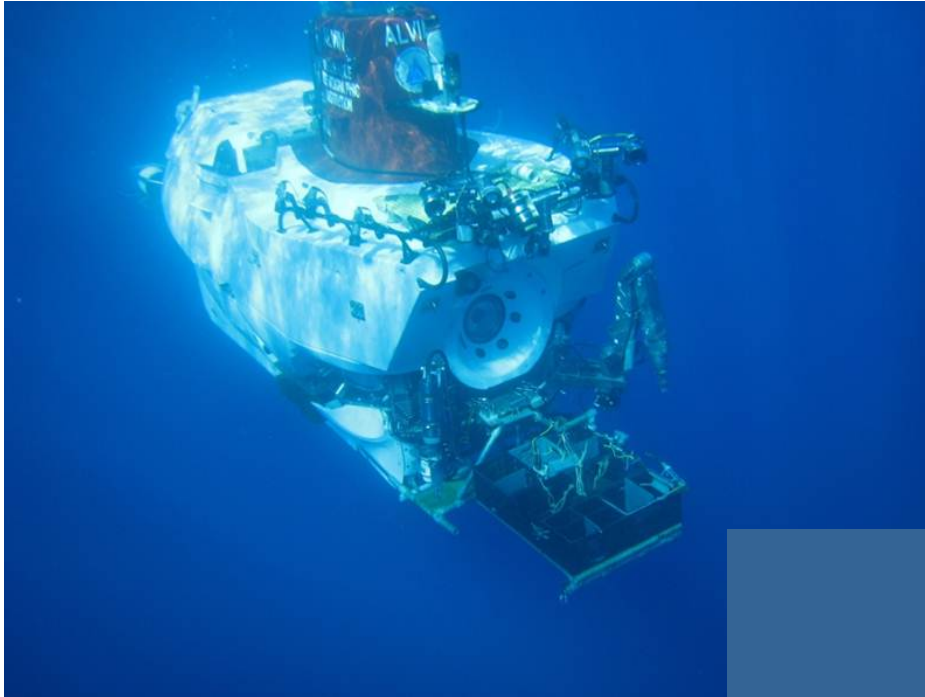




DeSSC Update

Alvin Upgrade Project



Susan Humphris
Principal Investigator

Kurt Uetz
Project Manager

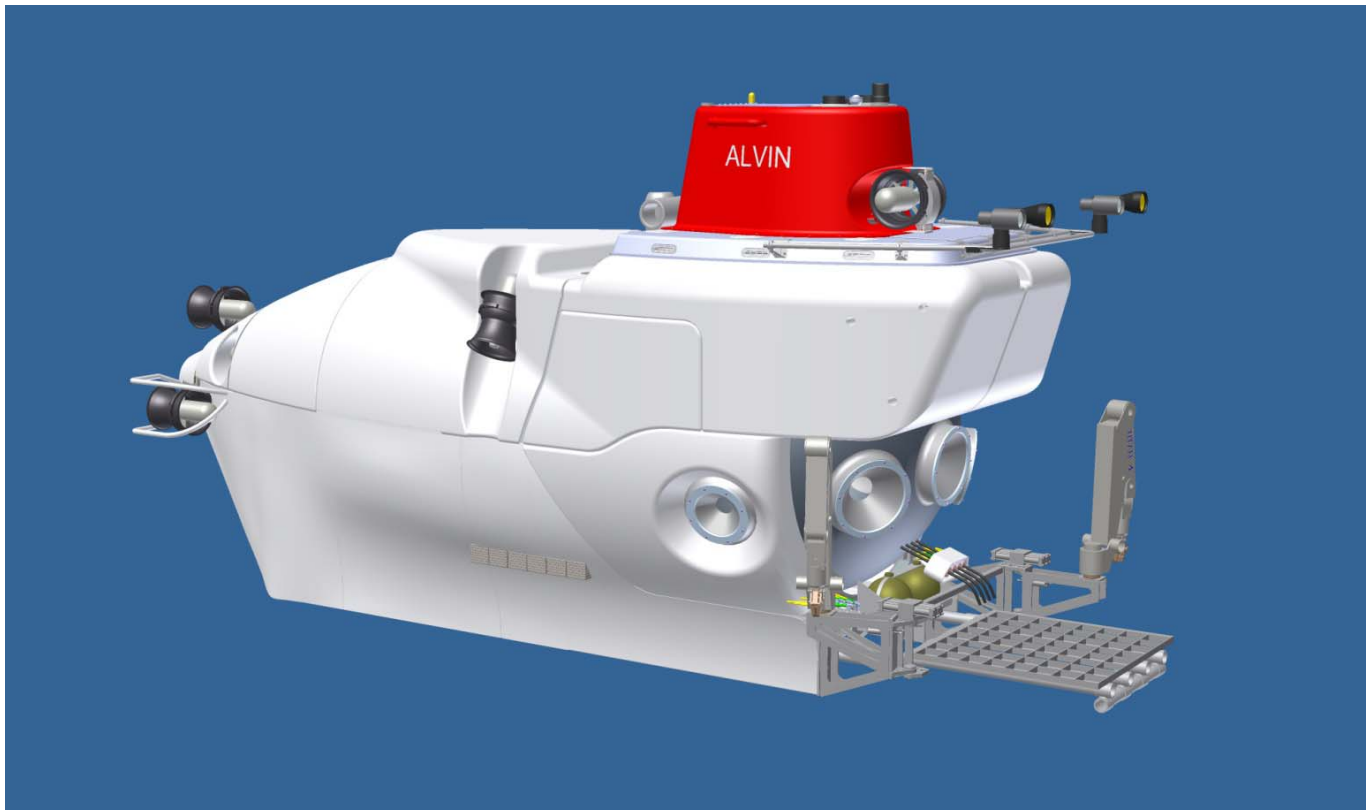




DeSSC Update Project Objectives



- A significantly enhanced submersible for the scientific community built in two stages:
 - Stage 1 4,500 m *Alvin* Upgrade: 2012
 - Stage 2 6,500 m *Alvin* Upgrade: future scheduling





DeSSC Update

Vehicle Characteristics



Project Objective	Stage 1 Vehicle	Stage 2 Vehicle	Remarks
6,500 meter depth capability		X	Stage 1 designs and fabricates select 6,500 meter components (sphere, penetrators, syntactic foam)
Larger personnel sphere, improved interior ergonomics	X		18% increase in interior volume; redesign of observer and pilot seating
Better visibility and overlapping views	X		Three 7" forward viewports with overlapping fields of view; two 5" side port
Improved interior electronics	X		Fiber optic network, touch screen controls, and upgraded observer monitors
Increased science payload	X		Double the vehicle payload to 400 pounds as well as expand the manipulator work area
Improved lighting and imaging	X		HD video, publication quality still imaging, and increased lighting output (LED)
Improved data collection, logging, and science interface	X		A fiber optic network and upgrades to the data recording and logging systems
Increased bottom time; mid-water capability		X	Requires increased battery capacity
Increased thruster horsepower		X	Requires increased battery capacity
Increased hydraulic plant capacity		X	Requires increased battery capacity
Automatic station keeping		X	Stage 1 includes auto-heading control
Vehicle Certification: NAVSEA	X		Potential double classification with ABS in Stage 2



DeSSC Update **Updates**



Personnel:

Don Peters is the project Chief Engineer and managing the the engineering effort

Descoping:

- The project is suspending ABS classification of the vehicle
 - Reduces risk in the project related to double classification
- The vehicle will continue the Navy certification process
 - The project will review systems for witnessing by ABS to maximize the potential for future double classification
- The personnel sphere and LARS will also continue the ABS classification process



DeSSC Update **Updates**



NAVSEA Certification:

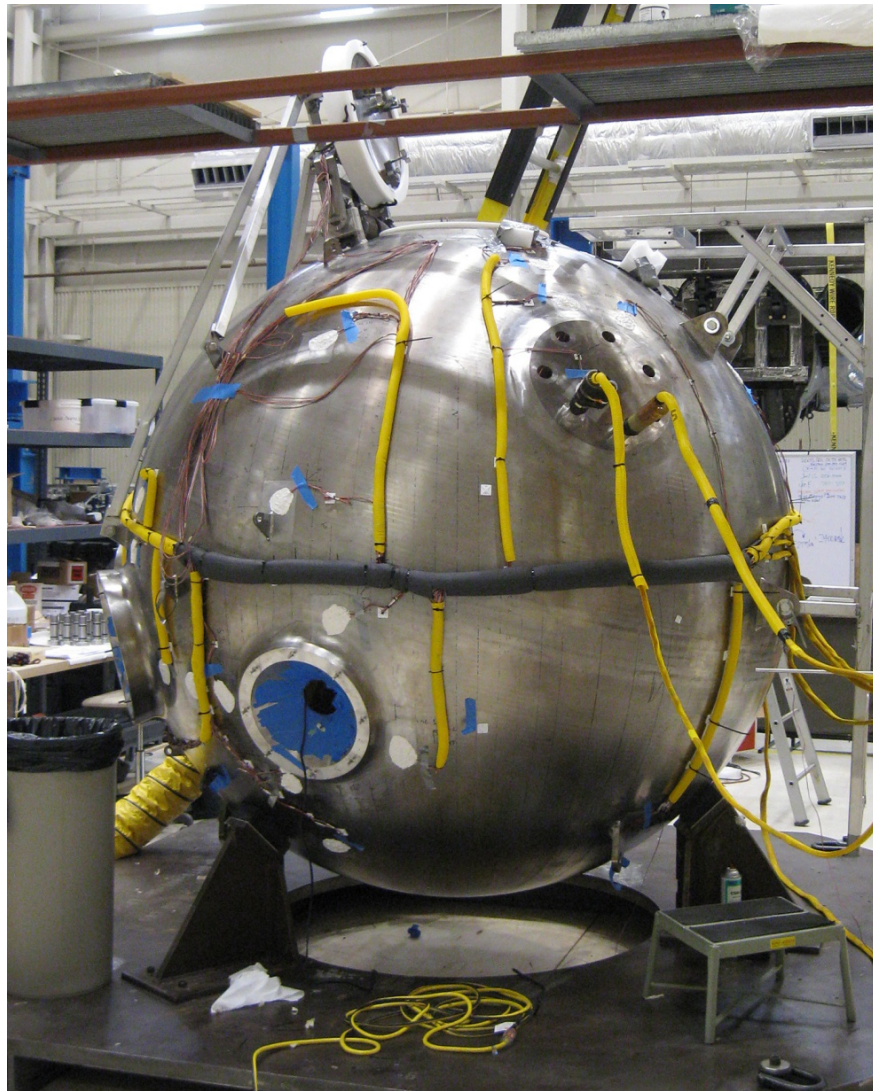
- Weekly program and technical meetings to review certification progress and expedite resolution of issues
- June 8th Hydrostatic Test Readiness Review
 - NSF reviewed and authorized pressure testing of the sphere

Personnel Sphere Hydrostatic Test:

Planned start:	June 20 th
Delivery to WHOI:	July 6 th



DeSSC Update Personnel Sphere Update



Ready for Hydrostatic Test



DeSSC Update

Hydrostatic Test Facility



← 10 ft diameter →

Chamber

12,000 psi max pressure

Northrop Grumman Oceanic
Test Facility

Annapolis, MD

End cap





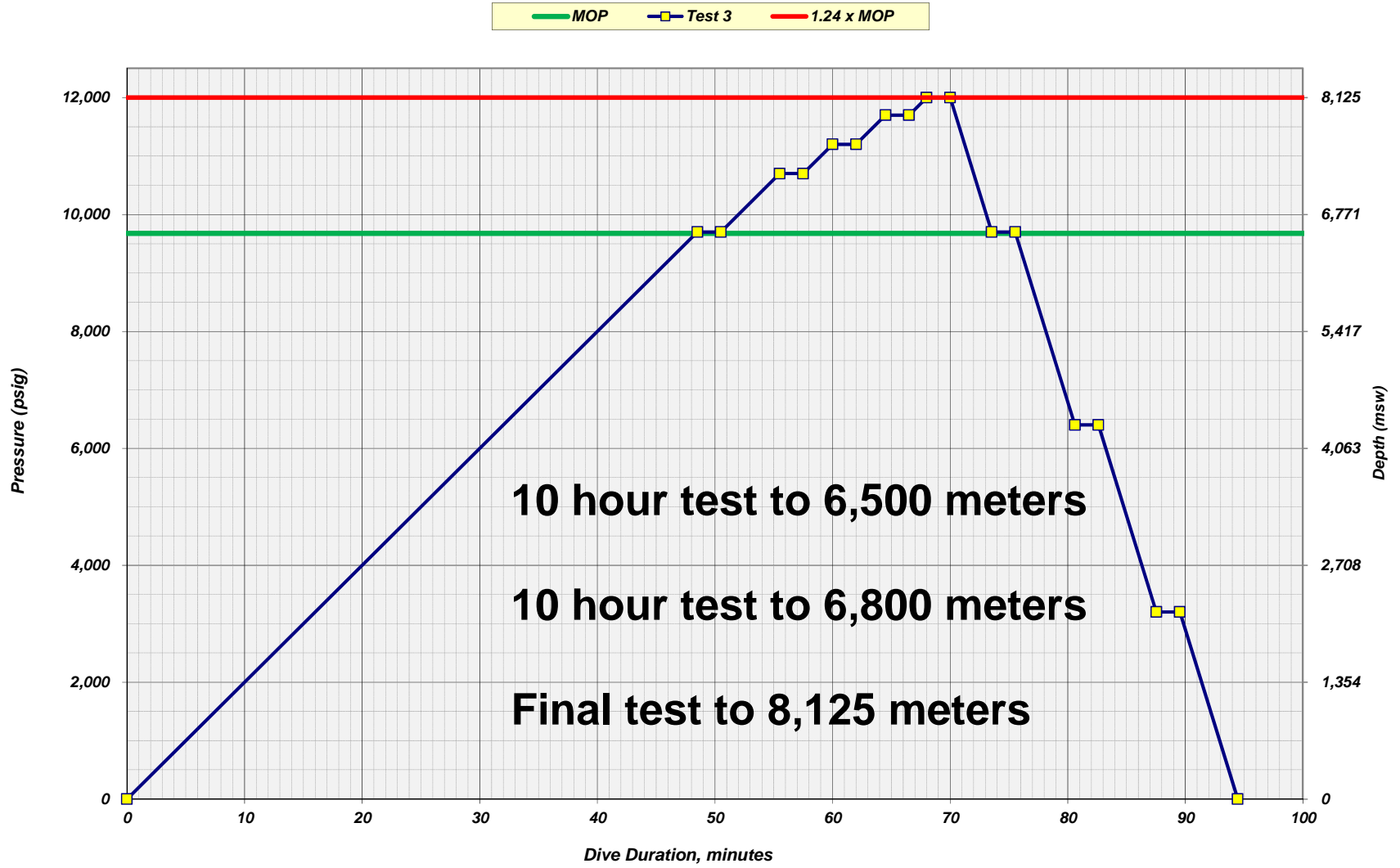
DeSSC Update

Hydrostatic Test



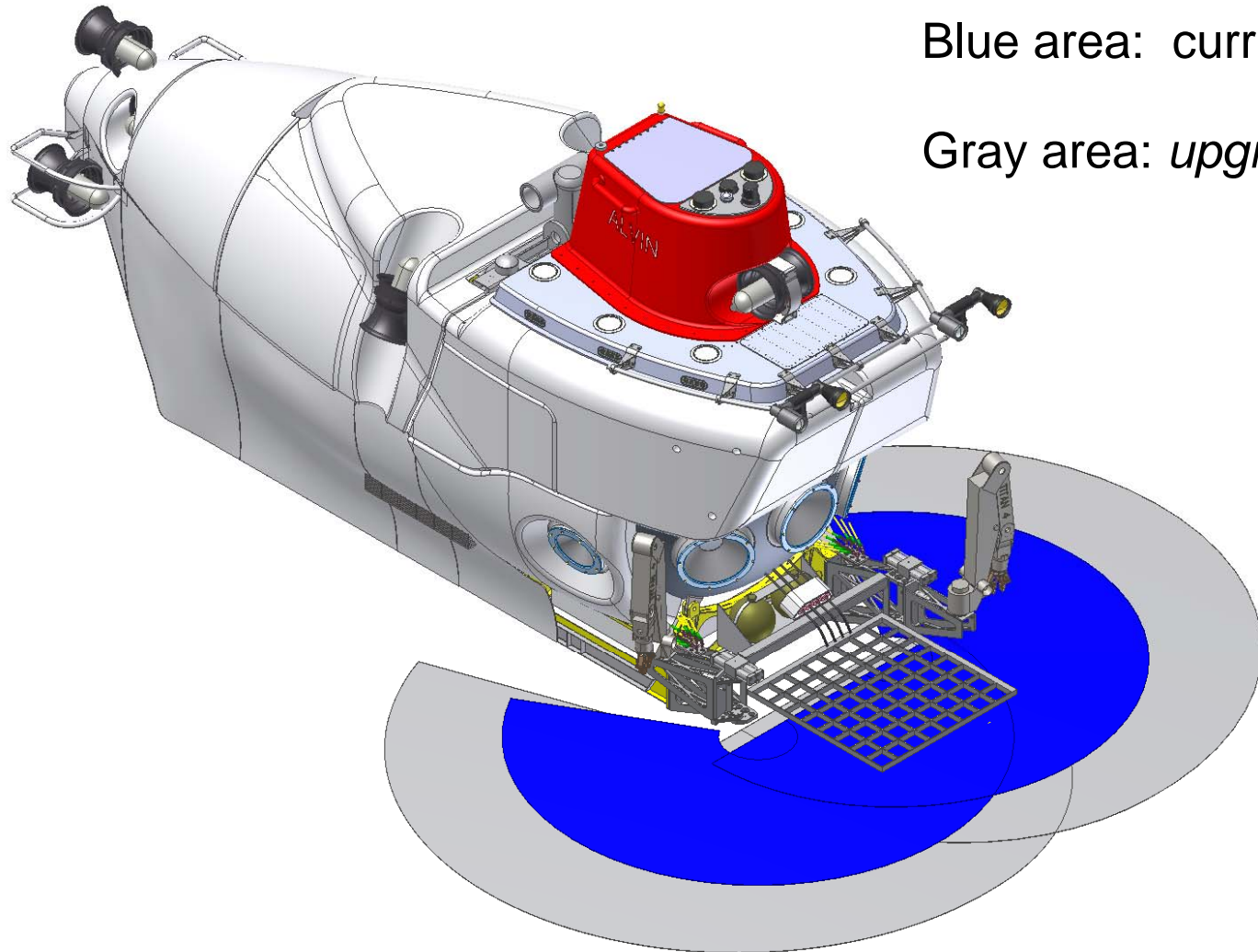
Final Dive Profile

Dive Profile - Test 3: 1.24 x MOP
