

**UNCLASSIFIED**

**CLASSIFICATION:**

EXHIBIT R-2, RDT&E Budget Item Justification							DATE:		<b>FEBRUARY 2005</b>
APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE					
<b>RESEARCH DEVELOPMENT TEST &amp; EVALUATION, NAVY /</b>				<b>BA-7</b>		PE 0305160N Defense Meteorological Satellite Program (Space)			
COST (\$ in Millions)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	
Total PE Cost	7.526	6.084	9.122	11.492	24.244	22.506	22.829	23.264	
1452 Geosat Follow-on	0.976	0.888	1.235	1.133	1.157	1.179	1.206	1.229	
0524 Navy METOC Support (Space)	3.666	3.214	7.887	10.359	23.087	21.327	21.623	22.035	
9282 Radiation Hardened Vector Processor	2.884	1.982	0.000	0.000	0.000	0.000	0.000	0.000	
Quantity of RDT&E Articles									
<b>(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</b>									
<p>This program element supports the naval services' unique requirements in meteorological and oceanographic (METOC) space-based remote sensors. Navy participates in joint efforts to leverage national polar-orbiting and geostationary satellite programs to demonstrate and validate improved warfighter capabilities. These requirements include the need to insure a smooth transition from the current joint Defense Meteorological Satellite Program (DMSP) to the future National Polar-orbiting Operational Environmental Satellite System (NPOESS). NPOESS readiness and risk reduction preparations to develop hardware and software that will allow ground stations to receive, ingest and exploit the NPOESS Preparatory Project (NPP) data. Unique naval warfighter capabilities will be transitioned to NPOESS and planned upgrades to NPOESS. These requirements also include the development of alternatives and required capabilities to replace the Geodetic/geophysical Satellite (GEOSAT) Follow-On (GFO) satellite which was launched on February 10, 1998 and is nearing end of life. A replacement to GFO is required to ensure continued support to Naval operations.</p> <p>These requirements include commitments to satellite, sensor, and operational demonstration/development activities as well as transition to fleet applications associated with four satellite programs: 1) The converged National Polar-orbiting Operational Environmental Satellite System (NPOESS), 2) the joint Defense Meteorological Satellite Program (DMSP), 3) the jointly funded Coriolis satellite which includes the Navy WindSat and Air Force SMEI (Solar Mass Injection Imager) instruments, and 4) the Geodetic/geophysical Satellite (GEOSAT) Follow-On (GFO) funded entirely by Navy. GFO altimeter data are used to observe significant wave height, ocean thermal and acoustic structure. The Navy METOC Support (Space) project provides for Navy participation in Navy/Air Force cooperative efforts leading to DMSP sensor development, specifically participation in the calibration and validation of instruments and delivery of satellite products to the Fleet. The passive microwave instruments carried on DMSP and future NPOESS satellites provide global oceanic and atmospheric data of direct operational relevance, including sea surface wind, sea ice, and precipitation. WindSat is a partnered program that meets multiple Naval remote sensing requirements and provides a significant risk reduction for the NPOESS satellites' Conical Microwave Imaging Sensor (CMIS) instrument. A Congressional Add for a Radiation Hardened Vector Processor system to advance the science of spacecraft based data and imagery processing was provided in FY04. Both the GEOSAT and Navy METOC Support (Space) projects fulfill Navy's obligation to develop naval service-unique, mission critical space-based METOC technology.</p>									
<b>(U) JUSTIFICATION FOR BUDGET ACTIVITY: BA-7:</b> This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it encompasses engineering and manufacturing development for upgrade of existing, operational systems.									

