

**UNCLASSIFIED**

**CLASSIFICATION:**

EXHIBIT R-2a, RDT&E Project Justification	DATE: <b>February 2008</b>
APPROPRIATION/BUDGET ACTIVITY	
<b>RESEARCH DEVELOPMENT TEST &amp; EVALUATION, NAVY/IBA-7</b>	
<b>Technology Applications J2228</b>	

PROJECT NUMBER AND NAME	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013
Project Cost J2228 Technology Applications	79,253	44,233	45,490	46,298	46,331	48,152	51,200
RDT&E Articles Qty	0.000	0.000	0.000	0.000	0.000	0.000	0.000

**A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:**

This project supports implementation of a coordinated Navy/Air Force Reentry System Applications Program (RSAP), a coordinated Navy/Air Force Strategic Guidance Applications Program (GAP), a coordinated Navy/Air Force Strategic Propulsion Applications Program (SPAP), and a coordinated Department of Defense Radiation Hardened Applications Program (RHAP). Reentry vehicle and guidance technology had been rapidly eroding beyond the point of being capable to respond to increasing aging phenomena and future requirements. The SPAP program, which commenced in FY 2004, demonstrates and validates technologies unique to strategic missile applications. The RHAP program, which commenced in FY 2004, addresses production, qualification and manufacturing issues associated with strategic and space radiation hardened electronics. The December 2001 DOD Nuclear Posture Review determined that infrastructure is a critical part of the new triad and these efforts form part of the infrastructure that supports the nuclear force structure.

The RSAP program, through sustainment of the reentry vehicle technology base, will maintain confidence in the dependability and reliability of strategic SLBM and ICBM weapon systems over the long term when no new systems will be in development. Critical and unique attributes necessary for the design, development and in-service support of current and modernized SLBM reentry systems have been defined and will be maintained to insure a functioning readiness application technical capability in reentry is preserved. Working closely with the Air Force, Navy and Air Force requirements have been integrated into a comprehensive program. The program maintains close coordination with the DOD Science and Technology (S&T) community in order to leverage S&T programs, ensure system driven technology base requirements are considered in contract awards, eliminate duplication of effort and provide an opportunity to demonstrate appropriate emerging technologies through a reentry flight test evaluation process.

The GAP program provides a minimum strategic guidance core technology development capability consistent with the Strategic Advisory Group (SAG) recommendations to COMSTRATCOM. The SAG recommended that SSP establish a program which preserves this critical design and development core. It is a basic bridge program which develops critical guidance technology applicable to any of the existing Air Force/Navy strategic missiles. The objective is to transition from current capability to a long term readiness status required to support deployed systems. Air Force and Navy guidance technology requirements are integrated and needs prioritized. Efforts are focused on alternatives to technologies identified as system "weak links." Currently system accuracy and functionality depends upon key technologies which provide radiation hardened velocity, altitude and stellar sensing capabilities. As the underlying technologies that currently provide these capabilities age and are no longer technically supportable, modern alternatives must be made available in order to allow for orderly replacement. There is no commercial market for these technologies and their viability depends on the strategic community.

The SPAP program is a coordinated Navy/Air Force effort and addresses infrastructure needs by exercising critical development skills to allow for future large-scale rocket motor test firings. A sound base of demonstrated technologies suitable for Strategic Missile applications will be maintained and will provide the nation a talent base and source of technologies suitable for a follow-on development program. Boost propulsion (missile stages), post boost propulsion (missile payload delivery vehicle) and Ordnance (separation events and flight termination events) and are all integral parts of missile propulsion application efforts. As a result of affordability reductions made to the Technical Applications programs during the POM-08 process, the SPAP program was terminated beginning in FY2008.

