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ANALYSIS OF CURRENT STATE OF UNDERWATER ANALOGS PLATFORMS FOR
BIOASTRONAUTICS RESEARCH

Abstract

Application of underwater analog environment in aerospace sector and especially Human Spaceflight research and training is well known, as everyone saw Neutral Buoyancy Laboratory and astronauts training underwater.

However the topic of underwater analogs is much larger and there are far more facilities to test in neutral buoyancy conditions new suit prototypes, advanced medical care for future commercial Spaceflight (as author did while co-creating Advanced Medical Crew Restraint - Mobile Medical Module). There are also analogs in Aquarius habitat in Florida's Key West, water egress trainings, tools and procedures development.

Author would like to introduce the vast field and spectrum of underwater analog, and current state for the following topics:

1. Introduction to underwater environment (neutral buoyancy)
2. Human performance and limitations (diving and saturation diving medicine)
3. Underwater procedures and operations
4. Testing tools (performance, ergonomics)
5. Testing suits (movement, sensors, design)
6. EVA training (NBL, NBF, Hydro Lab)
7. Water egress (Soyuz, Orion, SpaceX)
8. Vehicle utilization
9. Reduced mobility and movement
10. Underwater habitats (building, performance)
11. Isolation studies (NASA, ESA, JAXA experiments)
12. Underwater science and marine biology