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EXHIBIT R-2a, RDT&E Project Justification							DATE: <b>FEBRUARY 2005</b>		
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-7</b>		PROGRAM ELEMENT NUMBER AND NAME PE 305160N Defense Meteorological Satellite Program (Space)				PROJECT NUMBER AND NAME 0524 Navy METOC Support (Space)			
COST (\$ in Millions)		FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost		<b>3.666</b>	<b>3.214</b>	<b>7.887</b>	<b>10.359</b>	<b>23.087</b>	<b>21.327</b>	<b>21.623</b>	<b>22.035</b>
RDT&E Articles Qty									
<p><b>(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</b></p> <p>The Navy Meteorological and Oceanographic (METOC) Support (Space) project provides for the naval services' unique sensor development efforts (WindSat and Advanced Altimeters) and Navy participation in Defense Meteorological Satellite Program (DMSP) Special Sensor Microwave/Imager (SSM/I) and Special Sensor Microwave Imager Sounder (SSMIS) calibration efforts in support of the Fleet operational requirements. WindSat, an initiative begun in 1997, is a partnered program that meets multiple Naval remote sensing requirements and provides a significant risk reduction for the NPOESS satellites' Conical Microwave Imaging Sensor (CMIS) instrument. The passive microwave instruments carried on DMSP and future NPOESS satellites provide global oceanic and atmospheric data of direct operational relevance, including sea surface wind speed, sea ice, and precipitation. The Navy METOC Support (Space) project ensures the naval services' operational requirements are satisfied primarily through demonstration of technologies for inclusion on operational constellations such as DMSP, the National Polar-orbiting Operational Environmental Satellite System (NPOESS) and the National Oceanic and Atmospheric Administration's (NOAA) Geostationary Operational Environmental Satellites (GOES). These efforts fulfill naval service unique requirements that are not funded within the DMSP, NPOESS or GOES programs, and are in accordance with current inter-agency agreements. The project also provides for participation in efforts leading to operational improvements of satellite derived products and naval service participation as a voting member of the DMSP Configuration Control Board (CCB) and as a technical advisor to the NPOESS Joint Agency Requirements Group (JARG). Future funding plans respond to emerging Chief of Naval Operations requirements for Navy and Marine Corps METOC data.</p>									

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APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-7</b>	PROGRAM ELEMENT NUMBER AND NAME PE 305160N Defense Meteorological Satellite Program (Space)	PROJECT NUMBER AND NAME 0524 Navy METOC Support (Space)

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

WINDSAT	FY04	FY05	FY06	FY07
Accomplishments/Effort/Subtotal Cost	2.678	2.589	4.292	4.201
RDT&E Articles Quantity	1			

FY04 Accomplishments: Supported WindSat wind speed and direction algorithm development. Supported WindSat on-orbit payload to provide Fleet ocean wind speed and direction data. Performed sensor calibration and data validation.

FY05 Plans: Control Coriolis Satellite and monitor health of WindSat on-orbit payload that provides fleet ocean wind speed and direction data. Perform sensor calibration and data validation of environmental algorithms generated for Fleet use.

FY06 Plans: Develop additional warfighter products (e.g. sea surface temperature) from the existing Windsat data stream. Control Coriolis Satellite and monitor health of the WindSat on-orbit payload that provides fleet ocean wind speed and direction data. Perform sensor calibration and data validation of environmental algorithms generated for Fleet use.

FY07 Plans: Develop additional warfighter products (e.g. sea ice characterization) from the existing Windsat data stream. Control Coriolis Satellite and monitor health of the WindSat on-orbit payload that provides fleet ocean wind speed and direction data. Perform sensor calibration and data validation of environmental algorithms generated for Fleet use.

Calibration and Validation Activities	FY04	FY05	FY06	FY07
Accomplishments/Effort/Subtotal Cost	0.907	0.539	2.140	1.333
RDT&E Articles Quantity				

FY04 Accomplishments: Continued to monitor Special Sensor Microwave/Imager (SSM/I) performance and continued validation support effort associated with the Defense Meteorological Satellite Program (DMSP) Special Sensor Microwave Imager Sounder (SSM/IS) and WindSat sensor. Conducted field experiments with Airborne Polarimetric Microwave Imaging Radiometer (APMIR) to use for calibration/validation of Defense Meteorological Satellite Program (DMSP) Special Sensor Microwave/Imager (SSM/I), Special Sensor Microwave Imager Sounder (SSM/IS) sensors, and the WindSat sensor.

