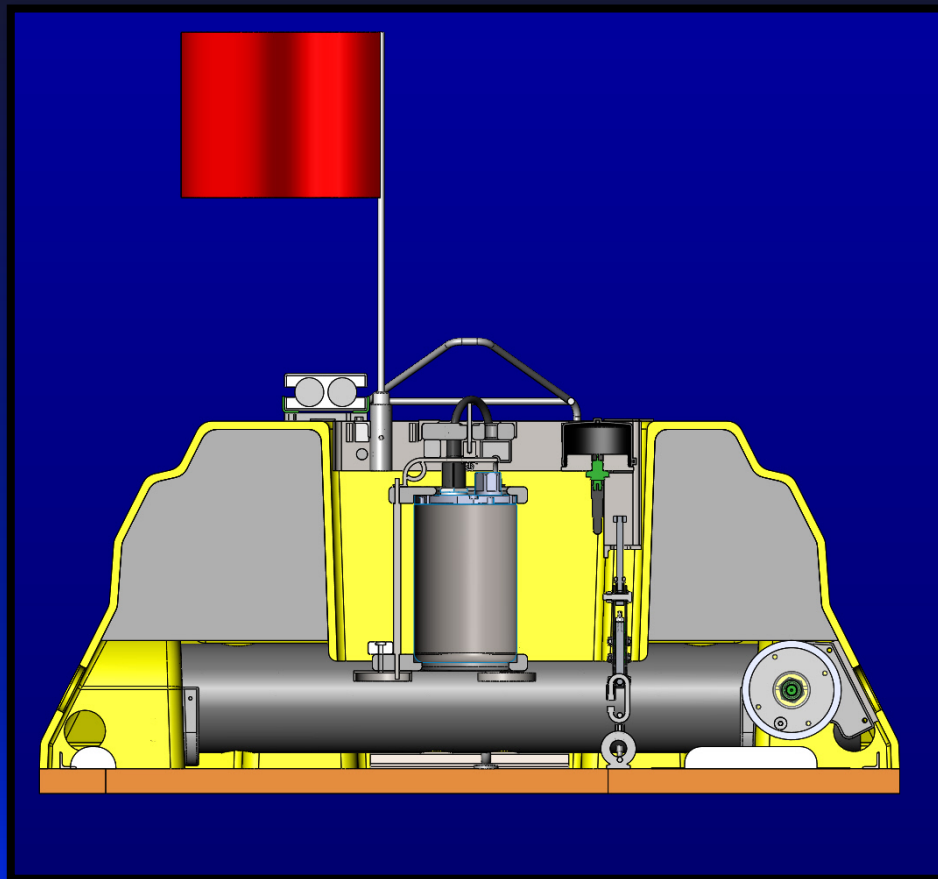
WHOI



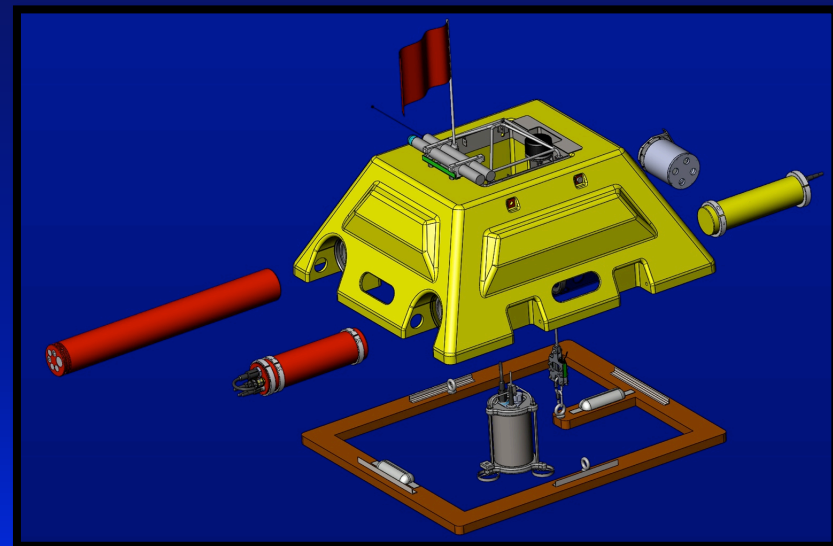


Scripps OBS Design

Shielded Intermediate Band



- Actively Levelled Trillium Compact
- Bandwidth: 120s to 100 Hz
- Bearing pressure:
 - ~ 0.375 psi (well settled in soft sediment)
 - ~ 3.81 psi (hard or sandy bottom)



