

**UNOLS Load Handling System Symposium
FINAL REPORT
December 2007**

This project was a joint effort funded by the National Science Foundation (NSF) and the Office of Naval Research (ONR). Complete information on the *UNOLS Load Handling System Symposium* can be found at:

<http://www.unols.org/publications/reports/lhsworkshop/index.html>

Though mainly a survey of existing and developing technologies in the US and foreign countries, this effort has made both direct and indirect contributions in the following areas:

- The Functional Requirements developed allowed construction of a “proof of concept” CTD handling system now in use aboard the *R/V HUGH R SHARP* (University of Delaware). A similar system is still under development for the *R/V KILO MOANA* (University of Hawaii), but that project is slowed by production challenges with the chosen vendor. However, it must be kept in mind that these difficulties do not lie with the new technologies and capabilities employed in the design.
- Raised awareness in the UNOLS fleet on the use of ABS classification standards as an alternate design standard to 46 CFR, Sub-Chapter U.
- Raised awareness in the UNOLS fleet on the utility of “Auto-Render” (winch slip) as a safety mechanism for protecting equipment and personnel from high cable tensions.
- Proved that motion compensation by winch pay-in/pay-out is a viable, low size/weight, and cost-effective means of reducing package heave and cable tensions from ship’s motions.
- Proved that packages can be captured using cable tension alone without requiring complex and specific locking mechanisms in the docking head.
- Proved that “hands-free” deployment and recovery of science packages is not only possible, but improves safety and reduces the need for personnel on deck.
- Demonstrated the utility of using an all-electric, PLC controlled “smart” winch in order to achieve these new capabilities with maximum performance and operational flexibility after delivery while minimizing cost and weight.
- Precipitated development of the *UNOLS Wire and Cable Safe Working Load Standards*. This document was accepted by the UNOLS community in 2007 and will be incorporated into the latest revision of the *Research Vessel Safety Standards* (RVSS) as Appendix A.
- Precipitated development of the *UNOLS Load Handling System Design Standards*. This document is currently under development and should be incorporated into the latest revision of the *Research Vessel Safety Standards* (RVSS) as Appendix B. The revised RVSS is due out in early 2008.

Like most divisions of the maritime industry, the US research vessel community tends to be conservative and slow to implement radical changes. From the safety standpoint, this

is probably a prudent position, though it does tend to slow acceptance and deployment of new technologies. The private sector tends to have the resources and the motivation to make more rapid investments in new equipment, methods, and technologies that show promise in improving capability while lowering cost. Many of the items listed above – though brought to the fore by this study – will take years to be widely accepted in the academic fleet.



(Handling System on R/V *HUGH R. SHARP*)