

UPDATE ON HOV ALVIN OVERHAUL AND 6500M UPGRADE COMPLETION

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BACKGROUND

- Alvin overhaul occurs nominally every 5 years. This overhaul, which began in March 2020, was timed with the R/V Atlantis midlife at ~6.5 years.
- The standard overhaul activities this year are supplemented by the replacement of several end-of-life systems that enable completion of 6500m depth rating.

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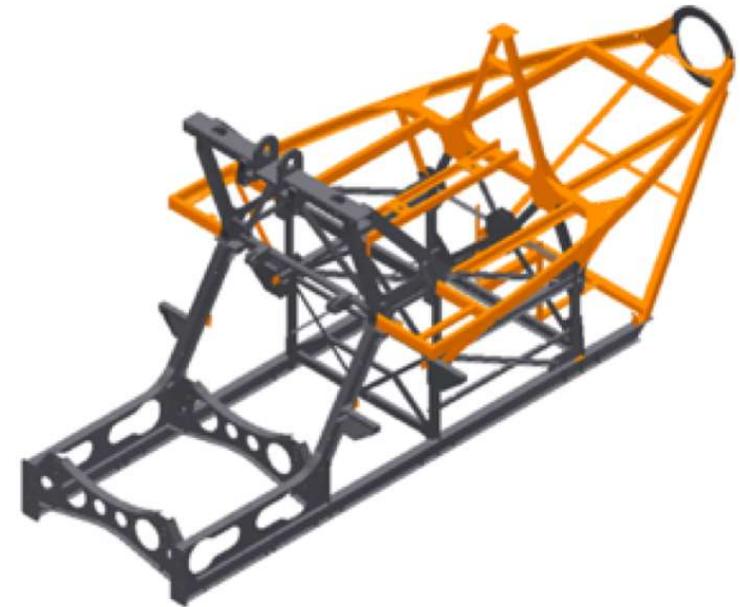


OVERHAUL PHASES

Disassembly phase	May 2020 - Jun 2020
Maintenance & mods phase	Jun 2020 - Jul 2021
Reassembly phase	Mar 2021 - Jul 2021
Testing phase	Jul 2021 - Aug 2021

OVERHAUL MILESTONES

Atlantis mid-life refit	Jul 2020 - Jul 2021*
Atlantis transit to WHOI	Jul 2021 - Aug 2021
Alvin post-overhaul testing	Jul 2021 - Aug 2021
Alvin on-load	Aug 2021 - Aug 2021
Alvin dockside testing	Aug 2021 - Aug 2021
Alvin Sea Trials	Aug 2021 - Sep 2021
Alvin Science Verification	Sep 2021 - Oct 2021



Modified Frame



- Off-load completed April 6th
- Team stand-down till May 8th
- Systematic disassembly begins
- Disassembly completed June 19th
- Primary maintenance work underway
- COVID-19 plans developed by team and supported by WHOI to ensure personnel safety.

ALVIN SYSTEM UPGRADES

- Imaging systems (standard overhaul + 6500m)
Integrate 4K video, improve lighting, controllers, display & recording
- Data systems (standard overhaul)
Improve post-drive transfer speeds, complete adoption of in-hull event logger/frame grabber, upgrade shipboard hardware, implement metadata & data product standards.
- Comms (standard overhaul)
Implement optical data transfer system, further develop acoustic image/data transmission for shipboard science observers.
- Sub hardware (6500m)
Main/variable-ballast system, replace foam, modify frame, motor controllers, hydraulics.

BALLAST SPHERE MILESTONES

Ballast sphere machining/welding	Jun 2020 - Nov 2020
Post weld heat treat	Nov 2020 - Nov 2020
Final machine	Nov 2020 - Dec 2020
Tech Readiness Review	Jan 2021 - Jan 2021
Hydro test	Jan 2021 - Jan 2021
Post hydro NDT	Jan 2021 - Feb 2021
Ship spheres to WHOI	Feb 2021 - Feb 2021



6,500 Meter H.P. Ballast Sphere

ALVIN SEA TRIALS & SCIENCE VERIFICATION

- Sea trials (NAVSEA 6500m certification) planned for Bermuda
- Science verification white paper forthcoming from a community-wide workshop ‘Expanding Deep Sea Horizons: Priorities in Abyssal Research’
 - Workshop included three sessions: Abyssal Plains & Seamounts (168 registered), Trenches & Transforms (152 registered); Technology & Societal Relevance (159 registered).
 - Final session added for Diversity, Equity, & Inclusion (Jul. 21) [ndsf.who.edu/alvin/workshop-alvin-in-the-abyss/].
 - Potential activities: New conops (e.g., extended dive days), testing new science systems, evaluating abyssal sample recovery & novel in-situ methods.