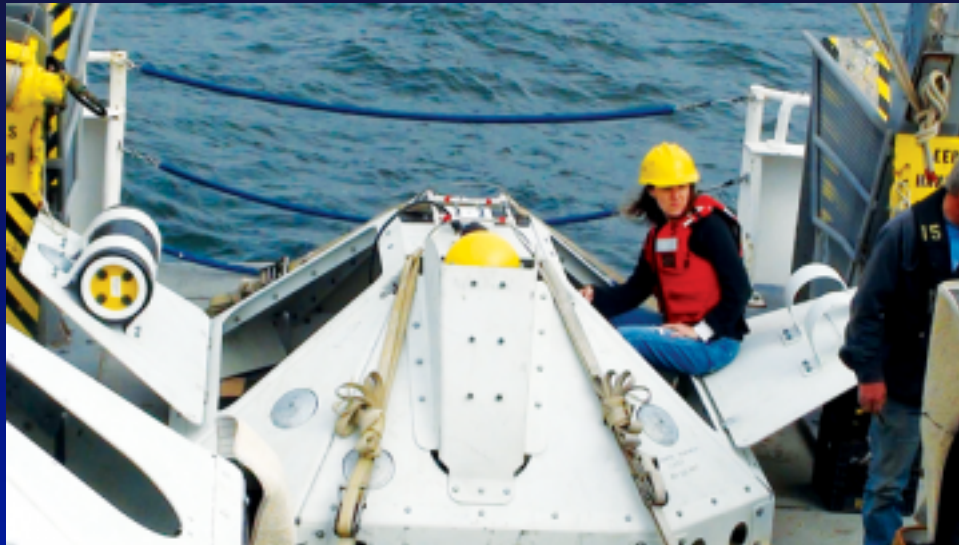


OBS Design

Shielded Intermediate Band



LDEO



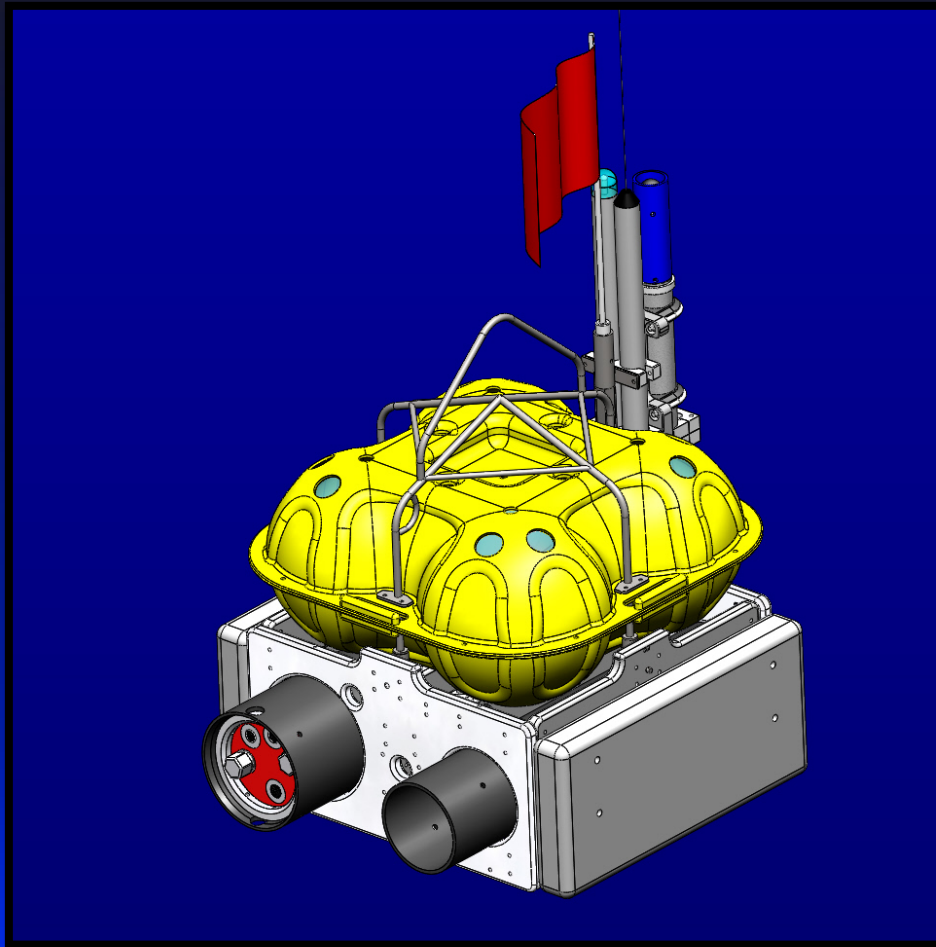
SIO



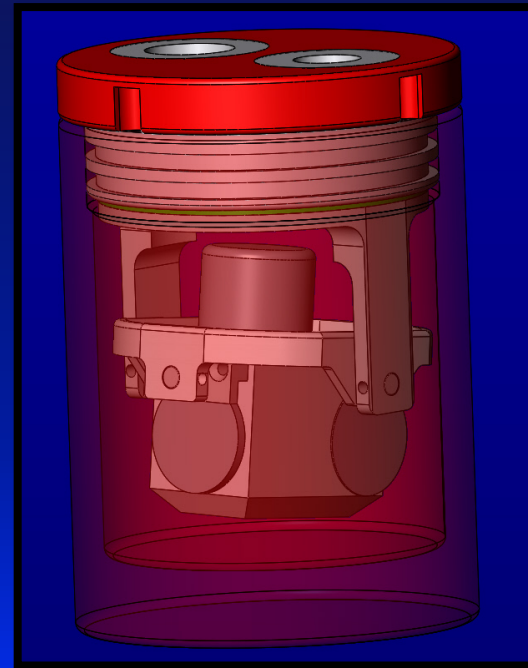


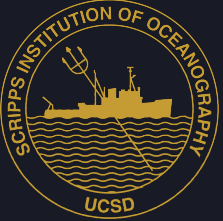
Scripps OBS Design

Short Period or Active Source



- Passively leveled 3 axis geophone
- Harmonic Frequency = 4.5 Hz
- Bearing pressure: 0.1 psi





