Replacement Human Occupied Vehicle *Alvin* Upgrade

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INSTITUTION


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QUIKSILVER

Alvin Upgrade Goals

Phase 1 (4500m)

- ✓ Larger personnel sphere; more interior space and improved ergonomics
- ✓ Improved field of view for pilots and observers
- ✓ Automated position keeping
- ✓ Sampling basket load limits significantly increased
- ✓ Improved lighting and video systems
- ✓ Improved interior electronics

Phase 2 (6500m)

- ✓ Increased battery capacity
- ✓ Increased on-bottom time
- ✓ Increased hydraulic plant capacity (improved manipulator performance)
- ✓ Increased thruster horsepower (better maneuverability)
- ✓ Improved mid-water research capability

New System Designs

- Personnel sphere (6,500m)
- Penetrators (6,500m)
- Syntactic foam (6,500m)
- Forward frame section
- Pressure vessels (6,500m)
- Video and lighting system
- Command & Control
- Electrical system

Cross-Deck Systems

- Mercury trim
- Variable ballast
- Main hydraulics
- Main ballast
- Main batteries
- Instrumentation
- Propulsion

Next Steps

- Science Verification Cruise
  Florida Escarpment, 2 legs
- 7 NSF-funded cruises in 2014, (184 days)
  Gulf of Mexico
  EPR, 9N
  Dorado Outcrop
- 4500m Certification
  December, Costa Rica

Phase II

6500m Certification requires:

- Technology Development
  - Batteries!
- Science Pressure
  - Community input proposals and/or recommendations
- Funding
  - Incremental systems upgrades
  - Overhaul