OVERVIEW

The 21st mission of the NASA Extreme Environment Mission Operations (NEEMO) was a highly integrated operational test and evaluation of tools, techniques, technologies, and training for science driven exploration during Extravehicular Activity (EVA). The 16-day mission was conducted from the Aquarius habitat, an underwater laboratory, off the coast of Key Largo, FL. The unique facility, authentic science objectives, and diverse skill-sets of the crew/team facilitate the planning and design for future space exploration.

TOOLS

Tool and Equipment Maturation

- Science Sampling Kit
- Equipment Transport
- Sample Collection

- Provided unique field environment for testing prototype hardware for design maturation of tools and equipment
- Included equipment, instrumentation, and sampling methodologies similar to science activities intended for planetary surface exploration

TECHNOLOGIES

Technology Innovation Incubator

- Navigation
- IV Workstation
- Informatics

- Assessed technology needs (hardware and software) for navigation, communication, and operations to support accomplishment of science objectives
- Developed unique technology solutions that will feed into other innovation opportunities and projects

TECHNIQUES

Concepts of Operations Testing

- Data Collection
- Science Ops
- Sample Preservation

- Evaluated concepts of operations mapped to specific EVA needs and knowledge gaps
- Integrated authentic science objectives allowed for credible analysis of end-to-end testing of concepts of operations required for exploration driven EVAs

TRAINING

Unique Training Opportunities

- Crew Training
- Skill-Set Integration
- Team Training

- Facilitated integration, coordination, and education from multiple disciplines and organizations
- Provided for unique crew training and leadership opportunities lauded by the astronaut office
- Enabled integration across diverse skill sets and teams

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