OBS Design

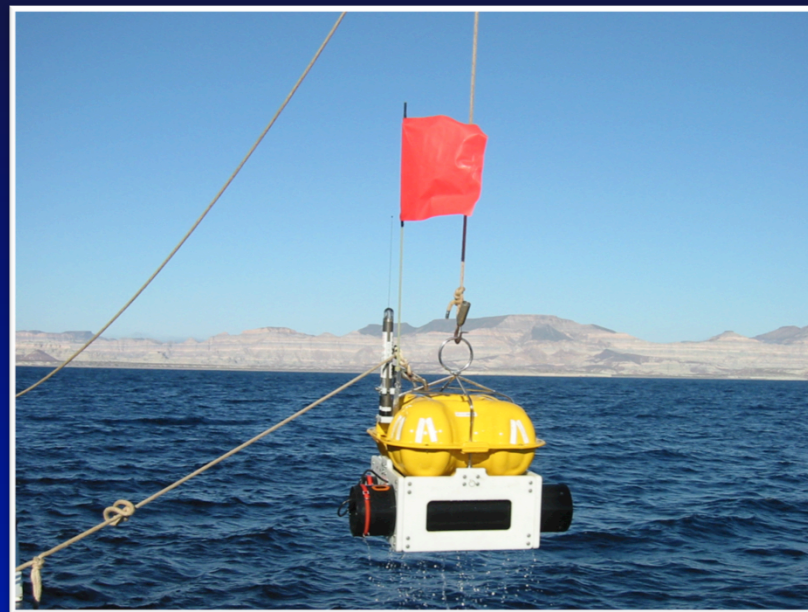
Short Period or Active Source



WHOI



SIO





SIO OBS

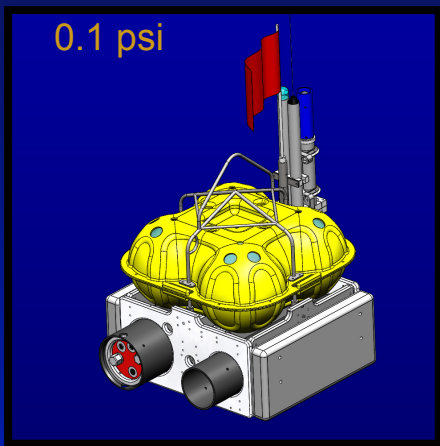
Qualitative Coupling Comparison

Bearing Pressure Range

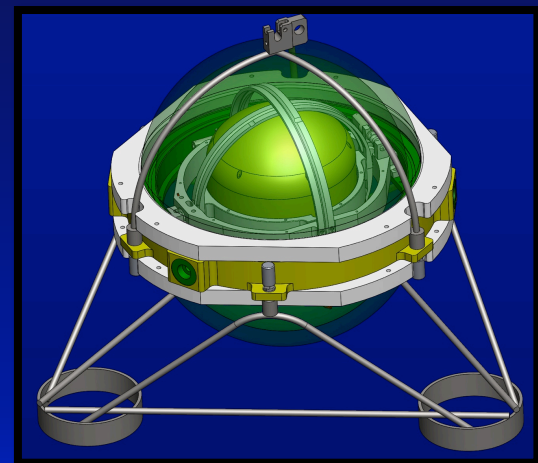
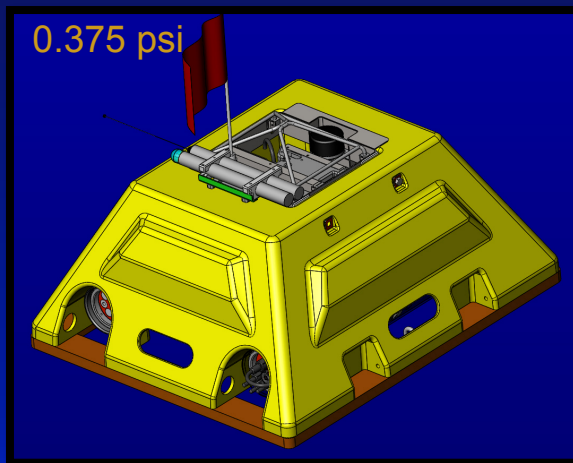


