CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification								DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-7**						R-1 ITEM NOMENCLATURE 0303109N Satellite Communications (Space)					
COST ($ in Millions)	Prior Years Cost	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Cost to Complete	Total Program
Total PE Cost	**239.796**	**54.743**	**112.970**	**379.541**	**504.753**	**298.456**	**201.110**	**305.348**	**158.978**	**Continuing**	**Continuing**
X0728 EHF SATCOM Terminals	**92.823**	**10.846**	**47.445**	**50.449**	**56.509**	**17.234**	**10.307**	**10.500**	**10.690**	**Continuing**	**Continuing**
X0731 Fleet Satellite Comm	**88.590**	**9.486**	**0.653**	**0.585**	**1.468**	**1.497**	**1.779**	**1.813**	**1.847**	**Continuing**	**Continuing**
X2472 Mobile User Segment	**58.383**	**34.411**	**59.018**	**315.801**	**428.177**	**243.464**	**118.507**	**221.182**	**73.246**	**89.000**	**1,641.189**
X9122 Advanced Wideband	**0.000**	**0.000**	**5.854**	**12.706**	**18.599**	**36.261**	**70.517**	**71.853**	**73.195**	**Continuing**	**Continuing**
											0.000
											0.000
Quantity of RDT&E Articles			**4**		**12**	**4**	**12**				**32**

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

(U) The Navy Extremely High Frequency (EHF) Satellite Communications (SATCOM) Program (NESP) provides for the development and production of terminals to provide anti-jam, low probability of intercept/detection communications capability for Command and Control of the fleet. NESP operates with Fleet Satellite (FLTSAT) EHF Packages (FEP), Ultra High Frequency (UHF) Follow On (UFO), and Milstar I/II Satellite Packages. The Milstar program is comprised of satellites, control stations, and aircraft, ship, and ground terminals to provide assured worldwide, secure, anti-jam, survivable communications for the National Command Authority, CINCs, and operational commanders. The Advanced EHF (AEHF) Operational Requirements Document (ORD) was validated by the Joint Requirements Oversight Council (JROC) on 22 Mar 1999. AEHF development cost estimates are included in the budget.

(U) The Navy Super High Frequency (SHF) Satellite Communications (SATCOM) program provides for the development and production of terminals to provide high capacity, reliable, low probability of intercept (LPI), secure, and jam resistant communications to Joint and Allied Forces. SHF SATCOM operates with the Defense Satellite Communication System (DSCS), DSCS Service Life Extension Program (SLEP), Wideband Gapfiller Satellite (WGS) System, and the Advanced Wideband System (AWS) satellites. The SHF SATCOM system is comprised of satellites, ground stations, and aircraft, ship and ground terminals to provide assured worldwide access to services such as Defense Information Systems Network (DISN), Global Command and Control System (GCCS), Plain Old Telephone Service (POTS), Secure Telephone Unit III (STU III) Secure Communications Service, Internet Protocol Routed Networks, and other digital services. The satellite systems SHF SATCOM operate over are transitioning from old technology DSCS III satellites to the more advanced DSCS SLEP and WGS satellites beginning in FY 1999 and continuing through FY 2005. The population of Navy SHF SATCOM terminals is also growing at a rapid pace. In order to meet the communication requirements of Navy users, advanced communication technologies for SHF SATCOM terminals must be developed to take full advantage of the capabilities of the new satellites in an efficient manner.

R-1 SHOPPING LIST - Item No. 192

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification	DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-7**	R-1 ITEM NOMENCLATURE 0303109N Satellite Communications (Space)

(U) The Sensitive Compartmented Information (SCI) Networks implements the Integrated Special Intelligence Communications portion of the ADNS architecture to provide services for transfer of Special Intelligence (SI) information between ships and shore activities in support of joint and combined operations. SCI Networks has been combined into the SI communications architecture and will provide real time indications and warning support to joint and component commanders through reliable high-speed transfer of sensor data and intelligence information. Enhanced interoperability with other services, agencies, and allies will permit a level of integration of SI operations not achievable with current systems.

(U) The Joint Ultra High Frequency (UHF) Military Satellite Communications Network Integrated Control System (JMINI) will provide dynamic centralized control of joint 5kHz and 25kHz UHF military satellite communications (MILSATCOM) voice and data resources (channels and Time Division Multiple Access (TDMA)) time slots via a globally integrated system of four control stations to be located at each of the three Naval Computer and Telecommunications Area Master Station (NCTAMS) sites plus Naval Computer and Telecommunications Station (NCTS) Guam.

(U) The Joint Tactical Radio System-Maritime (JTRS-M) will serve as the JMINI Control System Channel Controller and will provide tactical Joint interoperable UHF satellite communications per CJCSI 6251.01. JTRS-M/F will replace all non-compliant, mostly 1970's design radios and multiplexers with a software programmable radio that can meet present and future requirements in a cost effective and forward thinking manner. The JTRS-M/F will be evolutionary in development beginning with a modification of the Digital Modular Radio (DMR) to be compliant with JTRS hardware and software. When complete, the modified DMR (renamed as JTRS-M/F Block I) will meet narrowband requirements of the Navy tactical communications. Beginning in FY 2003, JTRS-M transfers to Program Element 0604280N, Project Number X3073.

(U) The Mobile User Objective System (MUOS) program provides for the development of the next generation DoD advanced narrowband communications satellite constellation. The current UHF Follow-On (UFO) constellation is expected to degrade below acceptable availability parameters by FY 2008 and will require replacement starting at that time. In addition, new user requirements have been identified and strategies have been modified to incorporate new concepts and technologies. The joint MUOS Integrating Integrated Product Team (IIPT) has developed an acquisition strategy to address the exponential growth of narrowband communications demands, as defined in the MUOS joint interest Operational Requirements Document (ORD). This program builds on state of the art technologies and commercial practices to develop a totally responsive joint warfighter system and provides for the development of the next generation DoD narrowband communications satellite constellation, the Mobile User Objective System (MUOS)

(U) The Navy Advanced Wideband Integrated Terminal Satellite Communications (SATCOM) program provides for the development and production of terminals to provide high capacity reliable, low probability of intercept (LPI), Anti-Jam (AJ), communications capability to the fleet. Terminals will support multiple data streams over Q/Ka-band, Ka-band, and X-band. The terminals will also support mesh networking without the need for gateway terminals.

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

R-1 SHOPPING LIST - Item No. 192

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**	PROGRAM ELEMENT NUMBER AND NAME 0303109N - Satellite Communications (Space)					PROJECT NUMBER AND NAME X0728 EHF SATCOM Terminals					
COST ($ in Millions)	Prior Years Cost	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Cost to Complete	Total Program
Project Cost	**92.823**	**10.846**	**47.445**	**50.449**	**56.509**	**17.234**	**10.307**	**10.500**	**10.690**	**Continuing**	**Continuing**
RDT&E Articles Qty			**4**		**12**						**16**

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

(U) Navy Extremely High Frequency (EHF) Satellite Communications (SATCOM) Program provides for the development and production of terminals to provide anti-jam (A/J), low probability of intercept (LPI)/detection communications capability for Command and Control of the fleet. The terminals will provide physical and electromagnetically survivable, worldwide communications in the current and projected electromagnetic and nuclear threat environments. Navy EHF terminals are interoperable with Army and Air Force terminals and will operate with Milstar as well as EHF packages on-board Ultra High Frequency (UHF) Follow-On (UFO) Satellites 4 through 11 and FLTSATCOM Satellites 7 and 8. The increased capability provided by EHF terminals is accomplished by use of the wider bandwidths available at extremely high frequencies, narrow antenna bandwidths, spread spectrum techniques, on-board satellite processing, and advanced signal processing technology.

