EXHIBIT R-2, RDT&E Budget Item Justification						DATE: February 2008	
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-7			R-1 ITEM NOMENCLATURE 0305160N DEFENSE METEOROLOGICAL SATELLITE PROGRAM (SPACE)				
COST ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	**8.169**	**4.782**	**8.208**	**18.999**	**32.540**	**17.901**	**19.392**
0524 METOC Space-Based Sensing Capabilities	6.159	3.704	2.682	1.099	1.009	1.943	1.163
1452 Geosat Follow-on	1.039	1.078	5.526	17.900	31.531	15.958	18.229
9999 Congressional Increases	0.971						

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

This program element supports the Naval service's 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 war fighter capabilities. These requirements include the need to ensure 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 include development of hardware and software that will allow ground stations to receive, ingest and exploit the NPOESS Preparatory Project (NPP) data. Unique naval war fighter capabilities will be transitioned to NPOESS and planned upgrades to NPOESS. Geodetic/geophysical Satellite (GEOSAT) Follow-On (GFO) satellite was launched on February 10, 1998 and is nearing end of life. Beginning in FY2009 these requirements include the development of a follow-on on-orbit altimetry capability as required to ensure continuing support to naval operations.

These requirements 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 jointly funded Coriolis satellite which includes Navy Satellite Based Wind Speed (WindSat) and Air Force SMEI (Solar Mass Ejection Imager) instruments, 4) the Geodetic/geophysical Satellite (GEOSAT) Follow-On (GFO) funded entirely by Navy and 5) a future on-orbit altimetry capability. GFO altimeter data are used to observe significant wave height, ocean thermal and acoustic structure. The Navy METOC Space-Based Sensing Capabilities 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' Microwave Imaging Sensor (MIS) instrument. The future altimetry satellite will be a partnered program to provide continuity in altimetry data. Both the GEOSAT Follow-On and Navy METOC Support (Space) projects fulfill Navy's obligation to develop naval service-unique, mission critical space-based METOC technology.

FY07 included Congressional increase for the Radiation Hardened Vector Processor to increase the Technology Readiness Level (TRL) of reconfigurable technology for satellite onboard processing with consideration toward targeted applications such as future satellite reconnaissance, surveillance and strategic missile warning systems that may use Wide Field of View (WFOV) Staring Sensors and large format Focal Plane Arrays (FPAs).

This budget reflects a reorganization by program/project to better support the acquisition process.

(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.

EXHIBIT R-2, RDT&E Budget Item Justification	DATE: February 2008
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-7	R-1 ITEM NOMENCLATURE 0305160N DEFENSE METEOROLOGICAL SATELLITE PROGRAM (SPACE)

(U) C. PROGRAM CHANGE SUMMARY:

(U) Funding:	FY 2007	FY 2008	FY 2009
FY08 President's Budget	8.275	4.887	3.820
FY09 President's Submit	8.169	4.782	8.208
Total Adjustments	-0.106	-0.105	4.388
Summary of Adjustments			
Misc. Adjustments		-0.031	4.388
Small Business Innovation (SBIR) Tax	-0.106	-0.074	
Subtotal	-0.106	-0.105	4.388

(U) Schedule:

This budget reflects a reorganization by program/project to better support the acquisition process. Schedules are now presented separately for each program/project.

(U) Technical:

Not Applicable

EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2008		
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-7	PROGRAM ELEMENT NUMBER AND NAME 0305160N DEFENSE METEOROLOGICAL SATELLITE PROGRAM (SPACE)					PROJECT NUMBER AND NAME 0524 NAVY METOC SUPPORT (SPACE)		
COST ($ in Millions)		FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost		**6.159**	**3.704**	**2.682**	**1.099**	**1.009**	**1.943**	**1.163**
RDT&E Articles Qty								

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

The Navy Meteorological and Oceanographic (METOC) Support (Space) project provides for the naval service's unique sensor development efforts (Navy Satellite Based Wind Speed (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/validation 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 National Polar-orbiting Operational Environmental Satellite System (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 METOC Space-Based Sensing Capabilities project ensures the naval service's 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 the Navy's direct participation in the NPOESS Integrated Program Office (IPO), and the application of data provided at the NPOESS Interface Data Processing Segments (IDPSs) to naval METOC warfighting products.