Pressure (Depth) vs. Dive Time





New Capability - Manipulator Reach



Blue area: current 60 ft²

Gray area: *upgrade* 114 ft²





DeSSC Update

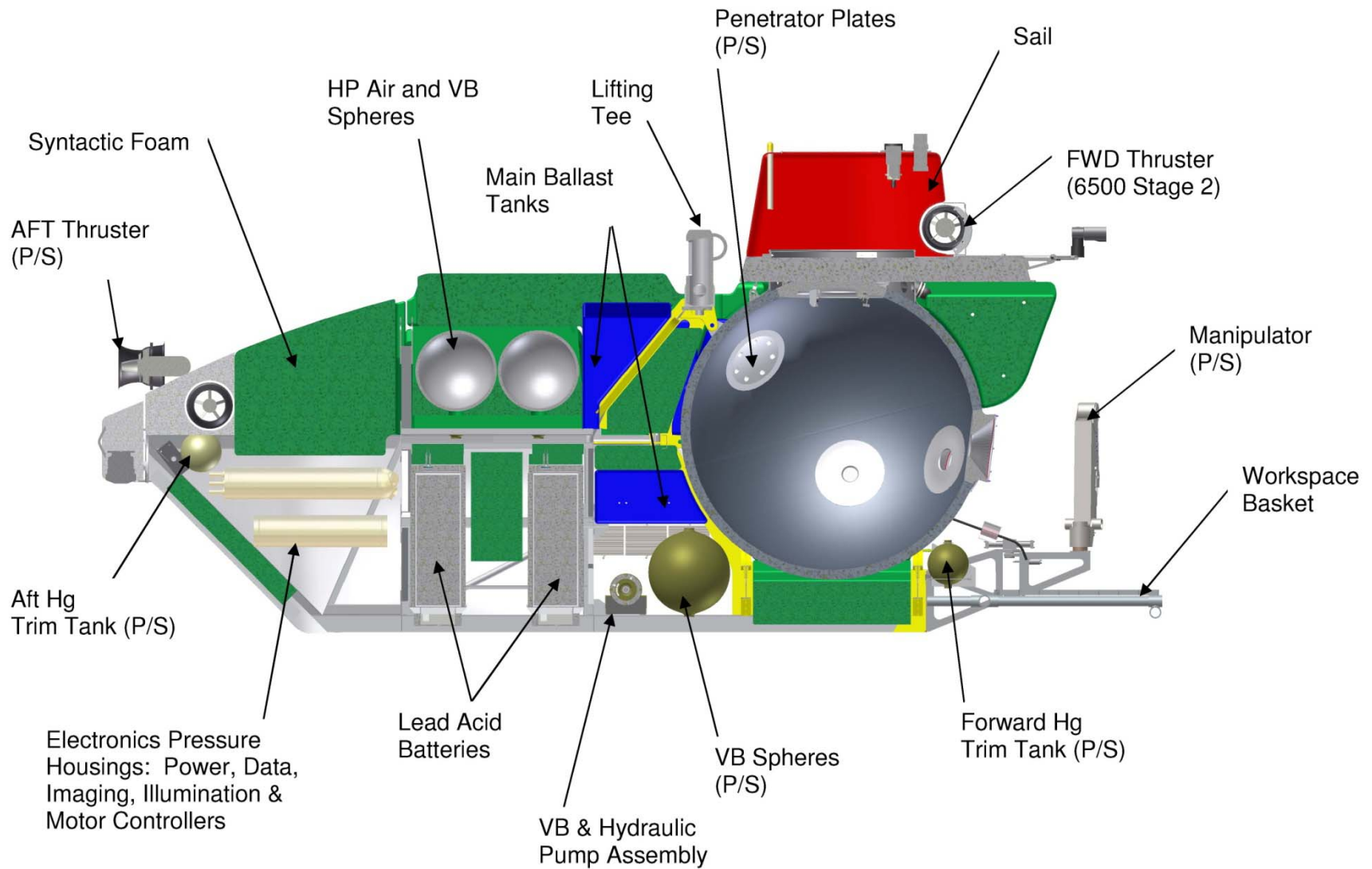
New Capability - Imaging



- File-based image storage to reusable HDD
- Long term data storage
- Situational Cameras: HD Video, 2 forward, internal pan and tilt
- Primary Cameras: HD Video, 10x zoom (Mini-Zeus)
- Science Cam #1: HD Video