(U) The Navy Super High Frequency (SHF) Satellite Communications (SATCOM) program provides for the development and production of terminals to provide high capacity, reliable, low probability of intercept (LPI), secure, and jam resistant communications to Joint and Allied Forces. SHF SATCOM operates with the Defense Satellite Communication System (DSCS), DSCS Service Life Extension Program (SLEP), Wideband Gapfiller Satellite (WGS) System, and the Advanced Wideband System (AWS) satellites. The SHF SATCOM system is comprised of satellites, ground stations, and aircraft, ship and ground terminals to provide assured worldwide access to services such as Defense Information Systems Network (DISN), Global Command and Control System (GCCS), Plain Old Telephone Service (POTS), Secure Telephone Unit III (STU III) Secure Communications Service, Internet Protocol Routed Networks, and other digital services. The satellite systems SHF SATCOM operate over are transitioning from old technology DSCS III satellites to the more advanced DSCS SLEP and WGS satellites beginning in FY 1999 and continuing through FY 2005. The population of Navy SHF SATCOM terminals is also growing at a rapid pace. In order to meet the communication requirements of Navy users, advanced communication technologies for SHF SATCOM terminals must be developed to take full advantage of the capabilities of the new satellites in an efficient manner.

(U) The EHF Medium Data Rate (MDR) upgrade program is near development completion and provides increased bandwidth by providing higher data rates [4.8 kilobits per second (Kbps) – 1.544 megabits per second (Mbps)] when communicating with Milstar II satellites.

(U) The Navy EHF Communications Controller (NECC) provides automated, netted tactical data information exchange over jam resistant EHF Low Data Rate (LDR) satellite links. The NECC will provide for load and channel sharing, resource management, communications management and planning, network control and monitoring, and packet switching.

(U) The EHF Time Division Multiple Access (TDMA) Interface Processor (TIP) will support wide area network (WAN) implementation through reliable, efficient, netted data exchange using MDR services. The MDR TIP combines support for general-purpose internet protocol (IP) data delivery and high speed, rapid delivery of tactical data within a single system architecture. TIP supports single-beam, multi-beam, and multi-satellite networks.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	0303109N - Satellite Communications (Space)	X0728 EHF SATCOM Terminals

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

(U) Advanced EHF is the follow-on satellite communications system that will provide worldwide, secure, survivable satellite communications to U.S. and International Partners strategic and tactical forces during all levels of conflict. The AEHF system provides an increase in single service capability from 1.5 Mbps to 8 Mbps, increases the number of coverage areas and retains A/J, LPI protection characteristics. It is compatible with today's Navy LDR/MDR terminals and will sustain the MILSATCOM architecture by providing connectivity across the spectrum of mission areas, to include land, air and naval warfare, special operations, strategic nuclear operations, strategic defense, theater missile defense, and space operations and intelligence. The AEHF system will replenish and improve on the capabilities of the Milstar system. The Milstar system is projected to begin degrading by FY 2003. The new system will equip the warfighters with the assured, jam resistant, secure communications as described in the ORD for the joint AEHF Satellite Communications System. The AEHF system will provide crosslinks within the AEHF constellation as well as between AEHF satellites and Milstar satellites in the backwards compatible mode. Mission requirements specific to Navy operations, including threat levels and scenarios, are contained in the AEHF ORD.

(U) The Challenge Athena Program requires the following enhancements: (a) Satellite Doppler Buffer Fill Meter, which is a "gauge" on the GUI that indicates the current level of fill of the satellite Doppler buffer. The terminal operator will be able to determine if the buffer is close to an overflow/underflow condition. With this indicator, he can then better plan when to re-center it without losing critical communications; (b) Channel Interleave Option for MIL-STD-188-165 Modes, that allow the channel interleaver to be enabled without the additional bandspreading required for framing and Reed-Solomon FEC that provides handover and EMI protection; (c) Higher Data Rates to increase the maximum provided data rate of the MD-1030B(V) 9 Modem to 4.096 Mbps with QPSK (Quadrature Phase Shift Keying) modulation. Higher available data rates in the MD 1030B(V)9 modem will allow the customer to achieve its near term throughput needs without putting up additional carriers; and (d) Shore Handover Error Burst. The MD-1030B(V)9 modem maintains its Bit Count Integrity (BCI) both at ship and shore based installations through shipboard antenna handover events. In addition, the MD-1030B(V)9 achieves virtual error free performance for ship's received data.

R-1 SHOPPING LIST - Item No. 192

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	0303109N - Satellite Communications (Space)	X0728 EHF SATCOM Terminals

(U) B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Milstar on Orbit test and checkout	0.306			
RDT&E Articles Quantity				

(U) Participated in Milstar on Orbit test and checkout of Milstar flight 5 and 6 (MST 8000). Continued to participate in joint interoperability communications with Army MDR Secure Mobile Antijam Reliable Tactical Terminal (SMART-T).

	FY 02	FY 03	FY 04	FY 05
Upgraded MD-1030B(V)9 modem	0.100			
RDT&E Articles Quantity				

(U) Upgraded MD-1030B(V)9 modem for the commercial satellite C band/CWSP (Challenge Athena).

	FY 02	FY 03	FY 04	FY 05
AN/WSC-6 WGS Terminal Upgrades	1.850	2.130	0.430	0.650
RDT&E Articles Quantity				

(U) FY02: Begin development of advanced SHF modems for Wideband Gapfiller Satellite system and AN/WSC-6 terminal upgrades.
(U) FY03: Continue development of an advanced modem system and AN/WSC-6 Wideband Gapfiller system terminal upgrades and conduct follow on test and evaluation.
(U) FY04: Developmental testing of advanced modem system and terminal upgrades.
(U) FY05: Operational testing of advanced modem system and terminal upgrades.

	FY 02	FY 03	FY 04	FY 05
TIP/NECC modifications	2.025			
RDT&E Articles Quantity				

(U) Development of TIP/NECC Increment 3 modifications.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	0303109N - Satellite Communications (Space)	X0728 EHF SATCOM Terminals

(U) B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
AEHF Development, First Phase	6.565	43.815	49.019	55.109
RDT&E Articles Quantity		4		12

(U) First phase of AEHF development for System Design and Development (SDD) for ship, shore and submarine platforms.

(U) **FY02:** Continued AEHF system engineering studies and analysis, performed terminal upgrade design and development, developed test procedures. Began development of terminal and satellite simulators and performed initial ground based testing.
(U) **FY03**: Continue engineering analysis and development of terminal and satellite simulators. Award contract for development of AEHF prototype terminal hardware and software. Hardware includes operator interface, Terminal Control Processor, Modem Control Processor, Antenna Pointing Unit and associated firmware. Software includes access control protocols, terminal Built In Testing (BIT)/BITE Adaptation Data Recorder, and LPI software. Develop a high-level test plan to ensure requirements are decomposed and the key modeling and analysis demonstrates acquisition, tracking, communications antenna checkout, antenna handover, motion, anti-jam, low probability of intercept, low probability of detection, link budgets, multiband/multimode feed/modem development, etc. Begin design and development of 4 AEHF prototypes (two ship, one sub, one shore).
(U) **FY04**: Complete development of satellite simulators. Continue hardware and software development under contract award and development of high-level test plan. Continue design and development of 4 AEHF prototypes.
(U) **FY05**: Complete AEHF prototype terminal hardware and software development under contract award. Complete design and development of 4 AEHF prototypes started in FY03. Begin design and development of Ka-band to integrate with AEHF prototypes. Begin production of 12 Engineering Development Models (EDM) for testing. Begin risk reduction phase necessary to demonstrate waveform interface compatibility testing between AEHF terminal and Lincoln Lab SATSIM and demonstrate payload-to-terminal on-orbit backward compatibility with existing Milstar constellation.

