

## Bounded Wave Simulator Electromagnetic Pulse (EMP) Hardening

SSC Pacific mitigates damaging effects of nuclear EMP

## Background

Nuclear EMP is an extremely intense, highly threatening, instantaneous pulse of electromagnetic energy originating from a nuclear explosion that damages or disrupts both military and civilian electronic infrastructure. The frequency of the EMP energy overlaps that used by communications systems, resulting in a disruption to mission-critical operations that could seriously impair a military's ability to fight. SPAWAR Systems Center Pacific (SSC Pacific), the HF subject matter expert of NAVSEA and PEO C4I & Space for all US Navy ships, has unique facilities and capabilities needed to mitigate the EMP threat.



## The Technology

SSC Pacific's Time Domain Measurement Range (TDMR) - Bounded Wave Simulator (BWS) Facility provides High Frequency (HF) antenna impulse response measurements on 1/48<sup>th</sup> scaled brass ship models and other specialized antennas for EMP analysis. This facility can simulate the characteristics of a Nuclear EMP pulse including spectrum, waveform, and polarization. EMP response measurements are used for antenna Transient Protection Device (TPD) specifications from which ship-specific solutions to EMP damage are engineered, in-house.



**Nuclear Blast** 





Time Domain Range / Bounded Wave Simulator



1:48 Scale Brass Ship Models

Approved for public release; distribution is unlimited.

Business Development Manager SSC Pacific Code 55403 Electromagnetics & Advanced Technology Division San Diego, CA 92152 55403@spawar.navy.mil

## (Website Version)

For a more detailed information sheet on this subject, or a bundle of all Division 554 information sheets, Make requests to Business Development Manager, <u>55403@spawar.navy.mil</u>, (619) 553-6538