0.55 psi unconsolidated to 4.5 psi sandy/rocky

0.1 psi



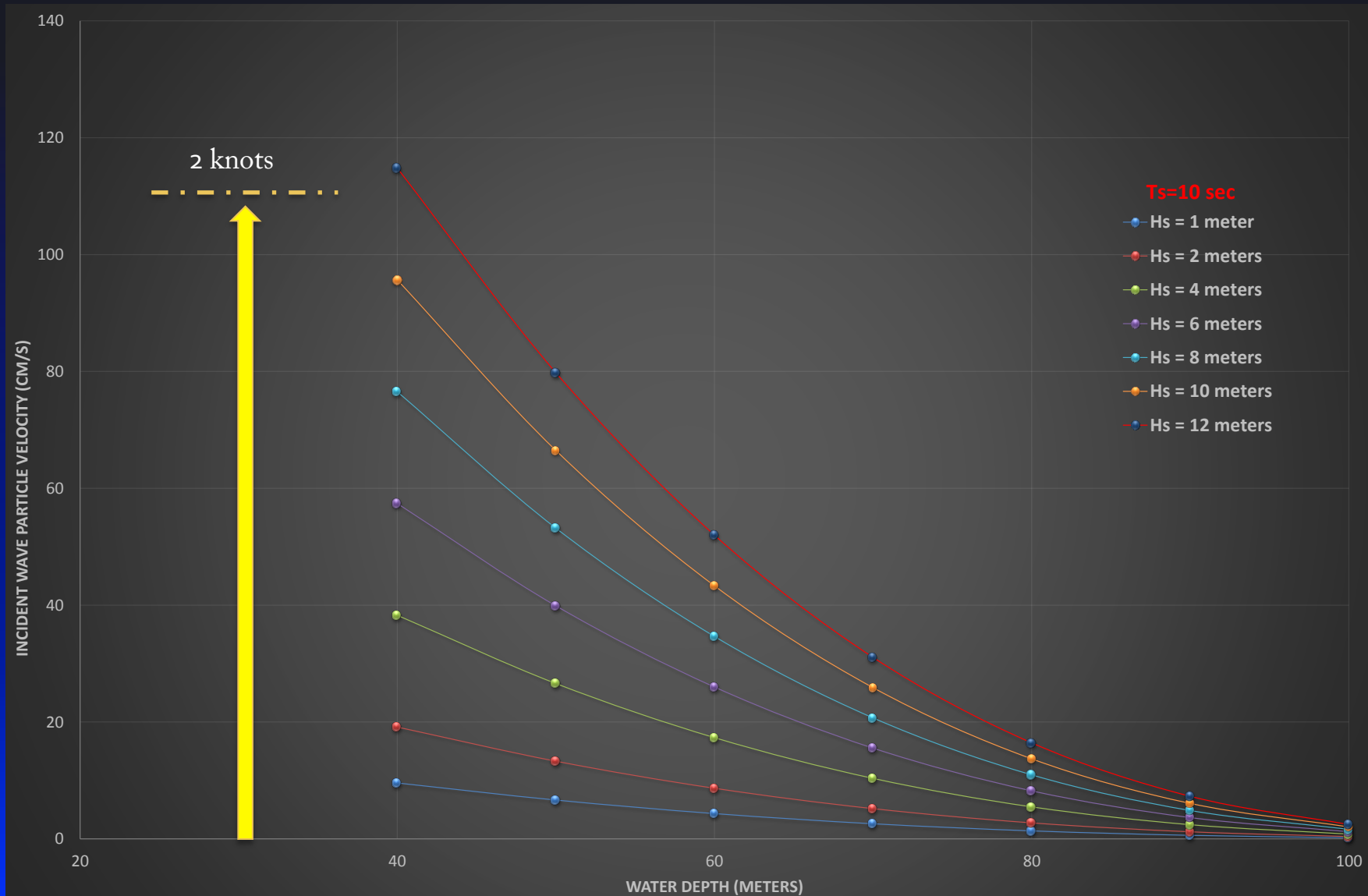
0.375 psi



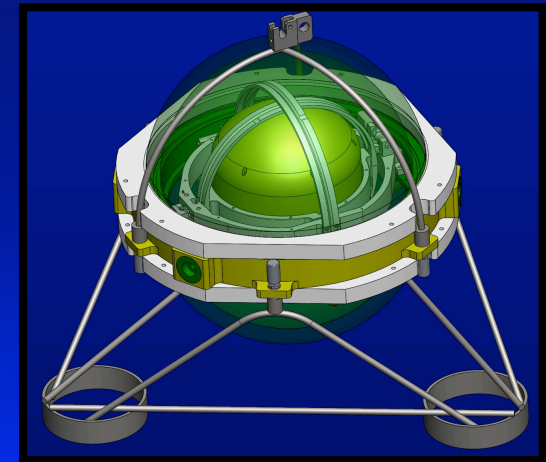
