CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification								DATE: February 2004			
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-7**						R-1 ITEM NOMENCLATURE PE 0305160N Defense Meteorological Satellite Program (Space)					
COST ($ in Millions)	Prior Years Cost	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009		Cost to Complete	Total Program
Total PE Cost	**170.268**	**21.833**	**7.878**	**4.215**	**5.198**	**5.827**	**22.810**	**23.199**		**CONTINUING**	**Continuing**
1452 Geosat Follow-on	**95.732**	**1.729**	**0.812**	**0.898**	**0.926**	**1.120**	**1.143**	**1.166**		**CONTINUING**	**Continuing**
0524 Navy METOC Support (Space)	**74.536**	**17.253**	**4.099**	**3.317**	**4.272**	**4.707**	**21.667**	**22.033**		**CONTINUING**	**Continuing**
9282 Radiation Hardened Vector Processor	**0.000**	**2.851**	**2.967**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**			**5.818**
											0.000
											0.000
											0.000
Quantity of RDT&E Articles											**0**

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

This program element supports the naval services' unique requirements in meteorological and oceanographic (METOC) space-based remote sensors. These interests include commitments to satellite, sensor, and operational demonstration/development activities as well as transition to fleet applications associated with five satellite programs: 1) The converged National Polar-orbiting Operational Environmental Satellite System (NPOESS), 2) the joint Defense Meteorological Satellite Program (DMSP), 3) the Coriolis satellite funded by Navy, the NPOESS Integrated Program Office (IPO) and the DoD Space Test Program (STP) which includes the Navy WindSat and Air Force SMEI instruments, 4) the Geodetic/geophysical Satellite (GEOSAT) Follow-On (GFO) funded entirely by Navy and 5) the Indian Ocean METOC Imager (IOMI) project. GEOSAT provided ocean topography information from 1985-1990. In 1991, the Navy began the development of a follow-on capability to continue providing this required ocean topography information via the GFO satellite, launched on 10 February 1998. 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, 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 spacecraft and sensor development in support of IOMI-GIFTS project was terminated. Congressional Adds for a Radiation Hardened Vector Processor system to advance the science of spacecraft based data and imagery processing were provided in FY03 and 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.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: BA-7: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it encompasses engineering and manufacturing development for upgrade of existing, operational systems.

R-1 SHOPPING LIST - Item No. 194

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: **February 2004**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**	PROGRAM ELEMENT NUMBER AND NAME PE 305160N Defense Meteorological Satellite Program (Space)					PROJECT NUMBER AND NAME 0524 Navy METOC Support (Space)					
COST ($ in Millions)	Prior Years Cost	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009		Cost to Complete	Total Program
Project Cost	**74.536**	**17.253**	**4.099**	**3.317**	**4.272**	**4.707**	**21.667**	**22.033**		**Continuing**	**Continuing**
RDT&E Articles Qty											**0**

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

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 (SSM/IS) 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, 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.

R-1 SHOPPING LIST - Item No. 194

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2004**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	PE 305160N Defense Meteorological Satellite Program (S	0524 Navy METOC Support (Space)

(U) B. Accomplishments/Planned Program

WINDSAT	FY 03	FY 04	FY 05	
Accomplishments/Effort/Subtotal Cost	14.243	3.055	2.589	
RDT&E Articles Quantity		1		

FY03 Accomplishments : Shipped WindSat flight payload to launch site for final integration with spacecraft and launch vehicle integration. Completed development and testing of algorithms and ground software for WindSat environmental data records. Supported WindSat launch processing, launch operations, early orbit checkout, and began on-orbit calibration and validation. Provided engineering support for the evaluation of the Coriolis spacecraft and WindSat payload on-orbit performance and completed on-orbit calibration/validation of WindSat data.
FY04 Plans: Support Windsat wind speed and direction algorithm development. Support WindSat on-orbit payload to provide Fleet ocean wind speed and direction data. Perform sensor calibration and data validation.
FY05 Plans: Continue to support WindSat on-orbit payload to provide Fleet ocean wind speed and direction data. Perform sensor calibration and data validation of environmental algorithms generated for Fleet use.