	FY 02	FY 03	FY 04	FY 05
EHF Polar		1.500	1.000	0.750
RDT&E Articles Quantity				

(U) EHF POLAR software development and systems engineering.

R-1 SHOPPING LIST - Item No. 192

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	0303109N - Satellite Communications (Space)	X0728 EHF SATCOM Terminals

(U) C. PROGRAM CHANGE SUMMARY:

(U) Funding:	FY 2002	FY 2003	FY 2004	FY 2005
President's Budget:	12.266	48.708		
Current BES/President's Budget	10.846	47.445	50.449	56.509
Total Adjustments	-1.420	-1.263		
Summary of Adjustments				
Section 8123: Management Reform Initiative	-0.108			
Section 8032: FFRDC	-0.047			
SBIR/STTR Transfer	-0.278			
JFK Battlegroup Force Interoperability Test (BFIT)	-0.027			
Task Force Web	-0.441			
Joint Mission Planning System Combat 1	-0.210			
Sec 313 Rev Economic Assumption	-0.026			
Economic Assumptions (SEC 8135)	-0.031	-0.273		
FY02 Federal Technology Transfer	-0.006			
Miscellaneous Navy Adjustments	-0.246			
Business Process Reform		-0.194		
IT Cost Growth		-0.089		
FY03 FFRDC Reduction		-0.090		
Miscellaneous Departmental Adjustments		-0.617		
Subtotal	-1.420	-1.263	0.000	0.000

(U) Schedule:

SDD contract award slipped from 12/02 to 5/03. Required Acquisition Strategy Report (ASR) was approved June 2002. The Request for Proposal (RFP) could not be released until ASR was approved. The Request for Proposal was released in August 2002 and contract award expected in May 2003.

(U) Technical:

Not Applicable.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	0303109N - Satellite Communications (Space)	X0728 EHF SATCOM Terminals

(U) D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
321500 - OPN Ship and Shore*	65.387	46.592	75.589	20.958	108.349	114.69	108.148	111.626	Continuing	Continuing

*Includes EHF terminal installation costs.

(U) Related RDT&E:

(U) PE 0303603F, Milstar

(U) PE 0303601F, Air Force Satellite Communications

(U) PE 0303142A, Army Extremely High Frequency Communications Terminal

(U) E. ACQUISITION STRATEGY:

(U) Navy Multiband Terminal (NMT) Concept Exploration contracts were awarded in FY01. Two System Development and Demonstration (SDD) contracts will be competively awarded in FY 2003 for the development and demonstration of four prototype terminals and in FY 2005 for the development, demonstration and procurement of twelve Engineering Developmental Models (EDMs). Prototype testing for downselect will occur after 28 months with a production option scheduled for FY 2005.

R-1 SHOPPING LIST - Item No. 192

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**		PROGRAM ELEMENT 0303109N - Satellite Communications (Space)				PROJECT NUMBER AND NAME X0728 EHF SATCOM Terminals						
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
Primary Hardware Development	TBD	TBD		28.739	12/02	42.320	12/03	47.929	12/04	Continuing	Continuing	
Ancillary Hardware Development	CPFF	Raytheon (Marlborogh, MA)	55.396	2.867	10/02					Continuing	Continuing	
Aircraft Integration											0.000	
Ship Integration	WR	NUWC (Newport, RI)		0.907	10/02					Continuing	Continuing	
Systems Engineering	WR	SSC SD (San Diego)	13.241							Continuing	Continuing	
Systems Engineering	WR	NUWC (Newport, RI)		2.092	10/02					Continuing	Continuing	
Systems Engineering	T&M	TCI (San Diego, CA)		1.604	10/02					Continuing	Continuing	
Systems Engineering	Various	Various	8.161							Continuing	Continuing	
Training Development	WR	TCI (San Diego, CA)		1.100	10/02					Continuing	Continuing	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			76.798	37.308		42.320		47.929		Continuing	Continuing	

Remarks:

Development Support	WR	SSC SD (San Diego, CA)	7.015	1.250	10/02	0.306	12/03	0.383	12/04	Continuing	Continuing	
Software Development	WR	SSC SD (San Diego, CA)		1.077	10/02	1.393	12/03	1.791	12/04	Continuing	Continuing	
Software Development	WR	NUWC (Newport, RI)	5.438	1.500	10/02	0.982	12/03	0.750	12/04	Continuing	Continuing	
Integrated Logistics Support	T&M	TCI (San Diego, CA)		1.353	10/02					Continuing	Continuing	
Technical Data											0.000	
Studies & Analyses	WR	SSC SD (San Diego, CA)	5.116	1.371	10/02	5.018	12/03	5.006	12/04	Continuing	Continuing	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			17.569	6.552		7.699		7.930		Continuing	Continuing	

Remarks:

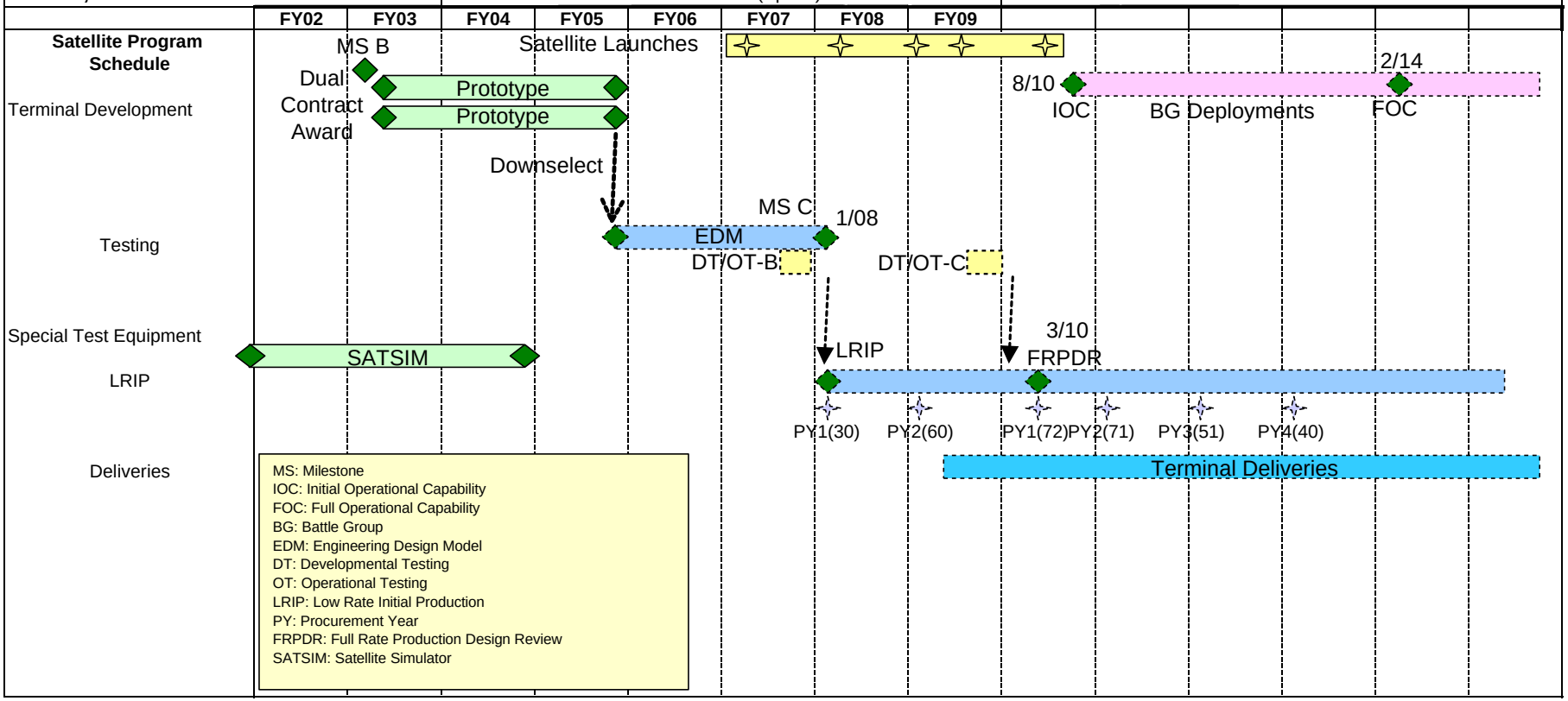
CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**		PROGRAM ELEMENT 0303109N - Satellite Communications (Space)				PROJECT NUMBER AND NAME X0728 EHF SATCOM Terminals						
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	WR	SSC SD (San Diego, CA)	9.302	0.667	10/02	0.430	12/03			Continuing	Continuing	
Operational Test & Evaluation	WR	SSC SD (San Diego, CA)		0.114	10/02			0.650	12/04	Continuing	Continuing	
Live Fire Test & Evaluation											0.000	
Test Assets											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			9.302	0.780		0.430		0.650		Continuing	Continuing	
Remarks:												
Contractor Engineering Support	T&M	BAH (San Diego, CA)		0.400	10/02					Continuing	Continuing	
Government Engineering Support											0.000	
Program Management Support	T&M	Various		2.355	10/02					Continuing	Continuing	
Travel				0.050	10/02					Continuing	Continuing	
Transportation											0.000	
SBIR Assessment											0.000	
Subtotal Management			0.000	2.805		0.000		0.000		Continuing	Continuing	
Remarks:												
Total Cost			103.669	47.445		50.449		56.509		Continuing	Continuing	
Remarks:												

R-1 SHOPPING LIST - Item No. 192

CLASSIFICATION:

EXHIBIT R4, Schedule Profile			DATE: February 2003
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**	PROGRAM ELEMENT NUMBER AND NAME 0303109N - Satellite Communications (Space)	PROJECT NUMBER AND NAME X0728 EHF SATCOM Terminals	



CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&BA-7**	PROGRAM ELEMENT 0303109N - Satellite Communications (Space)				PROJECT NUMBER AND NAME X0728 EHF SATCOM Terminals			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Milestone B (MSB)		2Q						
Contract Award		3Q						
Prototype Complete				4Q				
Engineering Development Model (EDM) Begins				4Q				
Developmental Testing					2Q			
Operational Testing (Platform Operational Assessment)					3Q			
Milestone C (MS C)							2Q	
Start Low-Rate Initial Production I (LRIP I)							2Q	
Start Low-Rate Initial Production II								1Q
Low-Rate Initial Production I Delivery								3Q
Developmental Testing								3Q
Operational Evaluation (AEHF Operational Evaluation)								4Q

R-1 SHOPPING LIST - Item No. 192

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: Febuary 2003			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**	PROGRAM ELEMENT NUMBER AND NAME PE: 0303109N Satellite Communications (Space)					PROJECT NUMBER AND NAME X0731 Fleet Satellite Comm					
COST ($ in Millions)	Prior Years Cost	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Cost to Complete	Total Program
Project Cost	**88.590**	**9.486**	**0.653**	**0.585**	**1.468**	**1.497**	**1.779**	**1.813**	**1.847**	**Continuing**	**Continuing**
RDT&E Articles Qty											**0**

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

(U) The Sensitive Compartmented Information (SCI) Networks implements the Integrated Special Intelligence Communications portion of the ADNS architecture to provide services for transfer of Special Intelligence (SI) information between ships and shore activities in support of joint and combined operations. SCI Networks has been combined into the SI communications architecture and will provide real time indications and warning support to joint and component commanders through reliable high-speed transfer of sensor data and intelligence information. Enhanced interoperability with other services, agencies, and allies will permit a level of integration of SI operations not achievable with current systems.

(U) The Joint Ultra High Frequency (UHF) Military Satellite Communications Network Integrated Control System (JMINI) will provide dynamic centralized control of joint 5kHz and 25kHz UHF military satellite communications (MILSATCOM) voice and data resources (channels and Time Division Multiple Access (TDMA)) time slots via a globally integrated system of four control stations to be located at each of the three Naval Computer and Telecommunications Area Master Station (NCTAMS) sites plus Naval Computer and Telecommunications Station (NCTS) Guam.

(U) The Joint Tactical Radio System-Maritime (JTRS-M) will serve as the JMINI Control System Channel Controller and will provide tactical Joint interoperable UHF satellite communications per CJCSI 6251.01. JTRS-M/F will replace all non-compliant, mostly 1970's design radios and multiplexers with a software programmable radio that can meet present and future requirements in a cost effective and forward thinking manner. The JTRS-M/F will be evolutionary in development beginning with a modification of the Digital Modular Radio (DMR) to be compliant with JTRS hardware and software. When complete, the modified DMR (renamed as JTRS M/F Block I) will meet narrowband requirements of the Navy tactical communications. Beginning in FY 2003, JTRS-M transfers to Program Element 0604280N, Project Number X3073.

R-1 SHOPPING LIST - Item No. 192

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **Febuary 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N /BA-7	PE: 0303109N Satellite Communications (Space)	X0731 Fleet Satellite Comm

(U) B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
DMR	8.791	(transfers to PE 0604280N Project Number X3073 in FY 03)		
RDT&E Articles Quantity				

Initiated modification of the Digital Modular Radio (DMR), identified as the Joint Tactical Radio System (JTRS) candidate radio, to be compliant with JTRS software architecture. Also, initiated development of contract package for JTRS-M/F Block II as the follow-on to the modified DMR.

These efforts will continue in Program Element 0604280N, Project Number X3073 JTRS-M/F beginning in FY 2003.

	FY 02	FY 03	FY 04	FY 05
JMINI NMS				0.822
RDT&E Articles Quantity				

Research of advanced Demand Assigned Multiple Access (DAMA) waveforms, Integrated Waveforms (IW), and modification of the JMINI CS system for compliance with Mobile User Objective System (MUOS) architecture

	FY 02	FY 03	FY 04	FY 05
SCI Networks	0.695	0.653	0.585	0.646
RDT&E Articles Quantity				

Continued integration and implementation of SCI Networks and associated Special Intelligence Communication capabilities. Development and testing of submarine upgrades, developmental testing of surface upgrades (DTIIIA), Functional Configuration Audit (FCA) and Physical Configuration Audit (PCA) of SCI Networks were accomplished during FY02. Continue DT&E and OT&E of submarine upgrade (DTIID and OTIIB), design, integration and testing (DTIIIB, DTIIIC, OTIIIA) of software and hardware for sub, surface, and shore. DTIID and OTIIB will support MSIIIB. DTIIIB, DTIIIC, and OTIIIA will support MS-IIIC.

