

# HOV ALVIN



WOODS HOLE  
**OCEANOGRAPHIC**  
INSTITUTION



SENTRY

# HOV ALVIN

NATIONAL DEEP SUBMERGENCE FACILITY



National Science Foundation

Principal Funding



Office of Naval Research

Alvin Owner



Naval Sea Systems Command

Program Oversight

## HOV ALVIN OVERVIEW

6,500 Meter depth rated HOV

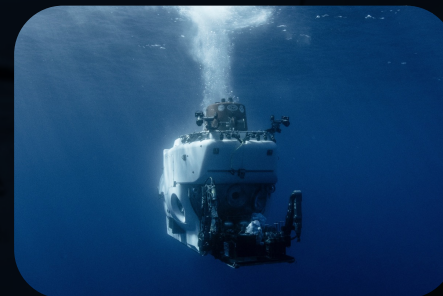
Designed for versatility and expandability

In-person, in-situ, directed sampling and observations

Superb observation, sampling, sensor and payload capability

Routine operations with/AUV SENTRY - concurrent and day/night

60 years of outstanding support for deep sea science



Missions time - 9-10 hours  
6-7 hours on-bottom

Routine integration of science-supplied  
sampling devices, sensors, and imaging  
equipment

Typical mission range - 4km  
(including sampling)

Highly maneuverable and  
independent of ship position



Accurate USBL, INS, Doppler  
Navigation

Large science sample payload  
- 400 pounds

Embedded SENTRY maps and .grp  
files

Sampling and local decision making  
leverages off of real-time, first-person  
experience

## OPERATIONAL MODEL



ALVIN is US NAVY owned, with continuous operations for nearly 60-years, and available to serve the broader scientific community for a wide range of applications.



Dedicated scientific support vessel - RV Atlantis  
Daily: Alvin Ops - up to 30 dives  
Nightly: Parallel scientific operations  
8-10 Alvin crew + Expedition Leader