FY05 Plans: Prepare and support launch of Defense Meteorological Satellite Program (DMSP) (F-17). Monitor performance of F-17's Special Sensor Microwave Imager Sounder (SSM/IS). Monitor SSM/I performance and continue calibration and validation support effort associated with the DMSP SSM/IS and WindSat sensor. Use Airborne Polarimetric Microwave Imaging Radiometer (APMIR) as an underflight resource for calibration/validation of Defense Meteorological Satellite Program (DMSP) Special Sensor Microwave/Imager (SSM/I) and Special Sensor Microwave Imager Sounder (SSM/IS) sensors.

FY06 Plans: Complete validation report for F17. Monitor Special Sensor Microwave/Imager (SSM/I) performance and continue calibration and validation support effort associated with the Defense Meteorological Satellite Program (DMSP) Special Sensor Microwave Imager Sounder (SSM/IS) and WindSat sensor.

FY07 Plans: Prepare for launch of DMSP (F-18). Monitor Defense Meteorological Satellite Program (DMSP) Special Sensor Microwave/Imager (SSM/I), Special Sensor Microwave Imager Sounder (SSM/IS) and WindSat sensor performance. Continue calibration and validation of Defense Meteorological Satellite Program (DMSP) Special Sensor Microwave/Imager (SSM/I), Special Sensor Microwave Imager Sounder (SSM/IS) sensors and the WindSat Sensor.

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APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-7</b>	PROGRAM ELEMENT NUMBER AND NAME PE 305160N Defense Meteorological Satellite Program (Space)	PROJECT NUMBER AND NAME 0524 Navy METOC Support (Space)		
<b>(U) B. Accomplishments/Planned Program</b>				
Advanced Altimeter	FY04	FY05	FY06	FY07
Accomplishments/Effort/Subtotal Cost	0.081	0.086	1.455	4.825
RDT&E Articles Quantity				
<p>FY04 Accomplishments: Began support of Advanced Altimeter program development and trade studies.            FY05 Plans: Continue support of Advanced Altimeter program development and trade studies.            FY06 Plans: Perform Analysis of Alternatives including investigating the Centre Nationale Etudes Spatiale's (CNES) Altimeter Ka band (AltiKa) for littoral region application. Begin concept development and market research for Advanced Altimeter and future sensors.            FY07 Plans: Perform field experiments to evaluate new techniques for littoral applications. Perform end to end architectural assessments and cost analysis to implement new techniques. Continue to support Analysis of Alternatives (AoA).</p>				
	FY04	FY05	FY06	FY07
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	0.000
RDT&E Articles Quantity				
	FY04	FY05	FY06	FY07
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	0.000
RDT&E Articles Quantity				

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APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-7</b>	PROGRAM ELEMENT NUMBER AND NAME PE 305160N Defense Meteorological Satellite Program (Space)	PROJECT NUMBER AND NAME 0524 Navy METOC Support (Space)

**(U) C. PROGRAM CHANGE SUMMARY:**

(U) Funding:	FY 2004	FY 2005	FY 2006	FY 2007
FY 05 President's Budget	4.099	3.317	4.272	4.707
FY 06 OSD Budget	3.666	3.214	7.887	10.359
Total Adjustments	(0.433)	(0.103)	3.615	5.652

Summary of Adjustments

Congressional Adjustments				
Congressional Recissions		-0.102		
Reprogrammings	-0.400			
Programmatic Adjustments		-0.001	3.575	5.549
Economic Assumptions			0.048	0.082
Pricing Adjustments			-0.008	0.021
SBIR/STTR Transfers	-0.033			
Subtotal	-0.433	-0.103	3.615	5.652

(U) Schedule:

Launch delays for Special Sensor Microwave Image Sounder (SSMIS) are a result of Air Force launch readiness delays.