R-1 SHOPPING LIST - Item No. 192

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: Febuary 2003
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	PE: 0303109N Satellite Communications (Space)	X0731 Fleet Satellite Comm

(U) C. PROGRAM CHANGE SUMMARY:

(U) Funding:	FY 2002	FY 2003	FY 2004	FY 2005
President's Budget:	4.595	0.669		
Current BES/President's Budget (PB 04)	9.486	0.653	0.585	1.468
Total Adjustments	4.891	-0.016	0.000	0.000
Summary of Adjustments				
Sec 8123 Mgmt Reform Initiative	-0.041			
SBIR	-0.102			
Congressional Add JTRS Ver 2	6.000			
Joint Mission Planning System Combat 1 Program	-0.089			
Sec 313 Rev Econ Assumptions	-0.010			
Sec 8135 Econ Assumptions	-0.029	-0.004		
Miscellaneous Department Adjustments	-0.838	-0.008		
Sec 8135 Business Process Reform		-0.003		
Sec 8109 IT Cost Growth		-0.001		
Subtotal	4.891	-0.016		

(U) Schedule:

OT-IIB scheduled for 1Q/02 has been re-scheduled for two separate testing events: OT-IIIA for surface ships in 4Q/04 and OT-IIB for submarines in 1Q/04.

(U) Technical:

Not Applicable

R-1 SHOPPING LIST - Item No. 192

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **Febuary 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	PE: 0303109N Satellite Communications (Space)	X0731 Fleet Satellite Comm

(U) D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
3050 – Comm Auto - SCI NETWORKS*	10.879	11.499	0.959	0.825	4.542	4.659	4.599	4.663	Continuing	Continuing
3215 – SATCOM - DMR	5.035	2.038							Continuing	7.073
3215 – SATCOM - JMINI-NMS	15.476	6.160	9.425	6.427					Continuing	37.488

*Includes terminal installation costs.

(U) E. ACQUISITION STRATEGY:

SCI-NETWORKS: Program is utilizing Cost Plus Fixed Fee contract vehicle. OPN SATCOM: Program is utilizing Cost Plus Fixed Fee and Cost Plus Incentive Fee contract vehicle.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **Febuary 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**		PROGRAM ELEMENT PE: 0303109N Satellite Communications (Space)			PROJECT NUMBER AND NAME X0731 Fleet Satellite Comm							
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
Con	FPI	Titan	6.309								6.309	
Primary Hardware Development	FFP	SRC	18.505								18.505	
Primary Hardware Development	PO	NAVSUP/SRC	5.223								5.223	
Primary Hardware Development	Var	Various	16.491	0.653	12/02	0.585	12/03	1.468	12/04	Continuing	Continuing	
Primary Hardware Development	CPFF	CSC	3.588								3.588	
Primary Hardware Development	PO	NAVAIR/ISC	1.176								1.176	
Primary Hardware Development	Var	Various	9.344								9.344	
Primary Hardware Development	FFP	Motorola	8.045								8.045	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
											0.000	
											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			68.681	0.653		0.585		1.468		0.000	71.387	

Remarks:

R-1 SHOPPING LIST - Item No. 192

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **Febuary 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**		PROGRAM ELEMENT PE: 0303109N Satellite Communications (Space)			PROJECT NUMBER AND NAME X0731 Fleet Satellite Comm							
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
Development Support											0.000	
Software Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
Studies & Analyses											0.000	
GFE											0.000	
Award Fees											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											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:

R-1 SHOPPING LIST - Item No. 192

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **Febuary 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**		PROGRAM ELEMENT PE: 0303109N Satellite Communications (Space)			PROJECT NUMBER AND NAME X0731 Fleet Satellite Comm							
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	PO	SSC SD	1.905								1.905	
Operational Test & Evaluation	MIPR	OPTEVFOR	0.238								0.238	
Operational Test & Evaluation	Var	Various	9.296								9.296	
Operational Test & Evaluation	PO	SSC CH	1.731								1.731	
Operational Test & Evaluation	CPAF	BAH	0.591								0.591	
Award Fees											0.000	
Subtotal T&E			13.761	0.000		0.000		0.000		0.000	13.761	
Remarks:												
Contractor Engineering Support	CPFF	CSC	3.588								3.588	
Contractor Engineering Support	CPFF	ACS	0.674								0.674	
Government Engineering Support	PO	NAVAIR	1.176								1.176	
Government Engineering Support	Var	Various	9.896								9.896	
Government Engineering Support	PO	SSC CH	0.300								0.300	
											0.000	
Subtotal Management			15.634	0.000		0.000		0.000		0.000	15.634	
Remarks:												
Total Cost			98.076	0.653		0.585		1.468		0.000	100.782	
Remarks:												

R-1 SHOPPING LIST - Item No. 192

CLASSIFICATION:

EXHIBIT R4, Schedule Profile			DATE: **Febuary 2003**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**	PROGRAM ELEMENT NUMBER AND NAME PE: 0303109N Satellite Communications (Space)	PROJECT NUMBER AND NAME X0731 Fleet Satellite Comm - DMR	

Fiscal Year	2002				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	1	2	3	4
Acquisition Milestones																																
Prototype Phase																																
Radar System Development																																
EDM Radar Delivery																																
Software 1XXSW Delivery 2XXSW Delivery 5XXSW Delivery																																
Test & Evaluation Milestones																																
Test Readiness Review			DTRR △	PRR △																												
Development Test		DT-IID ▭																														
Operational Test			DT-IIE ▭																													
Technical Evaluation							OT-11A ▭																									
			▭ TECHEVAL																													
Production Milestones																																
LRIP I																																
LRIPII																																
FRP																																
Deliveries																																
LRIP II Delivery	LRIP II ▭																															

R-1 SHOPPING LIST - Item No. 192

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

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **Febuary 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**	PROGRAM ELEMENT PE: 0303109N Satellite Communications (Space)				PROJECT NUMBER AND NAME X0731 Fleet Satellite Comm - DMR			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Prototype Phase								
System Design Review (SDR)								
Milestone II (MSII)								
Contract Preparation								
Software Specification Review (SSR)								
Preliminary Design Review (PDR)								
System Development								
Critical Design Review (CDR)								
Quality Design and Build								
Developmental Test Readiness Review (DTRR)	3Q							
Developmental Testing (DT-IIA)								
Eng Dev Model (EDM) Radar Delivery - Lab								
Software Delivery 1XXSW								
Preproduction Readiness Review (PRR)	~~4Q~~							
EDM Radar Delivery - Flt Related								
Milestone C (MS C)								
Operational Testing (OT-IIA)		3Q						
Start Low-Rate Initial Production I (LRIP I)								
Software Delivery 2XXSW								
Developmental Testing (DT-IIB1)								
Developmental Testing (DT-IIB2)								
Start Low-Rate Initial Production II								
Operational Testing (OT-IIB)								
Developmental Testing (DT-IIC)								
Functional Configuration Audit (FCA)								
Low-Rate Initial Production I Delivery								
Technical Evaluation (TECHEVAL)	3Q							
Physical Configuration Audit								
Operational Evaluation (OT-IIC) (OPEVAL)								
Low-Rate Initial Production II Delivery	1Q							
IOC								
Full Rate Production (FRP) Decision								
Full Rate Production Start								
First Deployment								
Developmental Testing (DT-IID)	1Q continue	through 3Q						
Developmental Testing (DT-IIE)	3Q							
Software Delivery 5XXSW								

