Project Name: Project Tektite I

Author: Don Wells

Organizations/People Involved:

ACB-2: Divers

NAVFAC: PC-2 CDR Walt Eager

ONR

MCB's: Seabee Divers from Atlantic and Pacific

Department of the Interior: Saturation divers

NASA:

General Electric: Habitat design and construction

Date: Jan-Feb 1969

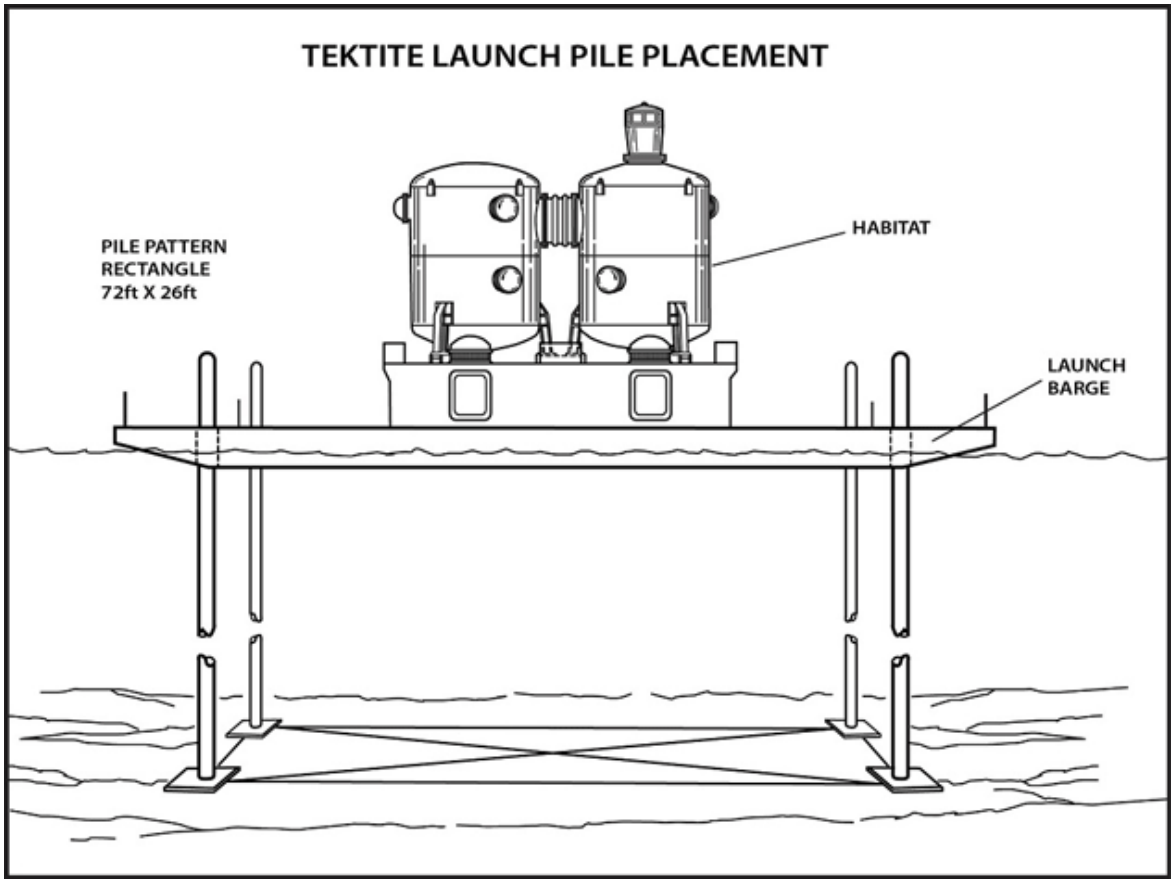
Project Summary:

After the success of the Navy's SEALAB II project using Navy divers to live in a submerged habitat for up to one month in 1965, the civilian departments of the government became interested in doing the same thing but with civilian divers. The Department of the Interior and the National Aeronautics and Space Agency (NASA) decided to join forces to conduct a scientist-in-the-sea experiment to learn about the behavioral and physiological effects on a diver living underwater under saturation conditions for months at a time. General Electric joined with Interior and NASA to conduct this experiment and designed and built the habitat to be used which was contributed by General Electric

The General Electric Tektite Habitat weighed 160 tons and was planned to be installed in Great Lameshur Bay off of St. Johns Island in the US Virgin Islands. A floating crane capable of lifting and placing the habitat in the oceans was too expensive to bring to St. Johns Island so ONR who was the lead Navy organization for the project tasked the Naval Facilities Engineering Command to develop a means to install the habitat. CDR Walt Eager, then head of the Ocean Facilities Program at NAVFAC, was assigned as the Project Engineer.

CDR Eager decided to use an AmmI Ponton for installing the habitat. Ammi pontoons were used in Vietnam for floating piers, fuel storage barges and other uses. They are also designed to drive six piling through the four corners and two along the side and jack the pontoon up to form wharfs and raised piers. CDR Eager's installation concept plan was to the use an Ammi pontoon with piling and to jack the pontoon downward to the seafloor using ballast to keep it in place. In order to be able to jack the pontoon downward, Eager converted the pontoon to allow water ballast to

be drawn into the Ammi tanks controlled by an air pressure manifold so that the pontoon remained slightly positive. The pontoon was jacked to the seafloor using 9-ton winches on each



Ammi Pontoon with Habitat Installed for Installation

pile. The concept was first tested in the Philadelphia Naval Shipyard before taking the pontoon to St. Johns. VI.