(U) Technical:

Not Applicable

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APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-3,4,7</b>	PROGRAM ELEMENT NUMBER AND NAME PE 305160N Defense Meteorological Satellite Program (Space)	PROJECT NUMBER AND NAME 0524 Navy METOC Support (Space)
<p><b>(U) D. OTHER PROGRAM FUNDING SUMMARY:</b></p> <p><u>Line Item No. &amp; Name</u></p> <p>Not Applicable</p> <p><b>(U) E. ACQUISITION STRATEGY: *</b></p> <p>Naval service unique space based METOC requirements are not fully funded through Joint or converged national program plans. Particular sensors or data sources with unique naval service mission needs are targeted to accelerate acquisition or ensure threshold accomplishment. WindSat provides risk reduction data and developmental technology that the NPOESS IPO will use in the development of the Conical Microwave Imager Sounder (CMIS). CMIS will collect global microwave radiometry and sounding data to produce microwave imagery and other meteorological and oceanographic data. CMIS can be viewed as the follow-on instrument to the Special Sensor Microwave (SSM) instruments Navy developed for the Defense Meteorological Satellite Program (DSMP). It will be the primary instrument for satisfying 20 NPOESS Integrated Operational Requirements Document (IORD) Environmental Data Records (EDRs). These CMIS sensors will be acquired as part of the NPOESS architecture which supports these Navy requirements in the future. Maintenance of rigorous sensor calibration and data validation for operational SSM instruments continues along with algorithm development in support of fleet applications. The Advanced Altimeter technologies will improve radar altimeter resolution and areal coverage to support Navy requirements for sea surface topography measurement in the littorals.</p> <p><b>(U) F. MAJOR PERFORMERS: **</b></p> <p>FY-04 - FY07 - Naval Research Laboratory, Washington D.C. 49% Satellite Mission and Technical Support, Sensor Calibration and Data Validation</p> <p>* Not required for Budget Activities 1,2,3, and 6 ** Required for DON and OSD submit only.</p>		

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**Exhibit R-2a, RDTE Project Justification**  
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Exhibit R-3 Cost Analysis (page 1)										DATE: <b>FEBRUARY 2005</b>		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NUMBER AND NAME					
<b>RDT&amp;E, N / BA-7</b>			PE 305160N Defense Meteorological Satellite Program (S				0524 Navy METOC Support (Space)					
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Spacecraft Development	FF	Spectrum Astro, AZ	2.500	0.000		0.000		0.000		0.000	2.500	
Spacecraft Development	CP	TRW, Redondo Beach, CA	4.885	0.000		0.000		0.000		0.000	4.885	
Subtotal Product Development			7.385	0.000		0.000		0.000		0.000	7.385	
Windsat Cal Val & Operational Data/Coriolis Command & Control	CP	Various	75.630	2.486		4.207		3.992		Continuing	Continuing	
*IOMI PM and System Engineering	CP	Various	3.754	0.000		0.000		0.000		0.000	3.754	
*SSMIS Cal/Val	CP	Various	7.496	0.642		2.190		1.378		Continuing	Continuing	
*Future Mission Engineering	CP	Various		0.086		1.490		4.989		Continuing	Continuing	
*APMIR	CP	Various	1.590	0.000		0.000		0.000		0.000	1.590	
Subtotal Support			88.470	3.214		7.887		10.359		0.000	109.930	
Remarks: *Indian Ocean METOC Imager (IOMI) *Special Sensor Microwave Imager Sounder (SSMIS) *Airborne Polarimetric Microwave Imaging Radiometer (APMIR)  Remarks: Future Mission Engineering will address Navy unique METOC requirements for littoral applications.												