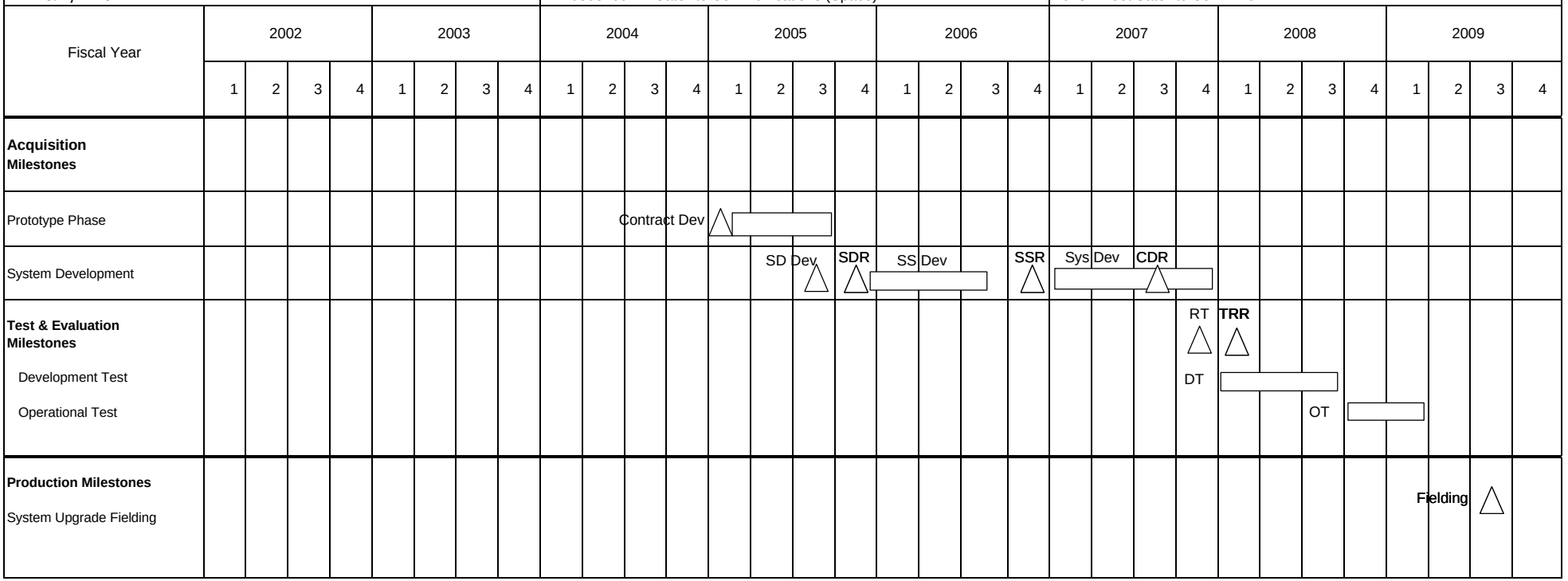
CLASSIFICATION:

EXHIBIT R4, Schedule Profile — DATE: **Febuary 2003**

APPROPRIATION/BUDGET ACTIVITY: **RDT&E, N / BA-7**

PROGRAM ELEMENT NUMBER AND NAME: PE: 0303109N Satellite Communications (Space)

PROJECT NUMBER AND NAME: X0731 Fleet Satellite Comm - JMINI



R-1 SHOPPING LIST - Item No. 192

CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: **Febuary 2003**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**	PROGRAM ELEMENT PE: 0303109N Satellite Communications (Space)				PROJECT NUMBER AND NAME X0731 Fleet Satellite Comm - JMINI			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Prototype Phase				1Q - 3Q				
Contract Development				1Q				
Software Design Development				3Q				
Software Design Review (SDR)				4Q				
Software Specification Development				4Q	1Q - 3Q			
Software Specification Review (SSR)					4Q			
System Development						1Q - 4Q		
Critical Design Review (CDR)						3Q		
Regression Testing						4Q	1Q	
Test Readiness Review (TRR)							1Q	
Developmental Testing							1Q - 3Q	
Operational Evaluation							4Q	1Q
System Fielding								3Q

CLASSIFICATION:

EXHIBIT R4, Schedule Profile | DATE: **February 2003**

APPROPRIATION/BUDGET ACTIVITY: **RDT&E, N / BA-7**

PROGRAM ELEMENT NUMBER AND NAME: 0303109N, Satellite Communications (Space)

PROJECT NUMBER AND NAME: X0731, FLT SATCOM / SCI NETWORKS

Fiscal Year	2002				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	1	2	3	4
Acquisition Milestones	MS IIIA Surface								MS IIIB Submarine					MS IIIC Surface/ Submarine																			
									DT IIIB Lab Test																									
Test & Evaluation Milestones	DT IIIA Lab Test for SW								DT IID Techeval Sub				DT IIIC																			
Development Test																																
Operational Test																																
Production Milestones									OT IIB Submarine				OT IIIA																			
Deliveries																																

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**	PROGRAM ELEMENT 0303109N, Satellite Communications (Space)				PROJECT NUMBER AND NAME X0731, FLT SATCOM - / SCI NETWORKS			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Milestone Decision (MS-IIIA)	1Q							
Milestone Decision (MS-IIIB)			1Q					
Milestone Decision (MS-IIIC)				2Q				
Developmental Testing (DT-IIIA)	4Q							
Developmental Testing (DT-IIIB)			1Q					
Developmental Testing (DT-IIIC)			3Q					
Operational Testing (OT-IIIA)			4Q					
Operational Testing (OT-IIB)			1Q					

R-1 SHOPPING LIST - Item No. 192

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**	PROGRAM ELEMENT NUMBER AND NAME 0303109N Satellite Communications (Space)					PROJECT NUMBER AND NAME X2472 Mobile User Segment					
COST ($ in Millions)	Prior Years Cost	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Cost to Complete	Total Program
Project Cost	**58.383**	**34.411**	**59.018**	**315.801**	**428.177**	**243.464**	**118.507**	**221.182**	**73.246**	**89.000**	**1,641.189**
RDT&E Articles Qty											**0**

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

(U) This program provides for the development of the next generation DoD narrowband communications satellite constellation, the Mobile User Objective System (MUOS).

(U) The current UHF Follow-On (UFO) constellation is expected to degrade below acceptable availability parameters and will require phased replacement by FY 2008. In addition, new user requirements have been identified and strategies have been modified to incorporate new concepts and technologies. The joint MUOS Integrating Integrated Product Team (IIPT) has developed an acquisition strategy to address the exponential growth of narrowband communications demands, as defined in the MUOS joint interest Operational Requirements Document (ORD). This program builds on state of the art technologies and commercial practices to develop a comprehensive joint warfighter system.

(U) This RDT&E effort supports the program objectives by assisting in identifying the most effective way to field a new system by FY 2008. Two Component Advanced Development (CAD) contracts were awarded in Q4 FY 2002. The CAD contracts will continue through FY 2003. In FY 2004, a single Risk Reduction & Design Development (RRDD) contract will be awarded after Key Decision Point (KDP) B in Q2 FY 2004.

R-1 SHOPPING LIST - Item No. 192

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA7	0303109N Satellite Communications (Space)	X2472 Mobile User Segment

(U) B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	34.411	59.018	315.801	428.177
RDT&E Articles Quantity				

(U) FY02: Awarded MUOS CAD contracts and associated engineering tasks.