Indian Ocean METOC Imager	FY 03	FY 04	FY 05	
Accomplishments/Effort/Subtotal Cost	2.260	0.000	0.000	
RDT&E Articles Quantity				

FY03 Accomplishments: Indian Ocean METOC Imager (IOMI) spacecraft and sensor development in support of IOMI-GIFTS project was terminated by PBD-751.

Calibration and Validation Activities	FY 03	FY 04	FY 05	
Accomplishments/Effort/Subtotal Cost	0.750	0.959	0.642	
RDT&E Articles Quantity				

FY03: Continued to monitor SSM/I performance and continued validation support effort associated with the DMSP SSM/IS and WindSat sensor. Conducted field experiments with APMIR to use for calibration/validation of DMSP SSM/I, SSM/IS sensors, and the WindSat sensor.
FY04 - FY05: Continue to monitor SSM/I performance and continue validation support effort associated with the DMSP SSM/IS and WindSat sensor. Conduct field experiments with APMIR to use for calibration/validation of DMSP SSM/I, SSM/IS sensors, and the WindSat sensor.

R-1 SHOPPING LIST - Item No.194

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2004**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-7	PE 305160N Defense Meteorological Satellite Program (S	0524 Navy METOC Support (Space)	

(U) B. Accomplishments/Planned Program

Advanced Altimeter	FY 03	FY 04	FY 05	
Accomplishments/Effort/Subtotal Cost	0.000	0.085	0.086	
RDT&E Articles Quantity				

FY04 - Begin support of Advanced Altimeter program development and trade studies.
FY05 - Continue support of Advanced Altimeter program development and trade studies.

	FY 03	FY 04	FY 05	
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	
RDT&E Articles Quantity				

	FY 03	FY 04	FY 05	
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	
RDT&E Articles Quantity				

R-1 SHOPPING LIST - Item No.194

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2004**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	PE 305160N Defense Meteorological Satellite Program (Spac	0524 Navy METOC Support (Space)

(U) C. PROGRAM CHANGE SUMMARY:

(U) Funding:	FY 2003	FY 2004	FY 2005
FY 04 President's Budget	17.540	4.145	3.571
FY 05 President's Budget	17.253	4.099	3.317
Total Adjustments	(0.287)	(0.046)	(0.254)
Summary of Adjustments			
N61 HQ Support			(0.236)
FY03_SBIR_5-May-03 FY 2003	(0.107)		
NWCF Rates - NRL Rates			(0.004)
Section 8094: Management Improvements		(0.011)	
Sec. 8126: Efficiencies/Revised Econ. Assumptions		(0.035)	
FY 2003 Update	(0.180)		
WCF - R&D - NRL - PBD 430			(0.010)
PBD 426 Rates - NRL			0.008
PBD-604 Inflation			(0.009)
PBD604 non purchase inflation			(0.002)
P07 Technical Adjustments			(0.001)
Subtotal	(0.287)	(0.046)	(0.254)

(U) Schedule:

Not Applicable

(U) Technical:

Not Applicable

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2004**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-3,4,7	PE 305160N Defense Meteorological Satellite Program (S	0524 Navy METOC Support (Space)

(U) D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name

Not Applicable

(U) E. ACQUISITION STRATEGY: *

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 measurment in the littorals.

(U) F. MAJOR PERFORMERS: **

FY-03 - FY05 - Naval Research Laboratory, Washington D.C. 49% Satellite Mission and Technical Support, Sensor Calibration and Data Validation

*** Not required for Budget Activities 1,2,3, and 6**
**** Required for DON and OSD submit only.**

R-1 SHOPPING LIST - Item No. 194

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2004**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**		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 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Spacecraft Development	FF	Spectrum Astro, AZ	0.000	2.500	Continuous	0.000		0.000		0.000	2.500	
Spacecraft Development	CP	TRW, Redondo Beach, CA	3.185	1.700	10/02	0.000		0.000		0.000	4.885	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Product Development			3.185	4.200		0.000		0.000		0.000	7.385	

Remarks: Spacecraft Development includes both the Coriolis (Spectrum Astro) and IOMI (TRW) Projects. The contract for the Coriolis spacecraft is held by the DoD Space Test Program with Spectrum Astro; through FY03 Navy provided ~$14M for the spacecraft development.
A. The FY03 increment completes the Navy obligation per the interagency MOA of the Space Test Program (STP) Spectrum Astro development.
B. The IOMI (TRW) spacecraft development was terminated by PBD #751.