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Exhibit R-3 Cost Analysis (page 2)										DATE: <b>FEBRUARY 2005</b>		
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-7</b>				PROGRAM ELEMENT PE 305160N Defense Meteorological Satellite Program (Space)				PROJECT NUMBER AND NAME 0524 Navy METOC Support (Space)				
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Total Cost			95.855	3.214		7.887		10.359		0.000	117.315	
Remarks:												

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APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-7</b>		PROGRAM ELEMENT NUMBER AND NAME 0305160N Navy Meteorological and Oceanographic Sensors - Space			PROJECT NUMBER AND NAME 1452 GEOSAT				
COST (\$ in Millions)		FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost		0.976	0.888	1.235	1.133	1.157	1.179	1.206	1.229
RDT&E Articles Qty									
<p><b>(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</b></p> <p>This project provides a satellite-borne radar altimeter sensor to obtain ocean topography measurements from which tactically significant features such as ocean fronts and eddies, wave heights, internal acoustic structure, and sea-ice edges are derived. Topography provides a unique and important data source in support of a number of naval service unique warfare areas such as anti-submarine and undersea warfare. GFO data are made freely available to other agencies such as the National Oceanic and Atmospheric Administration (NOAA) and the National Aeronautics and Space Administration (NASA) who value its input to studies involving global warming and climate change including El Nino Southern Oscillation (ENSO) effects. Ocean topography data was previously provided by GEOSAT from 1985 until the satellite failed in January 1990. The GEOSAT Follow-On (GFO) satellite which was launched in February 1998 provides altimetry data until its end of life and if not replaced there will be a gap in altimetry coverage until an Advanced Altimeter or a National Polar-orbiting Operational Environmental Satellite System (NPOESS) altimeter is available.</p>									

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APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA - 7</b>	PROGRAM ELEMENT NUMBER AND NAME 0305160N Navy Meteorological and Oceanographic Sensors - Space	PROJECT NUMBER AND NAME 1452 GEOSAT

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

On-Orbit Performance Incentive Fee	FY04	FY05	FY06	FY07
Accomplishments/Effort/Subtotal Cost	0.955	0.000	0.000	0.000
RDT&E Articles Quantity				

FY04 Accomplishments: Continued to fund on-orbit performance incentive.

Algorithm Development and Sensor Calibration and Data Validation	FY04	FY05	FY06	FY07
Accomplishments/Effort/Subtotal Cost	0.021	0.888	1.235	1.133
RDT&E Articles Quantity				

FY04 Accomplishments: Continued limited assessment of on-orbit system performance, conducted payload calibration and data validation, refined orbits and resolved performance anomalies.  
 FY05 Plans: Assess on-orbit system performance, conduct payload calibration and data validation, refine orbits and resolve performance anomalies.  
 FY06 Plans: Investigate and implement life extension solutions (e.g. develop work arounds for degraded components). Assess on-orbit system performance, conduct payload calibration and data validation, refine orbits and resolve performance anomalies. Develop GFO metrics for warfighter applications.  
 FY07 Plans: Implement additional life extension solutions. Assess on-orbit system performance, conduct payload calibration and data validation, refine orbits and resolve performance anomalies. Improve warfighter applications using GFO metrics.

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APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
<b>RDT&amp;E, N / BA-7</b>	0305160N Navy Meteorological and Oceanographic Sensors - Space	1452 GEOSAT

**(U) C. PROGRAM CHANGE SUMMARY:**

(U) Funding:	FY 2004	FY 2005	FY 2006	FY 2007
FY 05 President's Budget	0.812	0.898	0.926	1.120
FY 06 President's Budget	0.976	0.888	1.235	1.133
Total Adjustments	0.164	(0.010)	0.309	0.013

Summary of Adjustments

Congressional Adjustments				
Congressional Recissions		-0.010		
Reprogrammings	0.180			
Programmatic Adjustments			0.300	0.000
Economic Assumptions			0.012	0.014
Pricing Adjustments			-0.003	-0.001
SBIR/STTR Transfers	-0.016			
Subtotal	0.164	-0.010	0.309	0.013

(U) Schedule:

Not Applicable

(U) Technical:

Not Applicable

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**Exhibit R-2a, RDTEEN Project Justification**  
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APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-7</b>	PROGRAM ELEMENT NUMBER AND NAME 0305160N Navy Meteorological and Oceanographic Sensors - Space	PROJECT NUMBER AND NAME 1452 GEOSAT
<p><b>(U) D. OTHER PROGRAM FUNDING SUMMARY:</b></p> <p><u>Line Item No. &amp; Name</u></p> <p>Not Applicable</p> <p><b>(U) E. ACQUISITION STRATEGY:</b></p> <p>The Naval services require a satellite-borne radar altimeter sensor on orbit to obtain ocean topography measurements from which tactically significant features such as ocean fronts and eddies, wave heights, internal acoustic structure, and sea-ice edges are derived. Rigorous payload calibration, data validation and precision orbit determination maintain accuracy and usefulness of data. Continued refinement of sensor performance works toward satisfying the Navy and Marine Corps' littoral data requirements. As the GeoSat Follow-On satellite reaches its end of life, the program will transition to satisfy naval service unique altimetry requirements through a free-flying Advanced Altimeter or a National Polar-orbiting Operational Environmental Satellite System (NPOESS) altimeter.</p> <p><b>(U) F. MAJOR PERFORMERS:</b></p> <p>FY04 to FY07 - Ball Aerospace, Boulder, CO 50% Satellite Mission Support and on-orbit incentive fee through FY 2004; Computer Sciences Corporation (CSC), Monterey, CA 50% Sensor Calibration, Data Validation and Technical Support.</p>		

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**Exhibit R-2a, RDTEN Project Justification**  
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Exhibit R-3 Cost Analysis (page 1)								DATE: <b>FEBRUARY 2005</b>				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NUMBER AND NAME					
<b>RDT&amp;E, N / BA-7</b>			0305160N Navy Meteorological and Oceanographic Sensors - Space				1452 GEOSAT					
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Software Development	CP	Ball Aerospace	85.984	0.000	N/A	0.000	N/A	0.000	N/A		85.984	
		Various	8.045	0.000	N/A	0.000	N/A	0.000	N/A		8.045	
Subtotal Product Development			94.029	0.000		0.000		0.000		0.000	94.029	
Remarks:												
Systems Engineering	CP	Ball Aerospace	2.672	0.300	N/A	0.400	N/A	0.370	N/A	CONTINUING	Continuing	
		Various	1.556	0.588	N/A	0.835	N/A	0.763	N/A	CONTINUING	Continuing	
Subtotal Support			4.228	0.888		1.235		1.133		0.000	7.484	
Remarks:												

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<b>RDT&amp;E, N / BA-7</b>			0305160N Navy Meteorological and Oceanographic Sensors - Space				1452 GEOSAT					
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
										Continuing	Continuing	
Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Total Cost			98.257	0.888		1.235		1.133		0.000	101.513	
Remarks:												

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EXHIBIT R4, Schedule Profile																								DATE: <b>FEBRUARY 2005</b>								
APPROPRIATION/BUDGET ACTIVITY <b>RDTE, N / BA-7</b>								PROGRAM ELEMENT NUMBER AND NAME 0305160N Navy Meteorological and Oceanographic Sensors - Space												PROJECT NUMBER AND NAME 1452 GEOSAT												
Fiscal Year	2004				2005				2006				2007				2008				2009				2010				2011			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Satellite Operations																																

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\* Not required for Budget Activities 1, 2, 3, and 6



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APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-7</b>		PROGRAM ELEMENT NUMBER AND NAME 0305160N Navy Meteorological and Oceanographic Sensors - Space			PROJECT NUMBER AND NAME 9282 Radiation Hardened Vector				
COST (\$ in Millions)		FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost		<b>2.884</b>	<b>1.982</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>
RDT&E Articles Qty									

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

The Radiation Hardened Vector Processor (RHVP) project will enable signal processing to be performed onboard a satellite rather than on the ground, reducing the bandwidth requirements of the downlink and increasing the information content of data that can be provided by a satellite payload. Radiation hardening for on-orbit processing of imagery and sensor data is a critical technology needed by ongoing Navy and national satellite programs.

A Congressional Add for a Radiation Hardened Vector Processor system to advance the science of spacecraft based data and imagery processing was provided in FY04.  
 A Congressional Add for Scalable Signal Processing Architecture to provide a dynamic solution for spacecraft based data and imagery processing was provided in FY05.