This budget reflects a reorganization by program/project to better support the acquisition process.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2008
APPROPRIATION/BUDGET ACTIVITY	**PROGRAM ELEMENT NUMBER AND NAME**	**PROJECT NUMBER AND NAME**
RDT&E,N / BA-7	0305160N DEFENSE METEOROLOGICAL SATELLITE PROGRAM (SPACE)	0524 NAVY METOC SUPPORT (SPACE)

(U) B. Accomplishments/Planned Program

METOC Space-Based Sensing Capabilities	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	6.159	3.704	2.682
RDT&E Articles Quantity			

FY07: Determined system design for advanced altimetry mission. Developed additional Warfighter products (sea ice coverage); continued risk reduction to Conical Microwave Imaging Sensor (CMIS) through Navy Satellite Based Wind Speed (WindSat) data exploitation and control Coriolis and monitor state of health of the WindSat on-orbit payload. Monitored Special Sensor Microwave Imager Sounder (SSMIS) performance and continued calibration and validation. Prepared for launch of F-18; Phase C Approval for Advanced Altimeter; Preliminary Design Reviewed for Advanced Altimeter; Global Data Processing System (GDPS) updated for sea ice; and F-17 SSMIS Calibration/Validation Final Report. Efforts formerly part of the "WINDSAT/Sensor/Observing Systems (Space)." Delivered initial set of advanced National Polar-orbiting Operational Environmental Satellite System (NPOESS) Preparatory Project (NPP)/NPOESS data assimilation algorithms. Conducted test and evaluation of these algorithms with NPP data. Efforts formerly part of the "NPOESS Assim/Prediction Models (Atmosphere/Ocean)."

FY08 - Prepare for launch of F-18. Develop additional Warfighter products (sea ice coverage); continue risk reduction to CMIS through Navy Satellite Based Wind Speed (WindSat) data exploitation and ground control and operations of Coriolis and monitor state of health of the WindSat on-orbit payload. Monitor Special Sensor Microwave/Imager (SSM/I) and SSMIS performance and continue calibration and validation. Efforts formerly part of the "WINDSAT/Sensor/Observing Systems (Space)."

FY09 - Continue performance assessments of microwave imagers (e.g.: SSMIS/SSMI/MIS) and continue to calibrate sensors and validate data and resolve anomalies. Continue ground control and operations of the Coriolis spacecraft and monitor the state of health of the WindSat on-orbit payload.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2008
APPROPRIATION/BUDGET ACTIVITY	**PROGRAM ELEMENT NUMBER AND NAME**	**PROJECT NUMBER AND NAME**
RDT&E, N / BA-7	0305160N DEFENSE METEOROLOGICAL SATELLITE PROGRAM (SPACE)	0524 NAVY METOC SUPPORT (SPACE)

(U) C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name

Not Applicable

(U) D. ACQUISITION STRATEGY:

Naval service unique, space based meteorological and oceanographic (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 National Polar-orbiting Operational Environmental Satellite System (NPOESS) Integrated Program Office (IPO) will use in the development of the Conical Microwave Image 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 arial coverage to support Navy requirements for sea surface topography measurement in the littorals.

(U) E. MAJOR PERFORMERS:

FY07 - FY09 - Naval Research Laboratory, Washington D.C. 60% Satellite Mission and Technical Support, Sensor Calibration and Data Validation

Exhibit R-3 Cost Analysis (page 1)													DATE: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-7			PROGRAM ELEMENT 0305160N 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 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract	
Spacecraft Development	FF	Spectrum Astro, AZ	2.500								2.500		
Spacecraft Development	CP	TRW, Redondo Beach, CA	4.885								4.885		
Subtotal Product Development			7.385	0.000		0.000		0.000			7.385		
WindSat-Sensor/Observing Systems (Space)	CP	Various	84.452	3.386		1.979		1.690		Continuing	Continuing		
*IOMI PM and System Engineering	CP	Various	3.754								3.754		
*SSMIS Cal/Val	CP	Various	9.292	0.000		1.000		0.486		Continuing	Continuing		
*Future Mission Engineering	CP	Various	0.316	0.000		0.725		0.506		Continuing	Continuing		
*APMIR	CP	Various	1.590								1.590		
NPP/NPOESS Algorithms-Assimilation/Prediction Models (Atmosphere/Ocean)		NRLs		2.773						Continuing	Continuing		
Subtotal Support			99.404	6.159		3.704		2.682		Continuing	Continuing		
Total Cost			106.789	6.159		3.704		2.682		Continuing	Continuing		