- Science Cam #2: HD Video + Still Imaging



DeSSC Update Vehicle Layout





DeSSC Update Work in Progress



May 2012



DeSSC Update Work in Progress





Status of Major Components



- **Penetrators:**

- Fiber optic units delivered and in testing
- Electrical units fabricated, preparing for testing

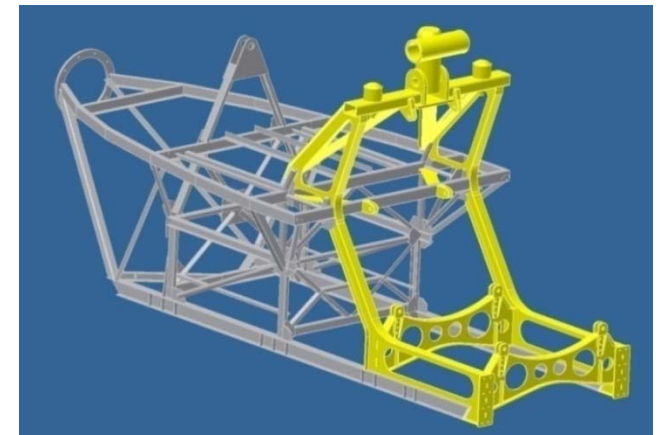


- **Foam:**

- All foam purchased, tested, and accepted
- Shaping is in process with several pieces delivered