R-1 SHOPPING LIST - Item No. 198

# UNCLASSIFIED

# UNCLASSIFIED

**CLASSIFICATION:**

EXHIBIT R-2a, RDT&E Project Justification		DATE: <b>FEBRUARY 2005</b>
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA - 7</b>	PROGRAM ELEMENT NUMBER AND NAME 0305160N Navy Meteorological and Oceanographic Sensors - Space	PROJECT NUMBER AND NAME 9282 Radiation Hardened Vector

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

Radiation Hardened Vector/Scalable Signal Processor Architecture	FY04	FY05	FY06	FY07
Accomplishments/Effort/Subtotal Cost	2.884	1.982	0.000	0.000
RDT&E Articles Quantity				

FY04 - Developed software and integrated it with the processors selected in FY03.  
 FY05 - Develop and demonstrate scalable/reconfigurable architecture

	FY04	FY05	FY06	FY07
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	0.000
RDT&E Articles Quantity				

	FY 04	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	0.000
RDT&E Articles Quantity				

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**UNCLASSIFIED**

**CLASSIFICATION:**

EXHIBIT R-2a, RDT&E Project Justification			DATE: <b>FEBRUARY 2005</b>	
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME		
<b>RDT&amp;E, N / BA-7</b>	0305160N Navy Meteorological and Oceanographic Sensors - Space	9282 Radiation Hardened Vector		
<b>(U) C. PROGRAM CHANGE SUMMARY:</b>				
(U) Funding:	FY 2004	FY 2005	FY 2006	FY 2007
FY 05 President's Budget	2.967	0.000	0.000	0.000
FY 06 President's Budget	2.884	1.982	0.000	0.000
Total Adjustments	(0.083)	1.982	0.000	0.000
Summary of Adjustments				
Congressional Adjustments		2.000		
Congressional Recissions		-0.018		
Reprogrammings				
Programmatic Adjustments				
Economic Assumptions	-0.003			
Pricing Adjustments				
SBIR/STTR Transfers	-0.080			
Subtotal	-0.083	1.982		
(U) Schedule:	Not Applicable			
(U) Technical:	Not Applicable			

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**CLASSIFICATION:**

EXHIBIT R-2a, RDT&E Project Justification		DATE: <b>FEBRUARY 2005</b>
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-7</b>	PROGRAM ELEMENT NUMBER AND NAME 0305160N Navy Meteorological and Oceanographic Sensors - Space	PROJECT NUMBER AND NAME 9282 Radiation Hardened Vector
<p><b>(U) D. OTHER PROGRAM FUNDING SUMMARY:</b></p> <p><u>Line Item No. &amp; Name</u></p> <p>Not Applicable</p> <p><b>(U) E. ACQUISITION STRATEGY:</b></p> <p>Not Applicable</p> <p><b>(U) F. MAJOR PERFORMERS:</b></p> <p>Not Applicable</p>		

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**Exhibit R-2a, RD TEN Project Justification**  
(Exhibit R-2a, page 22 of 26)

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: <b>FEBRUARY 2005</b>				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NUMBER AND NAME					
<b>RDT&amp;E, N / BA-7</b>			0305160N Navy Meteorological and Oceanographic Sensors - Space				9282 Radiation Hardened Vector					
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Software Development	CPFF	Valley Technologies Inc.	5.735	1.982	05/05	0.000	N/A	0.000	N/A		7.717	
Subtotal Product Development			5.735	1.982		0.000		0.000		0.000	7.717	
Remarks:												
Systems Engineering			0.000	0.000		0.000		0.000				CONT
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: <b>FEBRUARY 2005</b>				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NUMBER AND NAME					
<b>RDT&amp;E, N / BA-7</b>			0305160N Navy Meteorological and Oceanographic Sensors - Space				9282 Radiation Hardened Vector					
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Total Cost			5.735	1.982		0.000		0.000		0.000	7.717	
Remarks:												

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