Replacement Human Occupied Vehicle *Alvin* Upgrade

UNOLS Council
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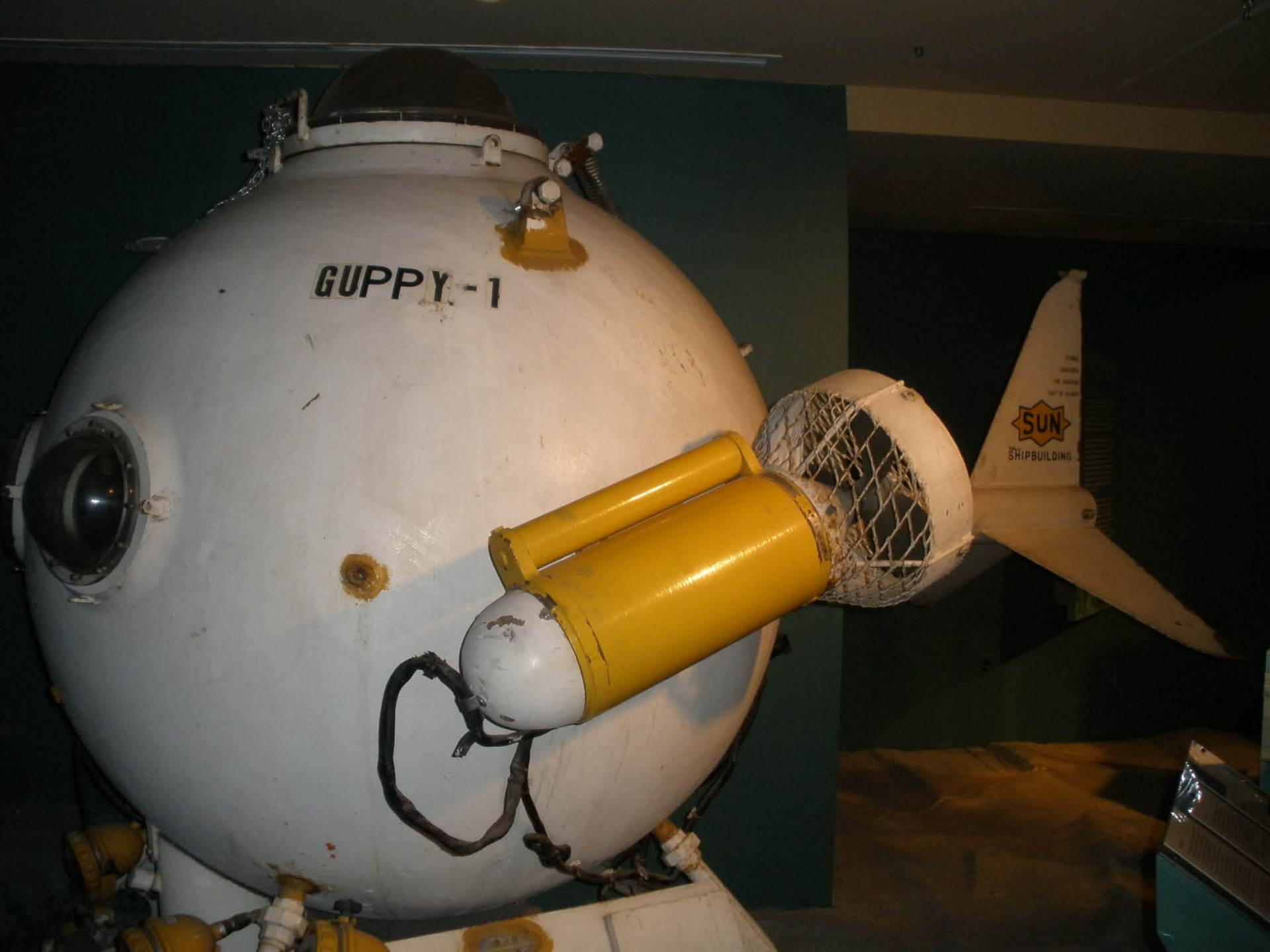
Brian Midson

HOV Alvin Upgrade (formerly RHOV)

Status

- Titanium personnel sphere successfully pressure tested on June 22, 2012 (to 8000m); final step in sphere construction project)
- Reassembly expected completion, December, 2012
- Recertification expected March, 2013
- Science Verification Cruise scheduled May, 2013 (Florida Escarpment, Cayman Trough)
- Science Operations expected to resume June, 2013. Cruises scheduled for the NE Pacific in 2013