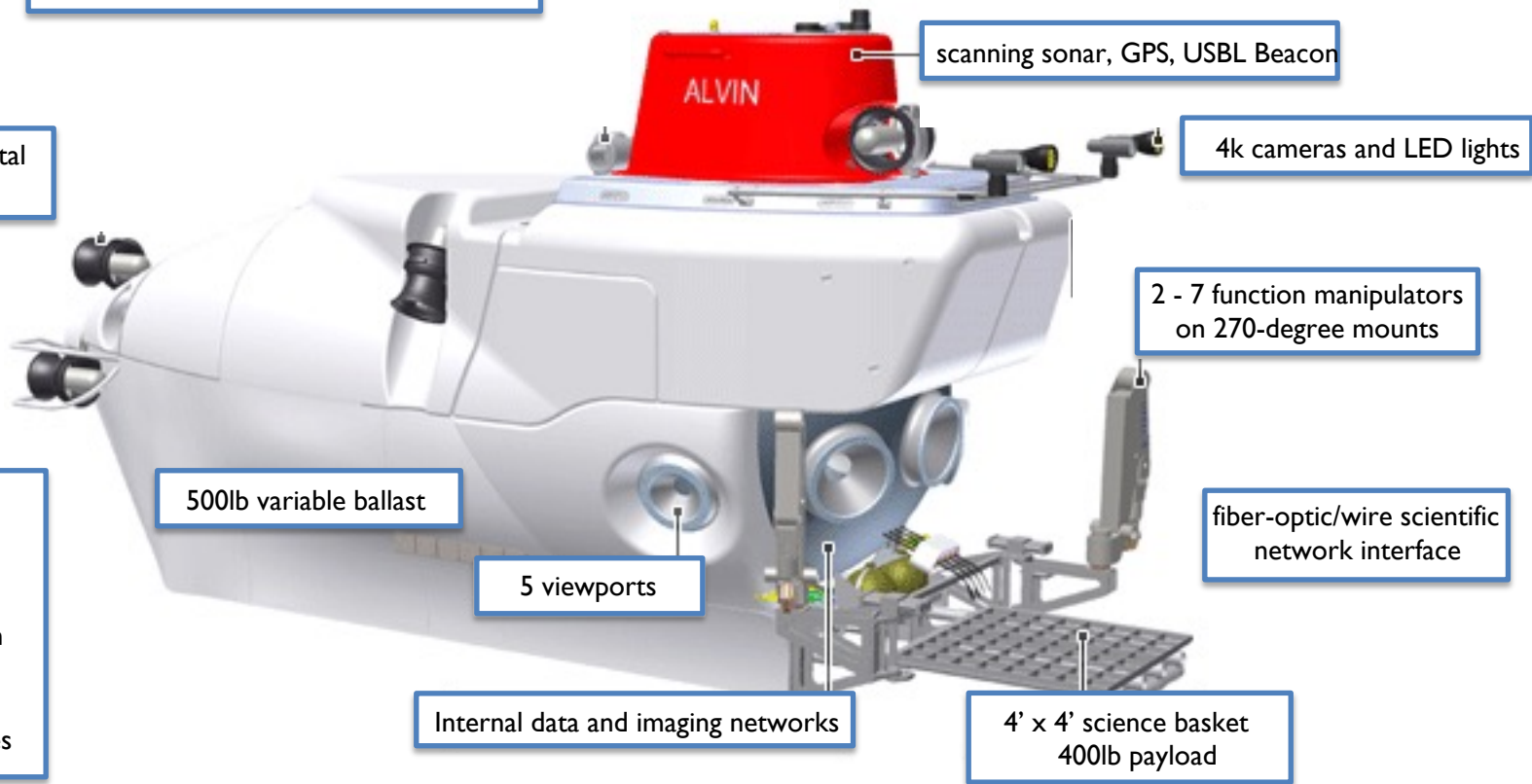


Advanced planning - 6-months from departure  
Daily mission planning to coordinate objectives  
Daily science basket re-configuration  
Routine maintenance limits down time  
Excellent on-scene support for science party



'Sealog' observer user interface  
High Quality interval still images  
Full sensor and navigational data package  
Multiple 4K video sources 1.5 TB per dive  
Post dive report and re-nav for accuracy

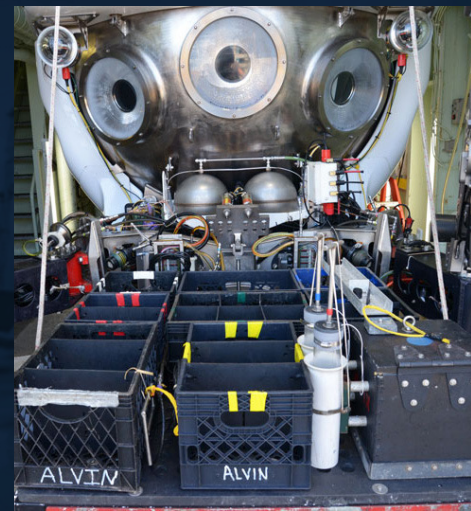
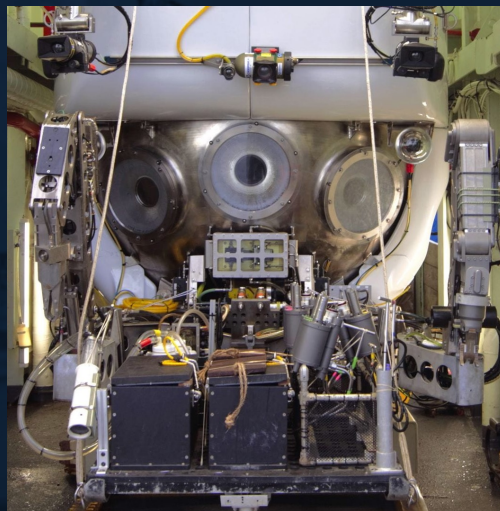
# DSV ALVIN SYSTEMS



# HOV ALVIN USE CASES

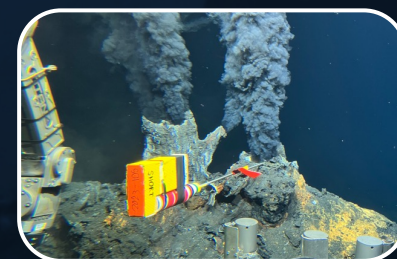
# ROUTINE SAMPLING

ALVIN's configurable basket enables high quality sampling throughout the dive. ALVIN's payload allows for multiple collaborative mission objectives.