Windsat Cal Val & Operational Data /Coriolis Command & Control	CP	Various	62.471	11.113		2.079		1.432		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	5.126	0.620		1.750		1.135		Continuing	Continuing	
Future Mission Studies	CP	TBD						0.500		Continuing	Continuing	
*APMIR	CP	Various		1.320		0.270		0.250		Continuing	Continuing	
											0.000	
											0.000	
Subtotal Support			71.351	13.053		4.099		3.317		0.000	91.820	

Remarks:
*Indian Ocean METOC Imager (IOMI)
*Special Sensor Microwave Imager Sounder (SSMIS)
*Airborne Polarimetric Microwave Imaging Radiometer (APMIR)

Remarks: Future Mission Studies adress Navy unique METOC requirements.

R-1 SHOPPING LIST - Item No. 194

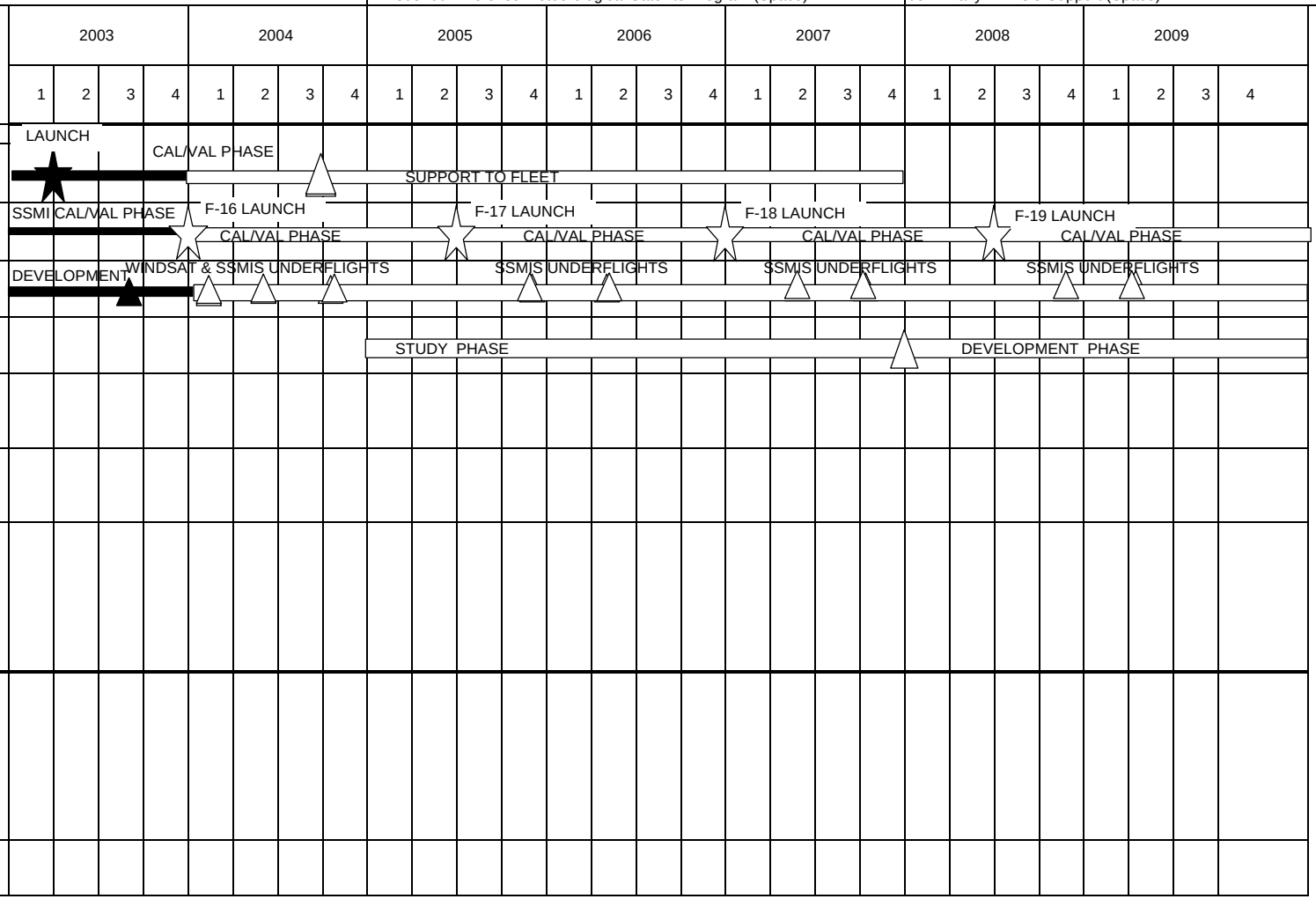
CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2004**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**			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 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation											0.000	
Operational Test & Evaluation											0.000	
Live Fire Test & Evaluation											0.000	
Test Assets											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Contractor Engineering Support										Continuing	Continuing	
Government Engineering Support											0.000	
Program Management Support											0.000	
Travel											0.000	
Transportation											0.000	
SBIR Assessment											0.000	
Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Total Cost			74.536	17.253		4.099		3.317		0.000	99.205	
Remarks:												

