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HOUSE SUBCOMMITTEE ON
ENERGY AND MINERAL
RESOURCES

STATEMENT OF

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ON

"RENEWABLE OCEAN ENERGY: TIDES, CURRENTS AND WAVES"

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Good morning Mister Chairman and distinguished members of the Subcommittee. I appreciate the opportunity to appear before you today to talk about the Department of Navy's Renewable Ocean Energy Power program.

The Navy's mission on and below the world's oceans requires it to maintain a close relationship to and interest in the ocean's resources. The ocean is the world's largest solar collector and wave energy is continuous. If it can be made economic, environmentally responsible harvesting of ocean energy could provide an important component of our nation's strategy to develop clean energy technologies. There are numerous ocean power technologies that are of interest to the Navy; of which ocean thermal and wave energy are being actively evaluated.

Jointly between the Office of Naval Research, Naval Facilities Engineering Command and Marine Corps Base Kaneohe Bay, Hawaii, we are leveraging the Small Business Innovative Research (SBIR) program to test one of the several wave power buoy technologies currently under development throughout the world. The SBIR program goals are to evaluate the economic and technical feasibility of converting wave energy into reliable electrical power for Navy applications. A prototype buoy, with a design capacity to produce 20 kilowatts, was deployed in 2004. The initial buoy configuration produced small levels of electric power, approximately 3 kilowatts, before having to be recovered for repairs. Lessoned learned from this prototype are being integrated into follow-on buoy configurations.

The second and third generation buoy designs will have a rated capacity of 40 kilowatts. Buoy designs are complete, fabricated and field testing is expected to begin in Fiscal Year 2007. These follow-on buoy designs are expected to provide increased efficiency, and improved operability and reliability. Upon completion of the SBIR the Navy will evaluate the economics

and operational benefits of proceeding with a large scale wave buoy array funded through private capital.

Through the SBIR program, the Navy also funded a project to develop a computer model to evaluate the feasibility of integrating Ocean Thermal Energy Conversion (OTEC) at military installations on tropical islands. OTEC uses the temperature difference between warm surface water and cold bottom water to drive a thermodynamic process to produce electricity. The computer model was applied to seven (7) Department of Defense island installations. Model results indicated Naval Support Facility Diego Garcia, a British governed island hosting a United States Navy base in the Indian Ocean, has the greatest potential energy savings. Guam and Kwajalein atoll also show good potential for OTEC technology.

The proposed OTEC facility will be designed to provide a 7 megawatts base load of electrical power and 1.25 million gallons of potable water per day for the island. As currently envisioned, once fully operational, the Diego Garcia OTEC facility builder/operator and the Navy will utilize authority of Title 10 US Code 2394 and engage into a Power Purchase Agreement - resulting in an expected annual avoided cost of $2 million to the Navy for energy and water production. We are expecting to complete the review of systems performance, reliability and design this year followed by construction and commissioning in Fiscal Year 2009.

The US Department of State and British Representatives were briefed on Diego Garcia OTEC efforts during a Political Military Exchange of Notes in September 2005 in Washington, DC. Concurrence for the Diego Garcia OTEC project was received in January 2006.

In 2005, the U.S. Army requested Navy assistance to review the feasibility of OTEC application at the Kwajalein Atoll/Reagan Test Site. We are working closely with the Army and

Department of Energy Federal Energy Management Program to ensure that knowledge and processes developed at Diego Garcia are applied to the Kwajalein Test Site.

In January 2005, the Navy continued to advance the OTEC technology development through a SBIR contract to evaluate the technical and economic feasibility of integrating hydrogen production with OTEC technology on floating platforms. The project will adapt, upscale, and integrate existing technologies in floating platform and cold water pipe design, OTEC systems, and hydrogen production and storage. A conceptual design for a floating OTEC platform capable of producing and storing hydrogen has been completed. We expect follow on SBIR efforts to prepare a preliminary engineering design sufficient to provide construction cost estimates, options for implementation and funding strategies. At the end of the second phase the Navy will assess whether the technology can help us cost effectively meet our mission requirements.

In summary, the Department of Navy is making great strides in partnering with small businesses in developing ocean energy technologies with significant potential to provide clean energy where we need it. We expect that in the not so distant future the ocean could play an increased role in renewable energy production. If this happens we hope that the Department of Navy will be regarded as a key supporter and early adopter of ocean energy technologies. With the continuing support of Congress, the Department of Navy will work to push the technical and operational boundaries of capturing the ocean's energy to support our military mission.

That concludes my statement. I look forward to answering any questions the Subcommittee might have.