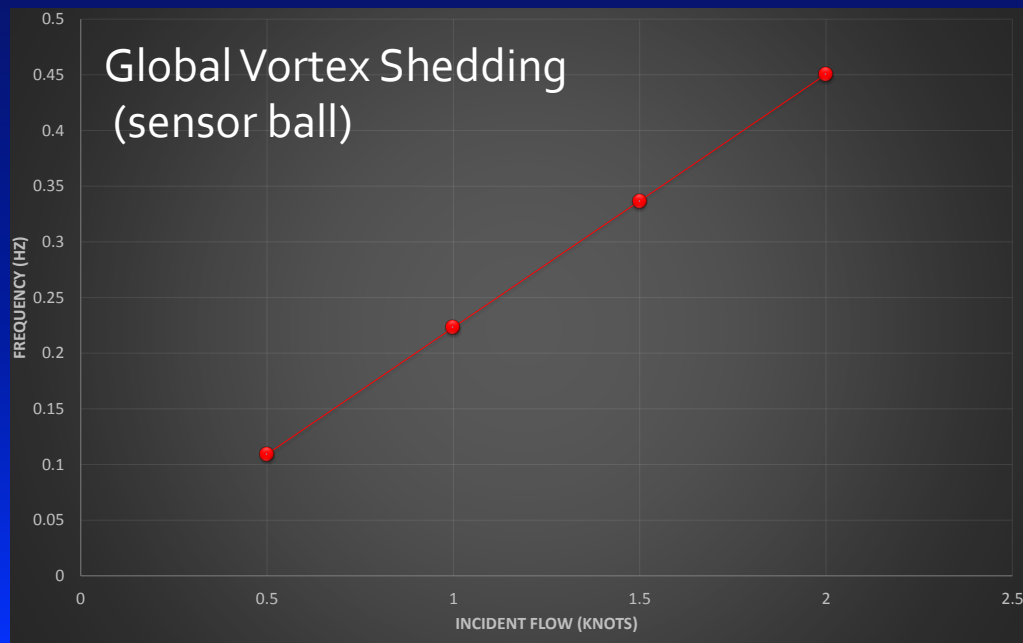
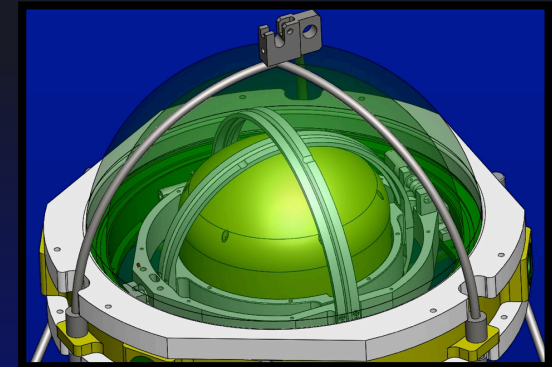
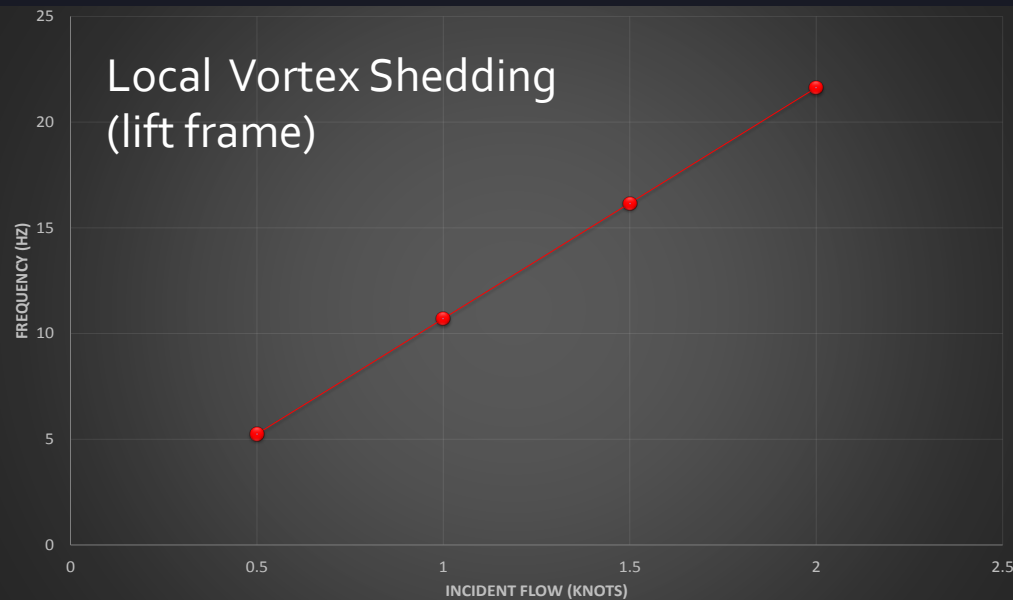