R-1 SHOPPING LIST - Item No.194

CLASSIFICATION:

EXHIBIT R4, Schedule Profile			DATE: **February 2004**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**	PROGRAM ELEMENT NUMBER AND NAME PE 305160N Defense Meteorological Satellite Program (Space)	PROJECT NUMBER AND NAME 0524 Navy METOC Support (Space)	



R-1 SHOPPING LIST - Item No. 194

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2004**	
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT				PROJECT NUMBER AND NAME		
RDT&BA-7	PE 305160N Defense Meteorological Satellite Program (Space)				0524 Navy METOC Support (Space)		
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
WindSat /Coriolis							
Testing Complete							
Launch	2Q						
Calibration /Validation Complete		3Q					
Special Sensor Microwave Image Sounder **(SSMIS)**							
DMSP Launches	4Q		2Q	4Q		2Q	
Airborne Polarimetric Microwave Imaging Radiometer **(APMIR)**							
WindSat Underflights	3Q	1Q					
SSMIS Underflights		2Q, 4Q	4Q	2Q	2Q, 4Q	4Q	2Q
Future Missions							
Study Phase Complete					4Q		
Start of Development Phase						1Q	

R-1 SHOPPING LIST - Item No. 194

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: **February 2004**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**	PROGRAM ELEMENT NUMBER AND NAME 0305160N Navy Meteorological and Oceanographic Sensors - Space					PROJECT NUMBER AND NAME 1452 GEOSAT					
COST ($ in Millions)	Prior Years Cost	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009		Cost to Complete	Total Program
Project Cost	**95.732**	**1.729**	**0.812**	**0.898**	**0.926**	**1.120**	**1.143**	**1.166**		**Continuing**	**Continuing**
RDT&E Articles Qty											**0**

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

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 provides altimetry data until an Advanced Altimeter or a National Polar-orbiting Operational Environmental Satellite System (NPOESS) altimeter is available.

R-1 SHOPPING LIST - Item No. 194

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2004**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA - 7	0305160N Navy Meteorological and Oceanographic Sensors - Space	1452 GEOSAT

(U) B. Accomplishments/Planned Program

On-Orbit Performance Incentive Fee	FY 03	FY 04	FY 05	
Accomplishments/Effort/Subtotal Cost	0.750	0.791	0.000	
RDT&E Articles Quantity				

FY03: Continued to fund on-orbit performance incentive.
FY04: Continue to fund on-orbit performance incentive.

