

NDSF 2015 Operator's Report



- **R/V *Armstrong* delivery and potential as platform for NDSF vehicles**
- **Vehicles are ‘mature’ systems, providing consistent services. Facility continues to develop new capabilities and innovative technologies in an effort to respond to community needs and remain cutting edge.**
- **Two new *Alvin* pilots certified**
- **External reviews from NAS (Decadal Survey of Ocean Sciences) and NSF internal review committee provided important feedback on NDSF operations**
- **Development of the *Nereus* Legacy Fund**



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Nereus Legacy Fund



NLF Guiding Principles

- Development of deep submergence technology with broad impact
- Enabling new operational paradigms and opening new ocean realms to scientific enquiry
- Delivering deep submergence tools that enhance ocean science
- Develop cutting-edge technologies that have the potential to transform deep submergence

NLF Project criteria

- Benefit a wide range of DSV users
- Provide synergistic opportunities (material or otherwise) between WHOI operated vehicles
- Provide leveraging opportunities for future growth
- Provide mechanism for WHOI to continue development of forward-looking tools for deep submergence science



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Nereus Legacy Fund Projects



NUI TRANSITION

Transition NUI into a science-ready vehicle for routine high-latitude operations. Acquire/replace hardware and develop software to address issues from initial deployment in preparation for field trials.

HADAL TECHNOLOGY

Initiate a ground-up, science-driven hadal program following a phased approach towards vehicle development. Workshop to define science priorities, initial design of smart-lander followed by addition of mobile assets for hadal investigations.

NDSF DATA CONVERGENCE & TELEPRESENCE

Develop a common automated data processing pipeline, data tracking and delivery system, determine benefits of telepresence-enabled on-shore data processing in order to ensure highest quality data and common format for all NDSF vehicles.



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Nereus Legacy Fund Projects



HYBRID LIFT TETHER

Complete the development of a hybrid lift tether begun as part of the *Nereid* HT vehicle project to enable single-body ROV operations. Design, prototype, and deliver a hybrid lift tether for *Nereid* HT.

SENTRY ASV TENDER

Develop capability to autonomously monitor and control AUV *Sentry* to enable more efficient dual vehicle (or ship) operations by removing the need for a proximal surface vessel tender. Acquire and outfit ASV and develop command/control and communications software and execute demonstration.

6,500M ALVIN

Execute the necessary engineering studies that roadmap the final stages of the 6,500m upgrade. Conduct power model and energy analysis, conduct variable ballast and arrangement model trade studies. Develop detailed roadmap towards completion of the *Alvin* upgrade.