Remarks:
*Indian Ocean METOC Imager (IOMI)
*Special Sensor Microwave Imager Sounder (SSMIS)
*Airborne Polarimetric Microwave Imaging Radiometer (APMIR)
* Future Mission Engineering will address Navy unique METOC requirements for littoral applications

EXHIBIT R4, Schedule Profile																													**DATE:** February 2008			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-7					**PROGRAM ELEMENT NUMBER AND NAME** 0305160N DEFENSE METEOROLOGICAL SATELLITE PROGRAM (SPACE)																				**PROJECT NUMBER AND NAME** 0524 NAVY METOC SUPPORT (SPACE)									
Fiscal Year	2007				2008				2009				2010				2011				2012				2013							
	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			
WindSat / Coriolis	Risk reduction demonstration.																														
Microwave Imager	Sensor Calibration / Data Validation →																														
NPP/NPOESS	Data Assimilation Algorithm Development																														

Exhibit R-4a, Schedule Detail						**DATE:** February 2008	
APPROPRIATION/BUDGET ACTIVITY RDT&E **BA-7**	**PROGRAM ELEMENT** 0305160N DEFENSE METEOROLOGICAL SATELLITE PROGRAM (SPACE)					**PROJECT NUMBER AND NAME** 0524 NAVY METOC SUPPORT (SPACE)	
Schedule Profile	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
WindSat / Coriolis	1Q						

EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2008	
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-7	PROGRAM ELEMENT NUMBER AND NAME 0305160N DEFENSE METEOROLOGICAL SATELLITE PROGRAM (SPACE)				PROJECT NUMBER AND NAME 1452 GEOSAT FOLLOW-ON		
COST ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	1.039	1.078	5.526	17.900	31.531	15.958	18.229
RDT&E Articles Qty							

(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. Geodetic/geophysical Satellite (GEOSAT) Follow-On (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 GFO satellite was launched in February 1998 and is nearing its end of life. A future satellite based altimeter will provide for continuation of this capability.

This budget reflects a reorganization by program/project to better support the acquisition process.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2008
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E,N / BA-7	0305160N DEFENSE METEOROLOGICAL SATELLITE PROGRAM (SPACE)	1452 GEOSAT FOLLOW-ON

(U) B. Accomplishments/Planned Program

Meteorology and Oceanography (METOC) Space	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	1.039	1.078	5.526
RDT&E Articles Quantity			

FY07 - Investigated and implemented life extension solutions to work arounds for degraded components. Assessed on-orbit system performance, calibrated payload and validated data, resolved anomalies. Assessed impact of differing orbits on metric effectiveness. Completed Geodetic/geophysical Satellite (GEOSAT) Follow-On (GFO) Performance Validation Reports (every 17 days) and GFO Engineering Anomaly Resolution Reports (upon retirement of anomaly). Completed meteorological and oceanographic (METOC) metric end of year report. Efforts formerly part of the "Algorithm Development and Sensor Cal/Val/Sensors/Observing Systems (Space)."

FY08 - Continue investigations and implementation of life extension solutions as work arounds for degraded components. Continue performance assessments and continue to calibrate payload and validate data and to resolve anomalies. Continue assessing impact of differing orbits on metric effectiveness. Complete GFO Performance Validation Reports (every 17 days) and GFO Engineering Anomaly Resolution Reports (upon retirement of anomaly). Complete METOC metric end of year report. Efforts formerly part of the "Algorithm Development and Sensor Cal/Val/Sensors/Observing Systems (Space)."

FY09 - Continue Geodetic/geophysical Satellite (GEOSAT) Follow-On (GFO) performance assessments and continue to calibrate GFO payload and validate data and resolve anomalies. Continue investigations and implementation of life extension solutions as work arounds for degraded components of GFO. Complete GFO Performance Validation Reports (every 17 days) and GFO Engineering Anomaly Resolution Reports (upon retirement of anomaly). Begin engineering analysis of alternative configurations for a future satellite based altimeter and prepare acquisition documentation.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-7	PROGRAM ELEMENT NUMBER AND NAME 0305160N DEFENSE METEOROLOGICAL SATELLITE PROGRAM (SPACE)	PROJECT NUMBER AND NAME 1452 GEOSAT FOLLOW-ON

(U) C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name

Not Applicable

(U) D. ACQUISITION STRATEGY:

The naval service requires 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 Geodetic/geophysical Satellite GEOSAT Follow-On (GFO) satellite reaches its end of life, the program will transition to a future on-orbit altimeter to satisfy naval service unique altimetry requirements.