GUPPY-1
SUN
SHIPBUILDING


A-TANK PRESSURE VESSEL
DIAMETER = 10 FEET
USABLE LENGTH = 27 FEET
MAX PRESSURE = 12,000 PSI


WHITING
DANGER
HIGH
VOLTAGE

High Bay

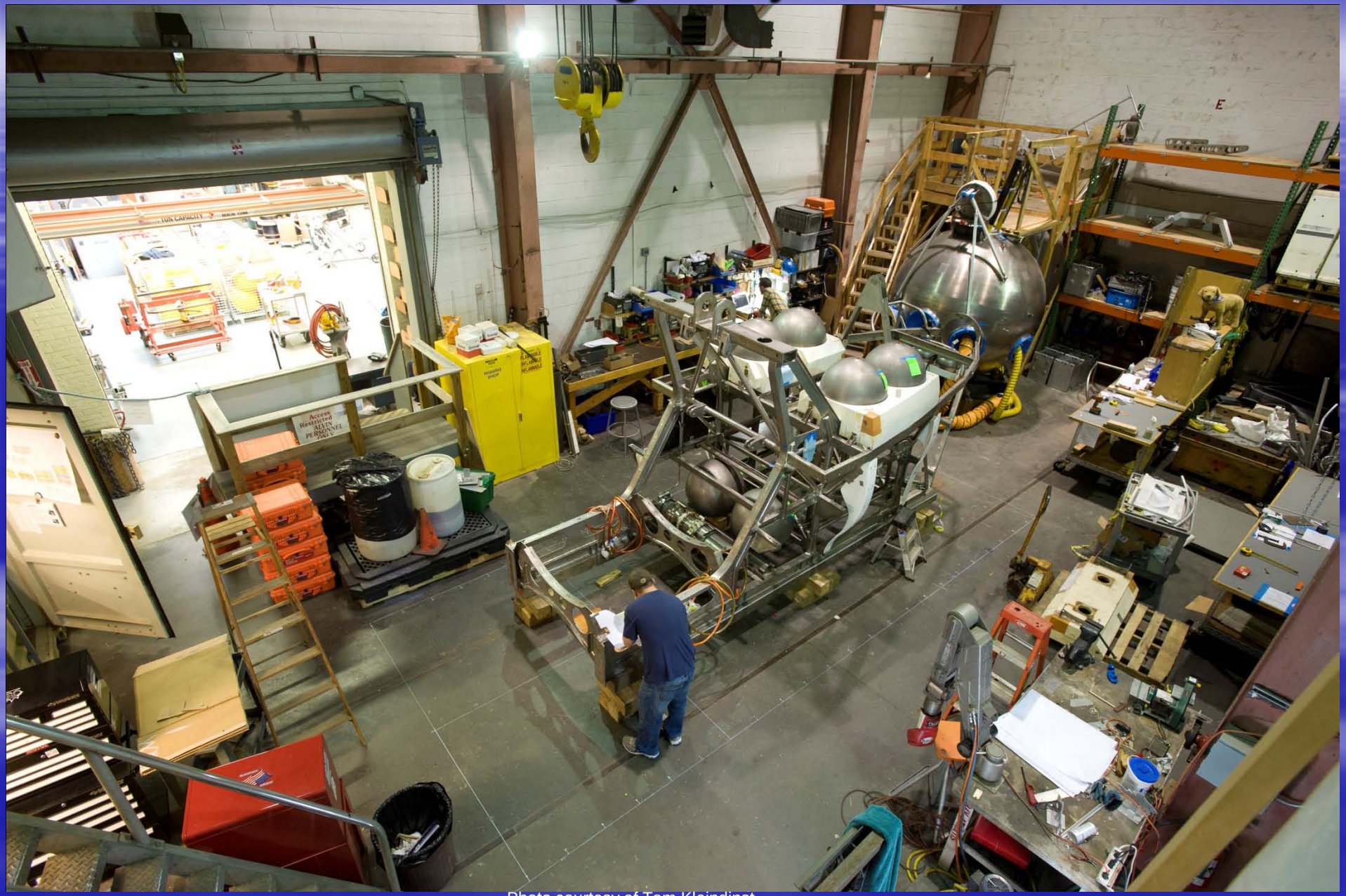


Photo courtesy of Tom Kleindinst

Machining a foam shape (Joe and Vick)