A second Ammi pontoon was employed as the habitat operation platform. This pontoon contained all of the habitat support systems. These included water supply, high and low pressure gas supply systems, a power generation system, sewer system and habitat monitoring and control van. The pontoon weighing 100 tons with all the control systems was jacked out of the water on four piling to keep it stable during the operation and to avoid transmitting noise to habitat environment. Umbilical's carrying power, water, air systems and communications were installed from the support platform to the habitat.

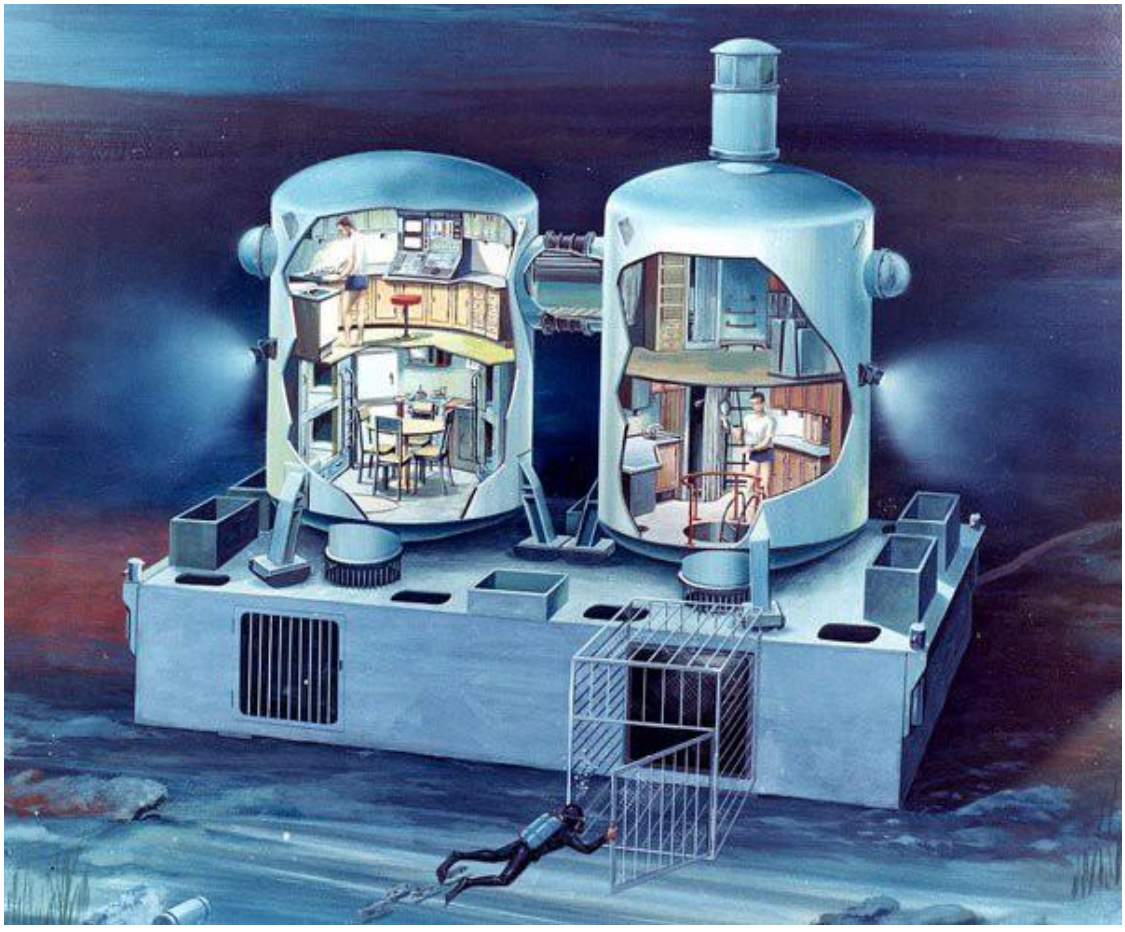
Construction Operations:

CDR Eager assembled his construction team at the Naval Amphibious Base, Little Creek, VA in September 1968. The team consisted of team members from ACB-2 and 12 Seabee divers from the Atlantic and Pacific fleets. They deployed to Lameshur Bay, St, Johns in October 1968 to build

the support camp and to survey the construction site in preparation for deployment of the habitat in early 1969. The Ammi pontoon with the Tektite habitat installed and the support barge with its equipment were loaded into the well deck of a LSD and transported to St, Johns where they were floated off the LSD and hauled to the work site by a small work boat. After the divers leveled the habitat seafloor site, they installed flat plate anchors on the seafloor for the piles to be driven through whose location were controlled to within +/- one inch. The jacking of the habitat began on 27 January 1969 and the habitat reached the bottom on 13 February. After the habitat was on the bottom, 20 tons of pig iron ballast was added to the Ammi pontoon to offset its 5,000 pounds of buoyancy.

The Department of the Interior divers entered the habitat on February 15 and remained for 60 days.

This was the first ocean construction project using an underwater elevator construction concept. This project was the first ocean construction project under the OFP shows that the program could develop unique construction solutions for difficult ocean projects.



General Electric Tektite Habitat

The Tektite habitat was installed two more times by others for operations at St. Johns and one in the Pacific Ocean off of Scripps Oceanographic Institute.

Project Report Link: DTIC AD773351 Project Tektite I: A Multiagency 60-Day Saturation Dive Conducted by the US Navy, NASA, Department of the Interior, and General Electric.