Environment

Particle Velocity Due To Waves

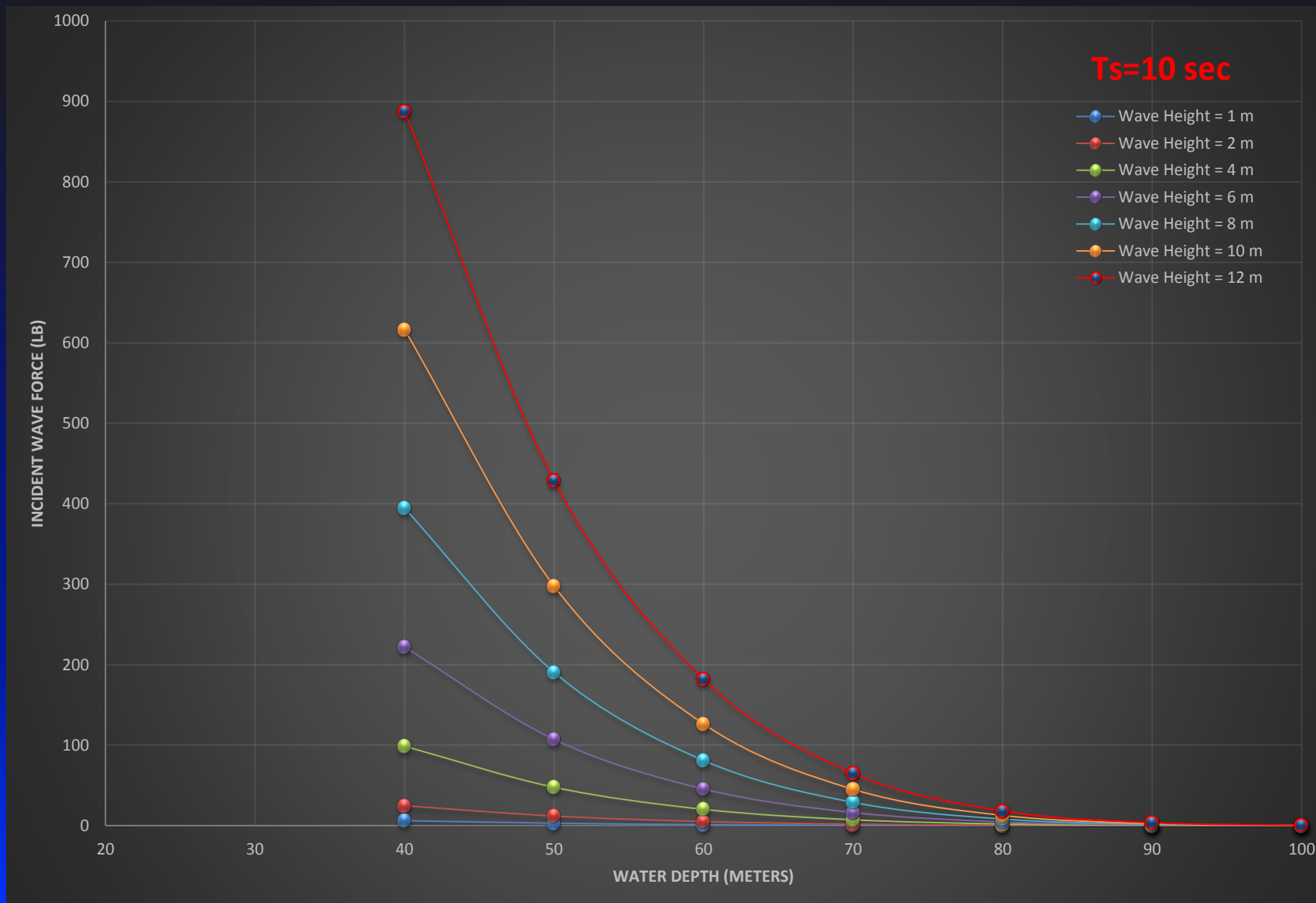


Flow and Consequent Turbulence





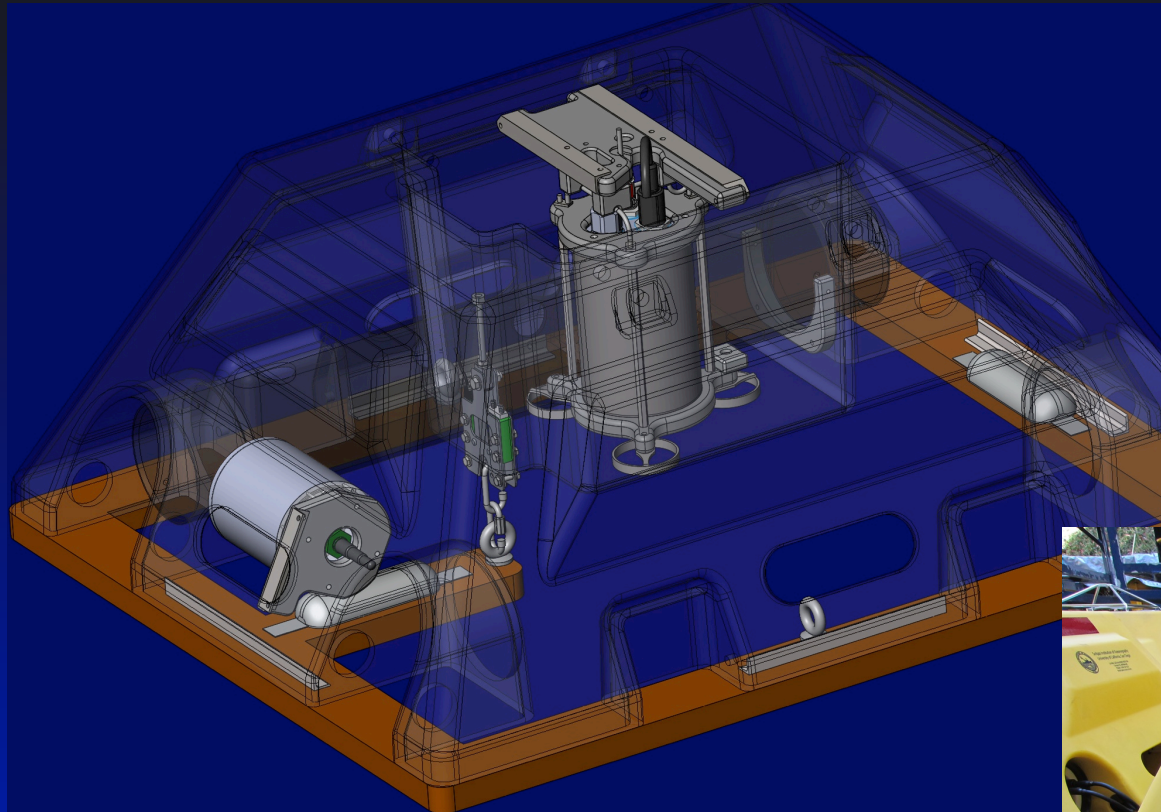
Incident Forces Due To Waves