(U) E. MAJOR PERFORMERS:

FY07 - Ball Aerospace, Boulder, CO 32% Satellite Mission Support; Computer Sciences Corporation (CSC), Monterey, CA 50% Sensor Calibration, Data Validation and Technical Support.
FY08 - Ball Aerospace, Boulder, CO 32% Satellite Mission Support; Computer Sciences Corporation (CSC), Monterey, CA 50% Sensor Calibration, Data Validation and Technical Support.
FY09 - Ball Aerospace, Boulder, CO 6%, Computer Sciences Corp. (CSC) Monterey, CA 9% Sensor Calibration, Data Validation and Technical Support, contractor TBD for analysis of a future satellite based altimeter and preparation of acquisition documentation.

Exhibit R-3 Cost Analysis								DATE: February 2008				
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-7		PROGRAM ELEMENT 0305160N DEFENSE METEOROLOGICAL SATELLITE PROGRAM (SPACE)						PROJECT NUMBER AND NAME 1452 GEOSAT FOLLOW-ON				
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Software Development	CP	Ball Aerospace	85.984		N/A		N/A		N/A		85.984	
		Various	8.045		N/A		N/A		N/A		8.045	
Subtotal Product Development			94.029								94.029	
Remarks:												
Systems Engineering	CP	Ball Aerospace	3.241	0.370	N/A	0.250	N/A	0.260	N/A	Continuing	Continuing	Continuing
		Various	3.067	0.669	N/A	0.828	N/A	0.866	N/A	Continuing	Continuing	Continuing
	CP	TBD						4.400	N/A	Continuing	Continuing	Continuing
Subtotal Support			6.308	1.039		1.078		5.526		6.308	Continuing	Continuing
Remarks:												
Total Cost			100.337	1.039		1.078		5.526		100.337	Continuing	Continuing

EXHIBIT R4, Schedule Profile																													**DATE:** February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-7					**PROGRAM ELEMENT NUMBER AND NAME** 0305160N DEFENSE METEOROLOGICAL SATELLITE PROGRAM (SPACE)																				**PROJECT NUMBER AND NAME** 1452 GEOSAT FOLLOW-ON							
Fiscal Year	2007				2008				2009				2010				2011				2012				2013			
	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
Future Altimeter Mission									Pre-Acq Activities				Prime Contract Award				Design/Build							Launch		Initial Cal/Val		
GFO Altimeter Satellite						GFO Cal/Val/Life Extension Solutions																						

Exhibit R-4a, Schedule Detail					**DATE:** February 2008		
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-7	**PROGRAM ELEMENT** 0305160N DEFENSE METEOROLOGICAL SATELLITE PROGRAM (SPACE)				**PROJECT NUMBER AND NAME** 1452 GEOSAT FOLLOW-ON		
Schedule Profile	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Future Altimeter Mission			1Q	2Q			1Q
GFO Altimeter Satellite	1Q						

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2008
APPROPRIATION/BUDGET ACTIVITY	**PROGRAM ELEMENT NUMBER AND NAME**	**PROJECT NUMBER AND NAME**
RDT&E,N / BA - 7	0305160N DEFENSE METEOROLOGICAL SATELLITE PROGRAM (SPACE)	9999 Congressional Increases

(U) B. Accomplishments/Planned Program

9282 Congressional Adds - Radiation Hardened Vector Processor	FY07	FY08	FY09
Accomplishments/Effort/Subtotal Cost	0.971		
RDT&E Articles Quantity			

FY07 - Congressional Add for Radiation Hardened Vector Processor. Demonstrated satellite based signal processing using Field Programmable Object Array (FPOA) technology. The demonstration of FPOA technology reduces the risk of implementing full-earth staring/ Wide Field of View (WFOV) and large format Focal Plane Arrays (FPAs) that are being considered for future strategic missile warning systems.