(U) FY03: Fully fund MUOS CAD contracts and associated system engineering tasks.

(U) FY04: Award MUOS Risk Reduction and Design Development (RRDD) contract and fund associated system engineering tasks.

(U) FY05: Continue funding for MUOS RRDD contract and associated system engineering tasks.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	0303109N Satellite Communications (Space)	X2472 Mobile User Segment

(U) C. PROGRAM CHANGE SUMMARY:

(U) Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget:	37.369	60.526		
Current BES/President's Budget	34.411	59.018	315.801	428.177
Total Adjustments	-2.958	-1.508		
Summary of Adjustments				
Management Reform Initiative (Sec 8123)	-0.330			
FFRDC	-0.006	-0.048		
FY2002 Miscellaneous Adjustments	-0.748			
Economic Assumptions (Sec 8135)	-0.098	-0.339		
Business Process Reform (Sec 8100)		-0.242		
IT Cost Growth (Sec 8109)		-0.111		
Federal Technolgy Transfer	-0.018			
Revised Economic Assumptions (Sec 313 P.L 107-206)	-0.079			
MUOS (SBIR)	-0.958			
BTR (.376 for retest of JFK BFIT and .345 for IT/IO and space operqtional efforts	-0.721			
Miscellaneous Department Adjustments		-0.768		
Subtotal	-2.958	-1.508	0.000	0.000

(U) Schedule:

MUOS Program Milestone A moved from 3rd Qtr 02 to 4th Qtr 02. Award of two MUOS CAD contracts moved from 3rd Qtr 02 to 4th Qtr 02. (X2472).

(U) Technical:

Not Applicable

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	0303109N Satellite Comminications (Space)	X2472 Mobile User Segment

(U) D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
2433 - Fleet Satellite Communications Follow-on				362.255	482.791	496.402	571.773	550.375	2198.6	4662.2

(U) E. ACQUISITION STRATEGY: *

Concept Exploration contracts were awarded in early FY 2000 and completed in late FY 2001. Two Component Advancement Development (CAD) contracts were awarded in Q4 FY 2002. A RRDD contract will be awarded in early FY 2004 with production option in FY 2005 and first launch in FY 2008.

(U) F. MAJOR PERFORMERS: **

N/A

R-1 SHOPPING LIST - Item No. 192

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**			PROGRAM ELEMENT 0303109N Satellite Communications (Space)			PROJECT NUMBER AND NAME X2472 Mobile User Segment						
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
MUOS Contracts and Demos	COM/FFP		57.139	50.064	1Q	307.000	2Q	415.739	1Q	726.548	1,556.490	1,336.239
UFO Digital Receiver	FFP		18.200								18.200	18.200
AoA for MUOS	MIPR		2.782								2.782	
Government Studies	VAR		0.711								0.711	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Product Development			78.832	50.064		307.000		415.739		726.548	1,578.183	
Remarks:												
Development Support											0.000	
Software Development											0.000	
Integrated Logistics Support			0.301	0.215				0.260		0.396	1.172	
Configuration Management											0.000	
Technical Data											0.000	
Studies & Analyses											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			0.301	0.215		0.000		0.260		0.396	1.172	
Remarks:												

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**		PROGRAM ELEMENT 0303109N Satellite Communications (Space)				PROJECT NUMBER AND NAME X2472 Mobile User Segment						
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	
Contractor Engineering Support	VAR		8.010	4.585		4.000		6.920		10.484	33.999	
Government Engineering Support	VAR		1.400	0.506		1.000		1.210		1.833	5.949	
Program Management Support	VAR		4.251	3.248		3.600		3.848		5.528	20.475	
Travel				0.400		0.201		0.200		0.450	1.251	
Transportation											0.000	
											0.000	
Subtotal Management			13.661	8.739		8.801		12.178		18.295	61.674	
Remarks:												
Total Cost			92.794	59.018		315.801		428.177		745.239	1,641.029	
Remarks:												

R-1 SHOPPING LIST - Item No. 192

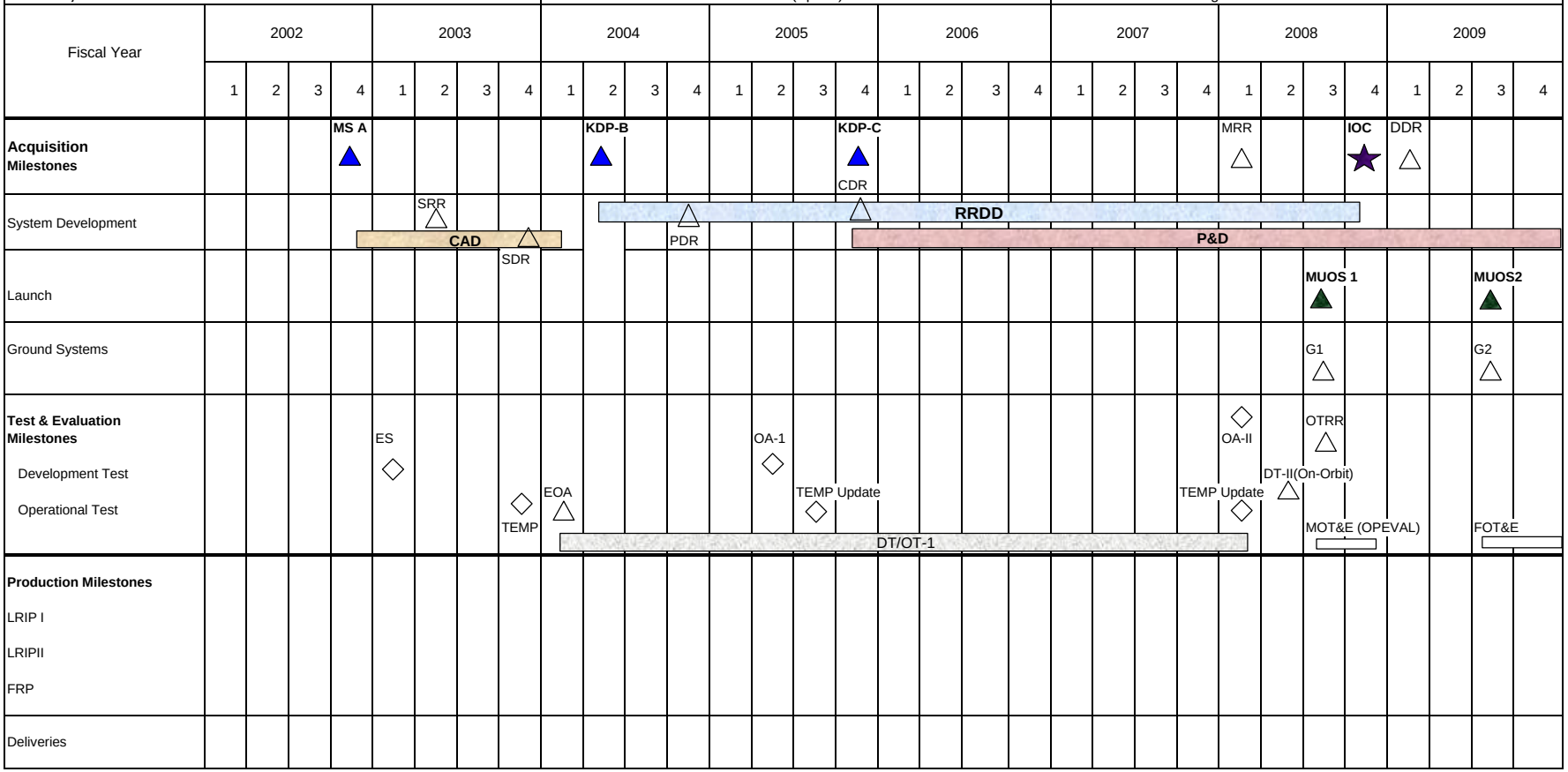
CLASSIFICATION:

EXHIBIT R4, Schedule Profile — DATE: **February 2003**

APPROPRIATION/BUDGET ACTIVITY: **RDT&E, N / BA-7**

PROGRAM ELEMENT NUMBER AND NAME: 0303109N Satellite Communications (Space)

PROJECT NUMBER AND NAME: X2472 - Mobile User Segment



R-1 SHOPPING LIST - Item No. 192

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

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&BA-7**	PROGRAM ELEMENT 0303109N Satellite Communications (Space)				PROJECT NUMBER AND NAME X2472 Mobile User Segment			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Milestone A	4Q							
Component Advanced Development (CAD)	4Q	1Q-4Q						
Early Operational Assessment (EOA)			1Q					
System Requirements Review		2Q						
Evaluation Strategy (ES)		1Q						
System Design Review (SDR)			1Q					
Key Decision Point B			2Q					
Preliminary Design Review (PDR)			4Q					
Test and Evaluation Master Plan (TEMP)		4Q						
Deveolpmental Testing (DT)/Operational Testing(OT-1)			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-2Q	
Key Decision Point C				4Q				
Critical Design Review (CDR)				4Q				
Operational Assessment (OA-I)				2Q				
Test and Evaluation Master Plan (TEMP) Update				3Q				
Risk Reduction and Design Development (RRDD)			2Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-2Q
Production& Development (P&D)				4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Launch 1 (M1)							3Q	
Ground System (1)							3Q	
Mission Readiness Review (MRR)							1Q	
IOC							4Q	
Launch 2 (M2)								3Q
Ground System (2)								3Q
Operational Assessment (OA-II)							1Q	
Test and Evaluation Master Plan (TEMP) Update							1Q	
Opertional Test Readiness Review (OTRR) for MOT&E							3Q	
Developmental Testing (DT-IIA) (On-Orbit)							2Q	
Multi-Service Opertional Testing & Evaluation ((OPEVAL) (MOT&E)							3Q-4Q	
Follow-On Test Evaluation (FOT&E)								2Q-4Q

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**	PROGRAM ELEMENT NUMBER AND NAME 0303109N - Satellite Communications (Space)					PROJECT NUMBER AND NAME X9122 Advanced Wideband System					
COST ($ in Millions)	Prior Years Cost	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Cost to Complete	Total Program
Project Cost	**0.000**	**0.000**	**5.854**	**12.706**	**18.599**	**36.261**	**70.517**	**71.853**	**73.195**	**Continuing**	**Continuing**
RDT&E Articles Qty						**4**	**12**				**16**

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

(U) The Navy Advanced Wideband Integrated Terminal Satellite Communications (SATCOM) program provides for the development and production of terminals to provide high capacity reliable, low probability of intercept (LPI), Anti-Jam (AJ), communications capability to the fleet. Terminals will support multiple data streams over Q/Ka-band, Ka-band, and X-band. The terminals will also support mesh networking without the need for gateway terminals.

R-1 SHOPPING LIST - Item No. 192

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	0303109N - Satellite Communications (Space)	X9122 Advanced Wideband System

(U) B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
AWS Concept Development		5.854	12.706	18.599
RDT&E Articles Quantity				

(U) FY03: Begin development of wideband tactical, protected tactical, and broadcast terminals to operate with Advanced Wideband System (AWS). Begin development of strategic terminals that will operate with the protected satellites in mid-latitude and polar regions. Development will include concept exploration and systems engineering studies and analysis. These studies and analysis will determine optimum methods to implement software programmable, modular, reconfigurable, and upgradeable SATCOM terminals. They will also investigate multi-band feed and phased array options. Terminal modem concepts will also be explored. Risk areas will be explored and documented. Terminal designs will be explored to mitigate these risk areas.

(U) FY04: Continue concept exploration systems engineering studies and analysis. Build and test prototype systems components including the multiband feed assemblies, multiband Radio Frequency (RF) equipment, multiband antenna radome for Radar Cross Section reduction and RF transmissibility, and fast acting multi-antenna switching systems. FY 2004 goals are to validate component designs for migration to system level inclusion.

(U) FY05: Migrate component prototypes tested in FY 2004 into a system level design. Begin system level engineering process to determine optimal tradeoffs between cost and performance. Build prototypes of system level components (multi band antenna system, multi-band IF and RF generation systems) and test.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	0303109N - Satellite Communications (Space)	X9122 Advanced Wideband System

(U) C. PROGRAM CHANGE SUMMARY:

(U) Funding:	FY 2002	FY 2003	FY 2004	FY 2005
President's Budget:	0.000	6.000		
Current BES/President's Budget	0.000	5.854	12.706	18.599
Total Adjustments	0.000	-0.146		
Summary of Adjustments				
Business Process Reform		-0.024		
Economic Assumptions		-0.034		
IT Cost Growth		-0.011		
Miscellaneous Department Adjustments		-0.077		
Subtotal	0.000	-0.146	0.000	0.000

(U) Schedule:

Schedule profile has not yet been developed by the program office because the Acquisition Strategy Report (ASR) has not been drafted. The ASR is used as a basis for the schedule profile. For this reason, schedule profile exhibits are not included in this submit.

(U) Technical:

Not Applicable.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	0303109N - Satellite Communications (Space)	X9122 Advanced Wideband System

(U) D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
321500 - OPN Ship and Shore*	NA	NA	NA	NA	NA	NA	25.400	95.000	312.932	433.332

(U) E. ACQUISITION STRATEGY: *

TBD until the system architecture is defined by the ongoing Transformational Communication Study.

(U) F. MAJOR PERFORMERS: **

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**			PROGRAM ELEMENT 0303109N - Satellite Communications (Space)			PROJECT NUMBER AND NAME X9122 Advanced Wideband System						
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
Primary Hardware Development	CPFF	TBD	NA	0.000	NA	9.774	11/03	14.685	11/04	Continuing	Continuing	
Ancillary Hardware Development											0.000	
Aircraft Integration											0.000	
Ship Integration											0.000	
Ship Suitability											0.000	
Systems Engineering	TBD	Various		1.112						Continuing	Continuing	
Training Development											0.000	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			0.000	1.112		9.774		14.685		Continuing	Continuing	
Remarks:												
Development Support	TBD	Various		0.340		0.977		1.468		Continuing	Continuing	
Software Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
Studies & Analyses	TBD	Various		3.420		0.977		1.468		Continuing	Continuing	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			0.000	3.760		1.955		2.936		Continuing	Continuing	
Remarks:												

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**			PROGRAM ELEMENT 0303109N - Satellite Communications (Space)			PROJECT NUMBER AND NAME X9122 Advanced Wideband System						
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											0.000	
Government Engineering Support											0.000	
Program Management Support	TBD	Various		0.894		0.977		0.979		Continuing	Continuing	
Travel				0.088						Continuing	Continuing	
Transportation											0.000	
SBIR Assessment											0.000	
Subtotal Management			0.000	0.982		0.977		0.979		Continuing	Continuing	
Remarks:												
Total Cost			0.000	5.854		12.706		18.599		Continuing	Continuing	
Remarks:												

R-1 SHOPPING LIST - Item No. 192