The RHAP program sustains critical skills in radiation hardened electronics by advancing radiation hardened simulation technologies to reflect the processes in future systems. These efforts become of greater importance because of the shrinking industrial base for radiation hardened electronics, the unavailability of underground testing resources, and the loss of radiation hardened expertise. These efforts are coordinated by the Radiation Hardened Oversight Council (RHOC) chaired by the Director, Defense Research & Engineering (DDR&E). The RHAP program focuses on a coordinated Production & Qualification Program which provides a transition between Science Technology (S&T) and production by efficient utilization of limited resources, sharing of information to eliminate redundancy, increased use of common part/technologies, coordination into the RHOC technology road map and implementation of the OSD (AT&L) investment strategy. The RHAP complements the GAP electronic parts activities by specifically focusing on those tasks required to ensure producibility of radiation hardened parts. As a result of affordability reductions to the Technical Applications programs during the POM-08 process, the RHAP program was terminated beginning in FY2008.

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**B. (U) Accomplishments/Planned Program**

	FY 2007	FY 2008	FY 2009
Reentry Systems Application Program (RSAP)	26,238	27,163	28,149
RDT&E Articles Quantity	0.000	0.000	0.000

- (U) FY 2007 PLAN
- (U) (\$26,238) Continue Reentry System Applications Program.
- FY 2007 efforts include:
  - (U) Maintain the current capability and support the planned service life extension of Navy reentry systems.
  - (U) Continue development and ground testing of reentry vehicle candidate heatshield and nosetip materials including those available from Science & Technology (S&T)
  - (U) Flight test alternative low-cost heatshield and replacement nosetip material. Next materials FT FY09.
  - (U) Flight test operationally aged heatshields to support aging trends and replacement materials assessments.
  - (U) Complete development and flight test advanced reentry instrumentation such as inertial sensors, avionics computers, and power distribution units encapsulated on the updated engineering instrumentation package.

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<b>B. (U) Accomplishments/Planned Program</b>	
(U) FY 2008 PLAN	
(U) (\$27.163) Continue Reentry System Applications Program.	
FY 2008 efforts include:	
(U) Maintain the current capability and support the planned service life extension of Navy reentry systems.	
(U) Continue development and ground testing of reentry vehicle candidate heatshield and nosetip materials including those available from Science & Technology (S&T)	
(U) Flight test alternative low-cost heatshield and replacement nosetip material.	
(U) Flight test operationally aged heatshields to support aging trends and replacement materials assessments.	
(U) Complete development and flight test advanced reentry instrumentation such as inertial sensors and avionics computer, encapsulated on the updated engineering instrumentation package.	
(U) Maintain RSAP technical program plan, conduct system assessments and continue Vulnerability & Hardening certification process development in absence of Nuclear Under Ground Testing (UGT) facilities.	
(U) Continue Reentry Body material development and advanced flight test instrumentation activities.	
(U) Continue development of advanced GPS receiver	
(U) Ground test advanced reentry material systems and advanced instrumentation components.	
(U) Develop test instrumentation to demonstrate D5LE missile reentry body interface compatibility.	
(U) Continue to develop the capability to produce Thermocouple (TC) Plugs at significantly reduced cost to the Government.	
(U) Create and execute plan to build Life Extension Test Bed (LETB) #2 Flight Test Body - FT Aug 2009.	
(U) FY 2009 PLAN	
(U) (\$28.149) Continue Reentry System Applications Program.	
FY 2009 efforts include:	
(U) Maintain the current capability and support the planned service life extension of Navy reentry systems.	
(U) Continue development and ground testing of reentry vehicle candidate heatshield and nosetip materials including those available from Science & Technology (S&T)	
(U) Flight test alternative low-cost heatshield and replacement nosetip material.	
(U) Flight test operationally aged heatshields to support aging trends and replacement materials assessments.	
(U) Complete development and flight test advanced reentry instrumentation such as inertial sensor avionics computer, encapsulated on the updated engineering instrumentation package.	
(U) Maintain RSAP technical program plan, conduct system assessments and continue Vulnerability & Hardening certification process development in absence of Nuclear Under Ground Testing (UGT) facilities.	
(U) Continue Reentry Body material development and advanced flight test instrumentation activities.	
(U) Continue development of advanced GPS receiver	
(U) Ground test advanced reentry material systems and advanced instrumentation components.	
(U) Develop test instrumentation to demonstrate D5LE missile reentry body interface compatibility.	