## EQUIPMENT

- Slurp Sampler
- Insulated Bio-boxes
- Rock collection
- Tube Cores
- Gas-tight water samplers
- Hi-temp water samplers



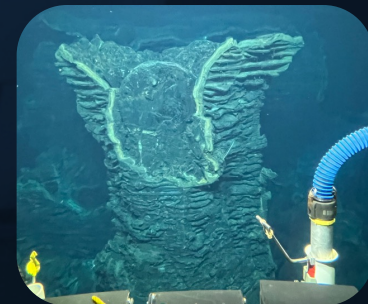
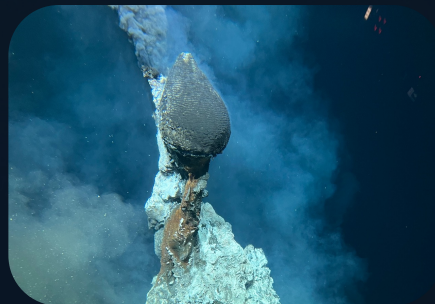
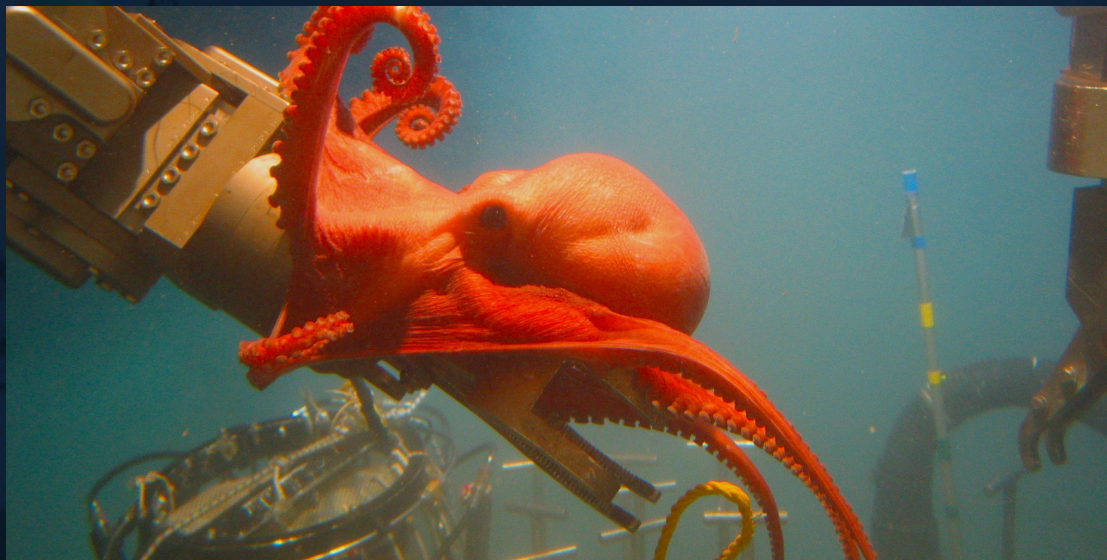


# IMAGING

Full suite of 4K and HD cameras and LED lights, integrated with an advanced digital control system, provides superb imaging capabilities

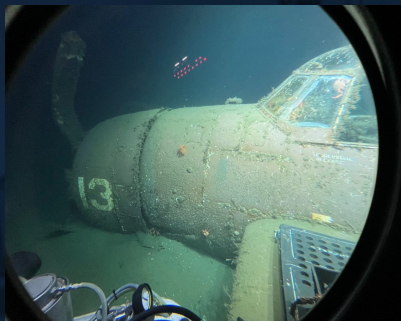
## COMPONENTS

- 33 LED Lights
- DSPL 4K cameras
- Go-pro still
- Go-pro 5K
- DSPL wide-angle
- HD PATZ



