

Project Name: AFAR Andros

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Organizations/People Involved:

Naval Underwater Sound Laboratory (Naval Undersea Warfare Center, Newport)

AUTEC, Andros Island, Bahamas

NAVFAC PC-2, CDR Walt Eager

Seabee Divers: Lt(j.g.) Scott Stevenson, Atlantic and Pacific Fleets

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Project Summary:

The second project undertaken by PC-2 in developing the OFP ocean construction capabilities was the test installation of the Azores Fixed Acoustic Array (AFAF) in AUTEC in 1300 feet of a water. The array was very large and weighed several tons making it difficult to launch using a floating crane. Further, the remoteness of the launch site made it impractical to bring a large crane to the site. Thus, an alternative launch concept was needed.

Based on the lessons learned with the Tektite habitat launch in 1969, CDR Eager again used an Ammi pontoon to launch the AFAR array in AUTEC. An Ammi pontoon was converted again to use an air pressure manifold to control the buoyancy of the pontoon by flooding compartments on the pontoon. Secondly, for stability during the launch operation, pontoons were welded to the Ammi pontoon periphery to provide fixed wing wall vertical stability during the sinking of the Ammi launch vehicle. Lastly, large salvage pontoons were affixed to each welded pontoon to allow stability of the launch pontoon at deeper depths. The AFAR array had positive buoyancy so when the Ammi pontoon launch platform was submerged deep enough, the array could be floated off of the platform and then controlled lowered to its planned depth.

Prior to the array launch operations, two electrical and mechanical cables had been laid from the beach to the array launch site and buoyed off for connecting to the array before it was submerged.

A second Ammi pontoon was assembled and used as the construction operations platform. It had four propulsion units installed on the four corners of the pontoon and connected to a joy stick control to allow dynamic positioning of the construction pontoon. The construction platform was held in place by a taut line mooring previously installed in 1800 feet of water and by the catenary of the array cables. The propulsion system could also be used for positioning. The construction barge also had a 10-ton crane for lifting launch components, a cable winch for lowering the array,

the air compressor and manifold for controlling the launch pontoon and other components used in the construction operation.

The launch sequence involved controlled flooding of the Ammi pontoon with divers using manual winches attached to the salvage pontoons to submerge the launch platform until the array was constrained to the platform by its positive buoyancy. The divers then cut the ropes holding the array on the Ammi pontoon and the array was lifted off and pulled seaward by the connected cables. A clump anchor was then lowered and its weight added to the array where the array was then lowered to its planned depth position using a winch and a polyethylene lowering line. The line was cut and buoyed off for retrieval of the array when the experiment was completed.

Project Report Link: DTIC ADA955064. Navy Underwater Construction, CDR Walt Eager, Technical Paper