Photo courtesy of Kurt Uetz

VB sphere foam shape installation

Photo courtesy of Tom Kleindinst

Bruce and Phil loading a foam block

Pilot Controls

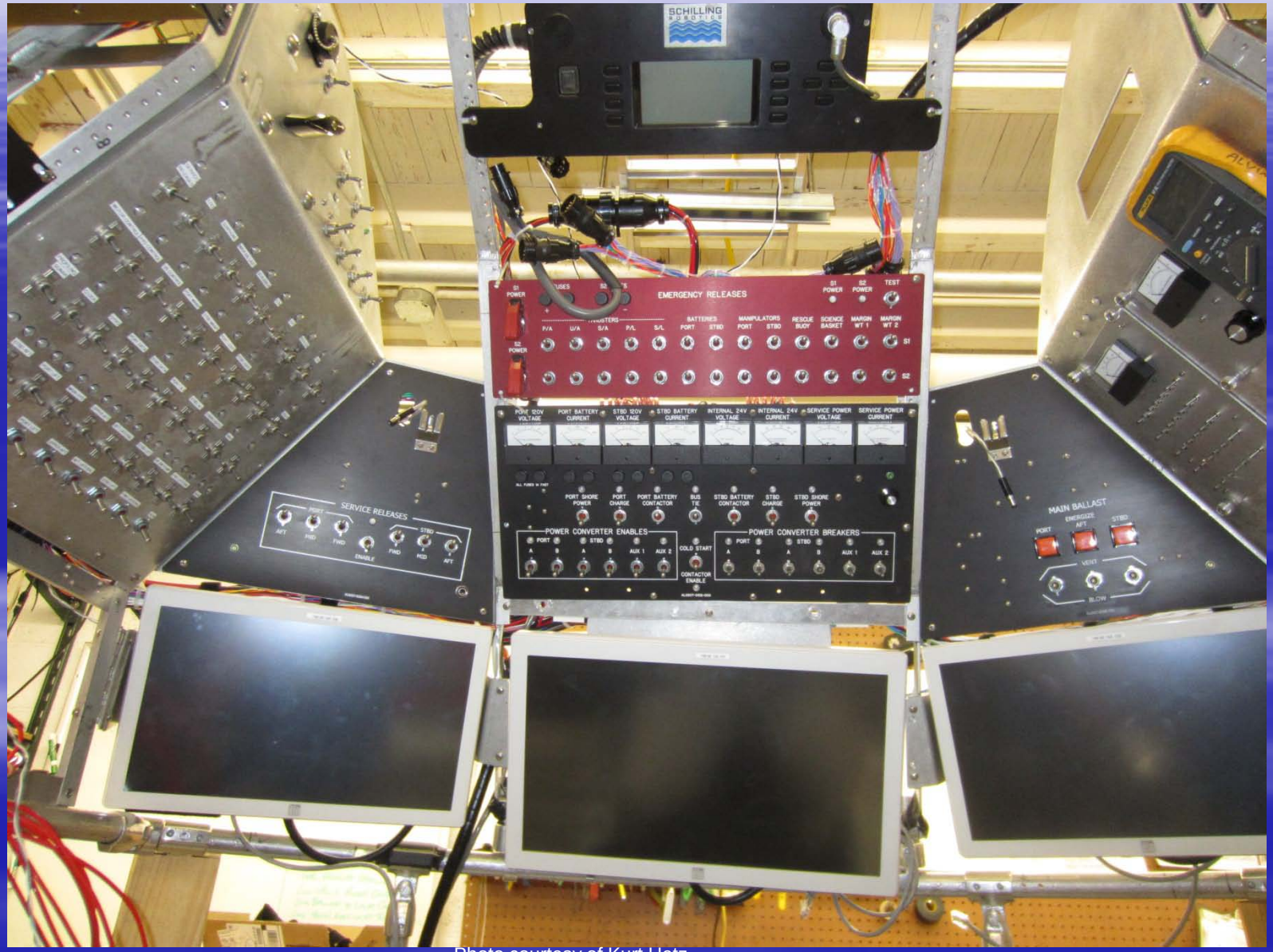
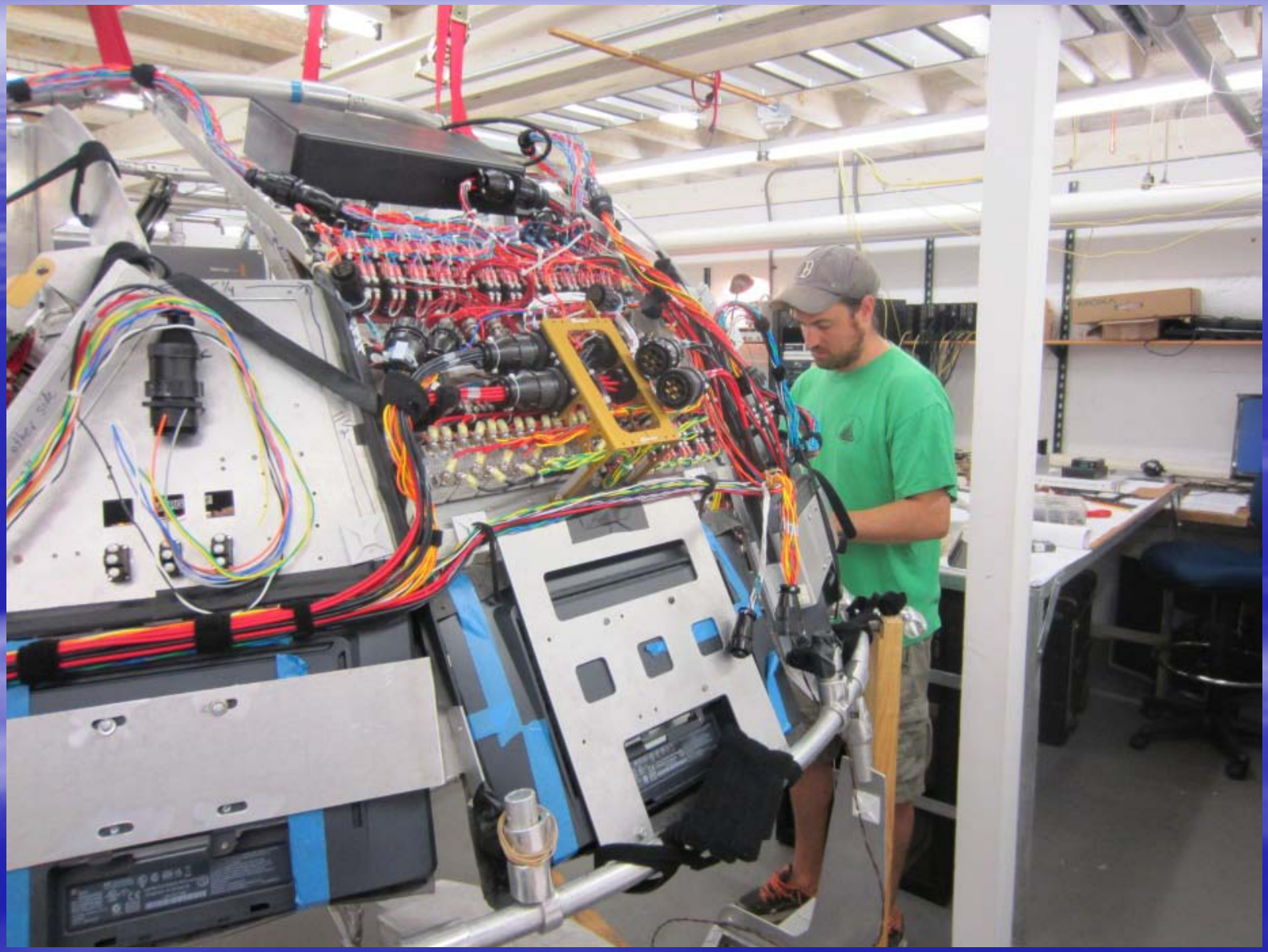


Photo courtesy of Kurt Uetz

Integrating Systems in the mockup



Sean installing the wiring harness

Photo's courtesy of Kurt Uetz

OLD SPHERE

NEW SPHERE

Photo courtesy of Tom Kleindinst

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

Existing sphere = 144 ft^3

New sphere = 171 ft^3

Frame Modification