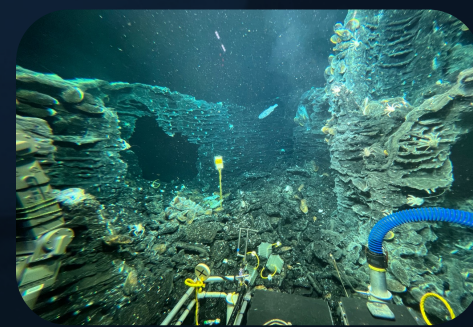
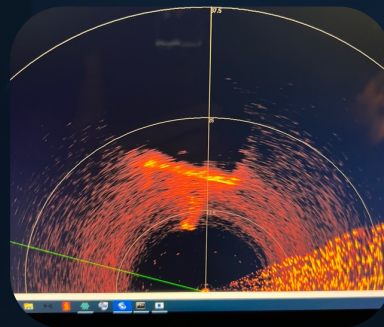
# EXPLORATION

ALVIN'S maneuverability, depth rating, and range provide users with the ability to reach remote locations, and cover large areas during exploratory dives



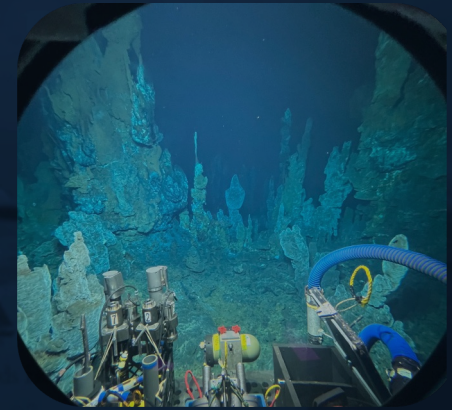
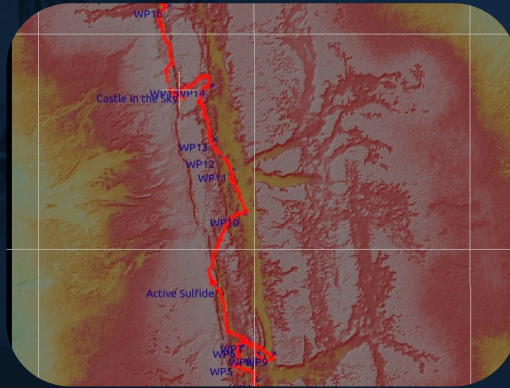
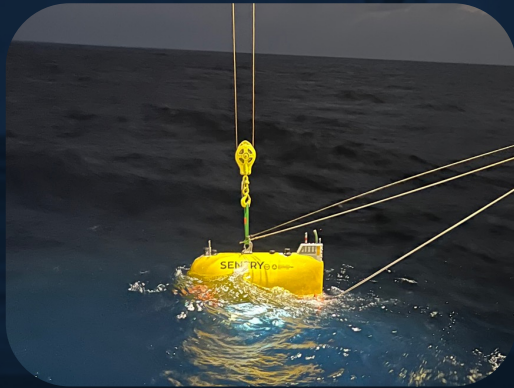
## SPECIFICS

- Forward scanning sonar
- 6,500m depth
- 4 - 5 kilometer range
- Precision navigation



SENTRY

# REINFORCING THE POWER OF SENTRY & ALVIN OPERATIONS



## SENTRY OPS

SENTRY operations and post-dive data analysis provides detailed maps and target locations for use in ALVIN operations

## DIVE PLANNING

SENTRY maps are embedded in ALVIN and TOPLAB navigation stations to direct operations and target selection

## DIVE SUCCESS

YBW off-axis vent site found with SENTRY, explored and sampled by ALVIN

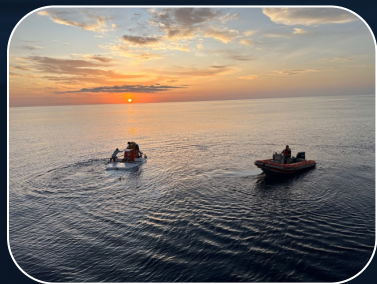
# Future of US Marine Seafloor and Subseafloor Sampling (With ALVIN)

ALVIN continues to evolve .. what can we do over the next 60 years?

What new tools can be incorporated?

How will hi-energy batteries change operations?

How can new technologies increase sub to ship to shore interactions?



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## THANK YOU

Bruce Strickrott - DSV ALVIN Program Manager

[STRICKROTT@WHOI.EDU](mailto:STRICKROTT@WHOI.EDU)



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