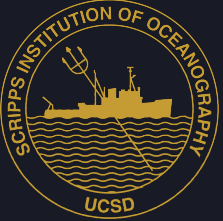




FLOW NOISE MITIGATION

SHEILDING

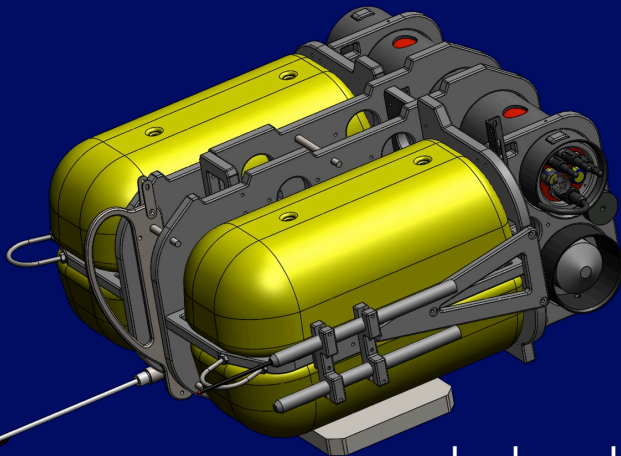




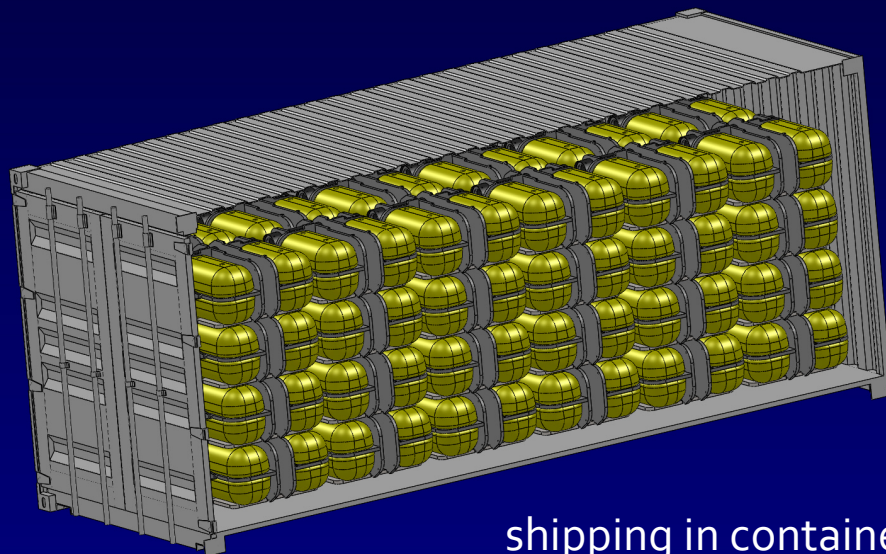
FLOW NOISE MITIGATION