- **Frame:**

- Front section removed
- Fabrication of new section started





DeSSC Update R/V Atlantis Status



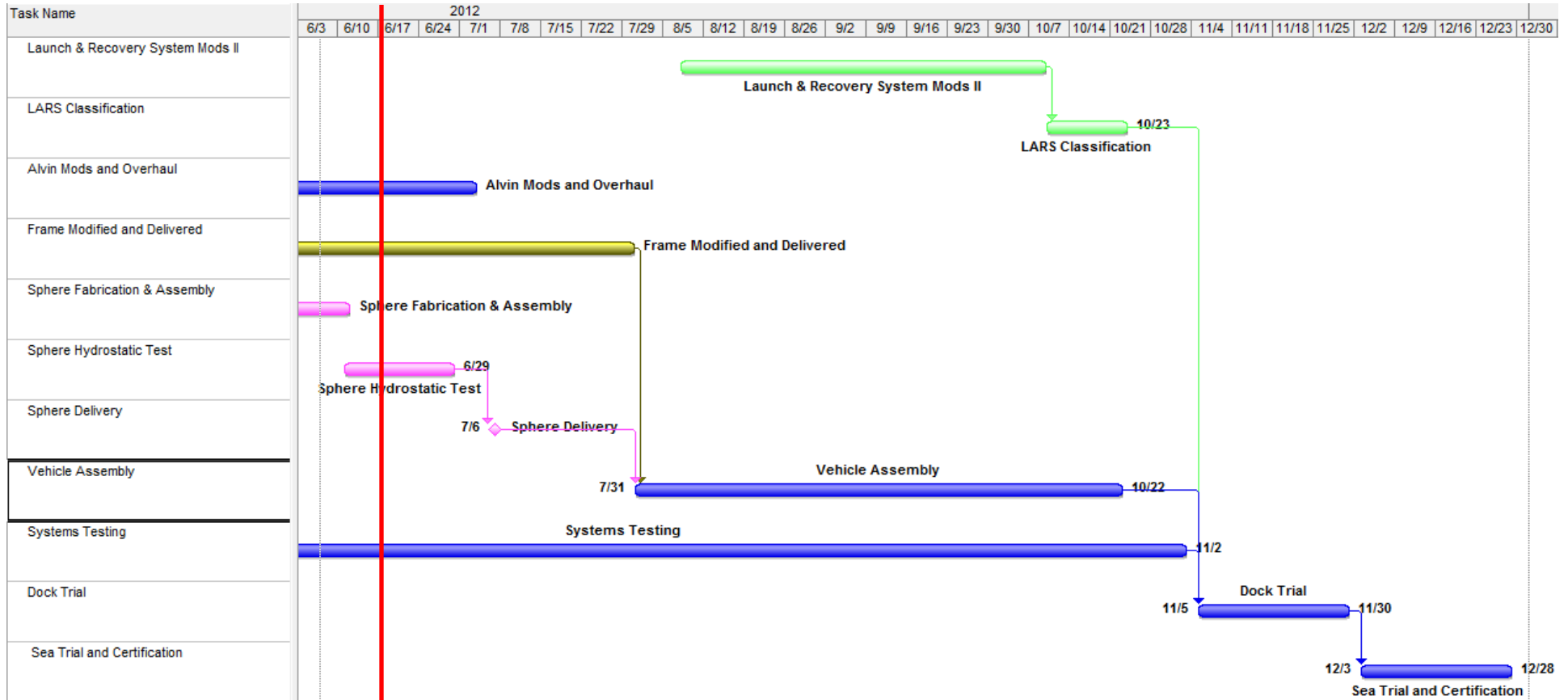
Launch and Recovery System Schedule

- Increase lift capability to 50,000 pounds
- A-Frame upgrade complete March 2011
- Deliver modified swinging beam to WHOI July 2012
- Shipyard maintenance period Aug – Sept
2012
- Reinstall swinging beam onto A-frame
- Complete hangar modifications
- Complete LARS integration October
2012
- ABS classify and NAVSEA certify





DeSSC Update Project Timeline



Today



DeSSC Update **Challenges Ahead**



Frame Modifications:

- Proceeding with fabrication in parallel with NAVSEA reviews

Vehicle NAVSEA Certification:

- Completing assembly and testing concurrent with certifying the vehicle for manned operations

***R/V Atlantis* LARS**

- Completion of swinging beam modifications in July
- Classify through ABS and certify with NAVSEA in time to support November dock trials

Budget:

- Any schedule delay will jeopardize completion within budget



DeSSC Update **Back to *Alvin* Operations**