Algorithm Development	FY-03	FY 04	FY 05	
Accomplishments/Effort/Subtotal Cost	0.350	0.000	0.000	
RDT&E Articles Quantity				

FY03 - Continued to develop improved ground station satellite data processing techniques.

Sensor Calibration and data validation	FY-03	FY 04	FY 05	
Accomplishments/Effort/Subtotal Cost	0.629	0.021	0.898	
RDT&E Articles Quantity				

FY03 - Continued to assess on-orbit system performance, conducted payload calibration and data validation, refined orbits and resolved performance anomalies.
FY04 - Continue limited assessment on-orbit system performance, conduct payload calibration and data validation, refine orbits and resolve performance anomalies.
FY05 - Continue to assess on-orbit system performance, conduct payload calibration and data validation, refine orbits and resolve performance anomalies.

R-1 SHOPPING LIST - Item No. 194

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2004**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	0305160N Navy Meteorological and Oceanographic Sensors - Space	1452 GEOSAT

(U) C. PROGRAM CHANGE SUMMARY:

(U) Funding:	FY 2003	FY 2004	FY 2005
FY 04 President's Budget	1.784	0.821	0.900
FY 05 President's Budget	1.729	0.812	0.898
Total Adjustments	(0.055)	(0.009)	(0.002)
Summary of Adjustments			
FY03_SBIR_5-May-03	(0.036)		
Section 8094: Management Improvements		(0.002)	
Sec. 8126: Efficiencies/Revised Econ. Assumptions		(0.007)	
FY 2003 Update	(0.019)		
Inflation			(0.002)
	(0.055)	(0.009)	(0.002)

(U) Schedule:

Not Applicable

(U) Technical:

Not Applicable

R-1 SHOPPING LIST - Item No. 194

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2004**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	0305160N Navy Meteorological and Oceanographic Sensors - Space	1452 GEOSAT

(U) D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name

Not Applicable

(U) E. ACQUISITION STRATEGY:

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.

(U) F. MAJOR PERFORMERS:

FY04 to FY05 - Ball Aerospace, Boulder, CO 50% Satellite Mission Support and on-orbit incentive fee; Computer Sciences Corporation (CSC), Monterey, CA 50% Sensor Calibration, Data Validation and Technical Support.

R-1 SHOPPING LIST - Item No. 194

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2004**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**		PROGRAM ELEMENT 0305160N Navy Meteorological and Oceanographic Sens				PROJECT NUMBER AND NAME 1452 GEOSAT						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Software Development	CP	Ball Aerospace	85.965	0.000	N/A	0.000	N/A	0.000	N/A		85.965	
		Various	8.045	0.000	N/A	0.000	N/A	0.000	N/A		8.045	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Product Development			94.010	0.000		0.000		0.000		0.000	94.010	
Remarks:												
Systems Engineering	CP	Ball Aerospace	1.082	1.071	N/A	0.554	N/A	0.662	N/A	CONTINUING	Continuing	
		Various	0.640	0.658	N/A	0.258	N/A	0.236	N/A	CONTINUING	Continuing	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Support			1.722	1.729		0.812		0.898		0.000	5.161	
Remarks:												

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: **February 2004**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**		PROGRAM ELEMENT 0305160N Navy Meteorological and Oceanographic Sens				PROJECT NUMBER AND NAME 1452 GEOSAT						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
										Continuing	Continuing	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Total Cost			95.732	1.729		0.812		0.898		0.000	99.171	
Remarks:												

R-1 SHOPPING LIST - Item No. 194

CLASSIFICATION:

EXHIBIT R4, Schedule Profile			DATE: **February 2004**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-7	0305160N Navy Meteorological and Oceanographic Sensors - Space	1452 GEOSAT	

Fiscal Year	2003				2004				2005				2006				2007				2008				2009			
	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																												

R-1 SHOPPING LIST - Item No. 194

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

CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: February 2004		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**	PROGRAM ELEMENT 0305160N Navy Meteorological and Oceanographic Sensc				PROJECT NUMBER AND NAME 1452 GEOSAT		
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Satellite Operations*							

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*NOTE: Operational Satellite - no major milestones.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: February 2004			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**	PROGRAM ELEMENT NUMBER AND NAME 0305160N Navy Meteorological and Oceanographic Sensors - Space					PROJECT NUMBER AND NAME 9282 Radiation Hardened Vector					
COST ($ in Millions)	Prior Years Cost		FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Cost to Complete	Total Program
Project Cost	**0.000**		**2.851**	**2.967**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**Continuing**	**Continuing**
RDT&E Articles Qty											**0**

(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.