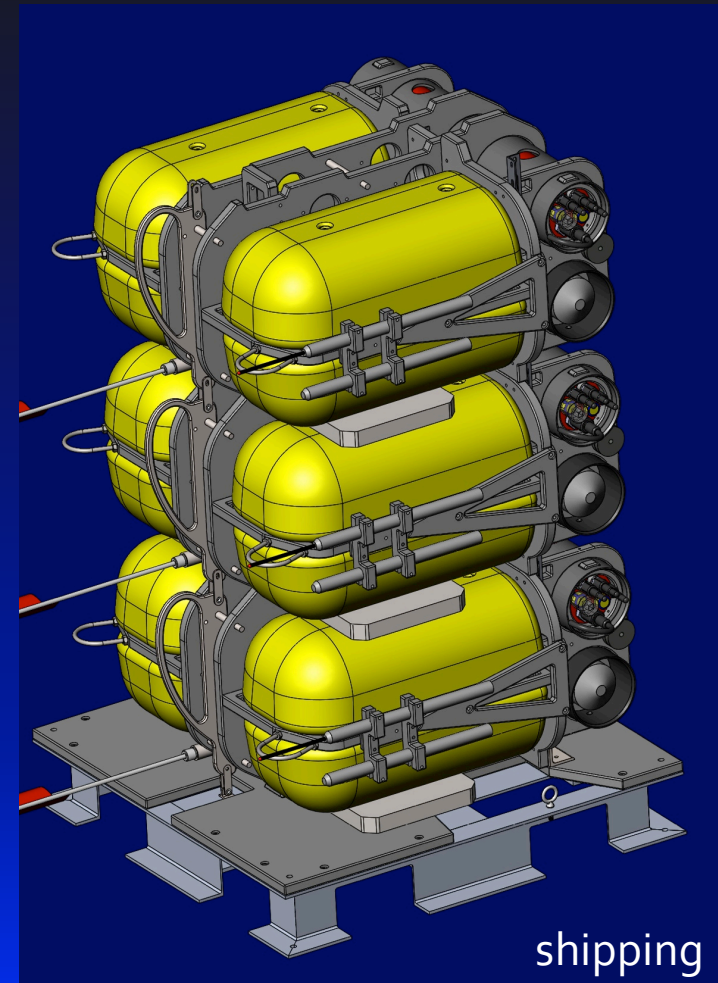
LOW PROFILE INSTRUMENT DESIGN



deployed



shipping in container



shipping



FLOW NOISE MITIGATION



LOW PROFILE INSTRUMENT DESIGN

