CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: **February 2007**	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**					R-1 ITEM NOMENCLATURE 0603573N/ADVANCED SURFACE MACHINERY			
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	**4.958**	**2.789**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
9999/Congressional Adds	**4.958**	**2.789**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

(U) Project 9999 - See the R2a for descriptions.

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B. PROGRAM CHANGE SUMMARY:

Funding:	FY 2006	FY 2007	FY 2008	FY 2009
FY 2007 President's Budget	5.100	0.000	0.000	0.000
FY 2008/2009 OSD Budget	4.958	2.789	0.000	0.000
Total Adjustments	-0.142	2.789	0.000	0.000
Summary of Adjustments				
SBIR reductions	-0.069	0.000	0.000	0.000
Congressional Program Reductions	-0.051	0.000	0.000	0.000
Sec. 8125: Revised	-0.022	0.000	0.000	0.000
Congressional Adds	0.000	2.800	0.000	0.000
Program Adjustments	0.000	-0.011	0.000	0.000
Subtotal	-0.142	2.789	0.000	0.000

Schedule:

Not Applicable

Technical:

Not Applicable

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APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA 4	0603573N/ADVANCED SURFACE MACHINERY SYS	Project Unit (PU) No. and Name: Congressional Plus-Ups : VARIOUS

C. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
9043C/9043	3.302	0.000		
Advanced Combatant Materials Research				

(U) Due to changing operational requirements, ships will require improved stealth, speed, and payload flexibility, which can place additional burdens on ship weight. The Advanced Combatan Materials funding will investigate high strength, damage tolerant, lightweight materials and associated advanced fabrication technologies that can achieve significant weight reduction or improved performance. These include improved marine aluminum alloys, solid state welding processes, novel titanium alloy processing, advanced steels for improved blast and ballistic protection, and a breakthrough in composite - metal joining invented in the UK.

	FY 06	FY 07	FY 08	FY 09
9819N	1.656	0.000		
LCS Advanced Lightweight Metals Technology				

(U) To meet mission requirements in the littoral environment, the LCS will require superior speed, maneuverability, and payload modularity that will be achieved through the use of lightweight aluminum and titanium alloys. The LCS Advanced Lightweight Materials Technology will investigate structural design concepts and manufacturing technologies that optimize ship properties, advanced welding processes such as friction stir welding and pulsed gas metal arc welding for higher productivity, and methods to modify the local and/or surface properties for improved fatigue performance.

	FY 06	FY 07	FY 08	FY 09
9819C	0.000	1.793		
LCS Advanced Lightweight Metals Tech-Aluminum				

(U) The purpose of the add is to address several concerns regarding the use of aluminum alloys for high-speed ship construction. In Navy service experience, aluminum structures have been characterized by extensive cracking due to fatigue, corrosion fatigue, and stress-corrosion cracking that were attributed to poor weld quality, poor weld repair, and sensitization due to the thermal effects of natural aging and welding. Aluminum is more difficult to weld than steel. Aluminum welds exhibit low fatigue properties and high fatigue crack growth rates as compared with steel. Aluminum exhibits a loss of strength at elevated temperatures. Improper selection of aluminum alloys can lead to localized and galvanic corrosion problems. In addition, the LCS design utilizes an aluminum alloys that has no prior Navy experience.

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C. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
9994C	0.000	0.996		
Lightweight Metals Tech For Aluminum Intensive				

(U) The Lightweight Metals Technology for Aluminum Intensive Marine Structures program will provide an aluminum design methodology that integrates the alloy composition and processing history with design tools to enable ship designers to predict the performance of aluminum structures. This capability is an enabling technology for developing lighter weight structures with improved properties to ensure the performance, reliability, and survivability of new ship designs including LCS Flight 1, LHA(R), and JMAC.

	FY 06	FY 07	FY 08	FY 09

	FY 06	FY 07	FY 08	FY 09