Congressional adds for a Radiation Hardened Vector Processor system to advance the science of spacecraft based data and imagery processing were provided in FY03 and FY04.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2004**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA - 7	0305160N Navy Meteorological and Oceanographic Sensors - Space	9282 Radiation Hardened Vector

(U) B. Accomplishments/Planned Program

	FY03	FY 04	FY 05	
Accomplishments/Effort/Subtotal Cost	2.851	2.967	0.000	
RDT&E Articles Quantity				

FY03 - Developed a test bed that was used to evaluate candidate digital processors (Phase 1)
FY04 - Develop software and integrate it with the processors selected in Phase 1.

	FY03	FY 04	FY 05	
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	
RDT&E Articles Quantity				

	FY 03	FY 04	FY 05	
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	
RDT&E Articles Quantity				

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2004**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	0305160N Navy Meteorological and Oceanographic Sensors - Space	9282 Radiation Hardened Vector

(U) C. PROGRAM CHANGE SUMMARY:

(U) Funding:	FY 2003	FY 2004	FY 2005
FY 04 President's Budget	3.000	0.000	0.000
FY 05 President's Budget	2.851	2.967	0.000
Total Adjustments	(0.149)	2.967	0.000
Summary of Adjustments			
FY03_SBIR_5-May-03 FY 2003	(0.076)		
Section 8094: Management Improvements		(0.008)	
Miscellaneous Adjustment	(0.073)		
Sec. 8126: Efficiencies/Revised Econ. Assumptions		(0.025)	
Radiation Hardened Vector Processing		3.000	
Subtotal	(0.149)	2.967	0.000

(U) Schedule:

Not Applicable

(U) Technical:

Not Applicable

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2004**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	0305160N Navy Meteorological and Oceanographic Sensors - Space	9282 Radiation Hardened Vector

(U) D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name

Not Applicable

(U) E. ACQUISITION STRATEGY:

Not Applicable

(U) F. MAJOR PERFORMERS:

Not Applicable

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2004**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**		PROGRAM ELEMENT 0305160N Navy Meteorological and Oceanographic Sens				PROJECT NUMBER AND NAME 9282 Radiation Hardened Vector						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Software Development		Valley Technologies Inc.	0.000	2.851	05/03	2.967	N/A	0.000	N/A		5.818	
		Tamaqua, PA	0.000								0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Product Development			0.000	2.851		2.967		0.000		0.000	5.818	
Remarks:												
Systems Engineering			0.000	0.000		0.000		0.000			CONT	
											CONT	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
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: **February 2004**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**		PROGRAM ELEMENT 0305160N Navy Meteorological and Oceanographic Sens				PROJECT NUMBER AND NAME 9282 Radiation Hardened Vector						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Total Cost			0.000	2.851		2.967		0.000		0.000	5.818	
Remarks:												

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CLASSIFICATION:

EXHIBIT R4, Schedule Profile																												DATE: **February 2004**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**									PROGRAM ELEMENT NUMBER AND NAME 0305160N Navy Meteorological and Oceanographic Sensors - Space												PROJECT NUMBER AND NAME 9282 Radiation Hardened Vector							
Fiscal Year	2003				2004				2005				2006				2007				2008				2009			
	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
Radiation Hardened Vector			—	—	—	—	—																					

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

CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: **February 2004**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**	PROGRAM ELEMENT 0305160N Navy Meteorological and Oceanographic Sensc				PROJECT NUMBER AND NAME 9282 Radiation Hardened Vector		
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Radiation Hardened Vector	3Q	3Q					

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