MULTI-PURPOSE SHOP

MMRI maintains a staff of Marine Research Systems Specialists to assist with all phases of our marine operations. The support provided includes design and construction of sensor platforms, instrument integration, navigation, launch and recovery services, and transportation support. The services provided by the shop professionals cover the gamut of activities required to conduct research in deep marine environments.

While the shop is equipped with the full range of modern machining tools and fabrication equipment, our most valuable assets are our people. The team includes skilled machinists, experienced fiber optic technicians, welders, electronics specialists, and master mechanics. What began years ago with coring and marine mining and mapping programs for which we fabricated and adapted custom coring systems to a near-shore vessel has expanded to fully capable marine support services that include the ability to design, build, launch and recover a wide range of marine research systems. State of the art navigation systems and launch and recovery services for Remotely Operated Vehicles (ROV) and Autonomous Undersea Vehicles (AUV) are included in the shop's sizeable quiver of capabilities (Figure 1).

DEPLOYABLE PLATFORMS

As researchers develop new sensors and arrays for a nearly infinite assortment of purposes, the shop staff designs and fabricates appropriate platforms for deployment and recovery. Figure 2 and 3 illustrates examples of the work of the MMRI shop completed recently, a pair of specially designed elevators to deliver instruments to the seafloor. One system is small and compact with a light payload of sonars and chemical sensors and can operate from a drop weight for recovery. The other platform is designed for much larger payloads and uses a pop-up buoy system for recovery via a ship's winch/cable. This platform was dubbed the ROVARD (Remotely Operated Vehicle Assisted Recovery Device) because it is designed to do the heavy lifting while an ROV makes the final placement of the delivered instruments at discreet, high-value sites (Figure 3).
Cruise Logistics and Deck Support

Our shop specialists handle all cruise instrument logistics – before, during and after a cruise - and back deck operations during GoMHRC research cruises. From pre-cruise planning to mobilization and demobilization, our commercially licensed drivers transport equipment, instruments and supplies needed for the cruise to and from our port of departure. The first step of every cruise is the installation and calibration of our own subsea acoustic navigation system to enhance the accuracy of the ship's navigation. As a result, visiting and reoccupying high value targets are routine operations. A sea-container with our "shop in a box" is brought along on most cruises for at-sea repair and maintenance of equipment from coring tools and computer systems to electronics and fiber terminations. The team has a proven track record of working well with the ship’s crews and visiting scientists, often making the difference between successful and unsuccessful completion of cruise objectives.

Collaborators

- Bureau of Ocean Energy Management (BOEM)
- Louisiana Universities Marine Consortium (LUMCON)
- University of Southern Mississippi, Underwater Vehicle Technology Center (UVTC)
- Specialty Devices, Inc.

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Figure 2. MMRI fabricated lander equipped with oceanographic sensors, including multiple sonars to image bubble streams emanating from the seafloor. The unit is self-contained with power and data management system, acoustic releases for remote recovery, and acoustic transponder for navigating the lander to high-value targets.

Figure 3. MMRI designed ROVARD deployment platform equipped with chemical arrays developed by University of North Carolina, Chapel Hill.