

EXHIBIT R-2, RDT&E Budget Item Justification						DATE: February 2007																																																									
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-7						R-1 ITEM NOMENCLATURE 0204311N-Integrated Surveillance Systems																																																									
COST (\$ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013																																																							
Total PE Cost	27.010	40.429	27.740	23.628	25.339	25.431	26.035	26.476																																																							
0766-IUSS Detection and Classification System	23.116	29.420	27.740	23.628	25.339	25.431	26.035	26.476																																																							
9792 IUSS Common Processor Automation	2.218	0.000	0.000	0.000	0.000	0.000	0.000	0.000																																																							
9793 Ultra-Thin Disposable Fiberoptic Undersea Surveillance	1.676	0.000	0.000	0.000	0.000	0.000	0.000	0.000																																																							
9A71 High Channel Count Interrogator for Sensor Arrays	0.000	1.445	0.000	0.000	0.000	0.000	0.000	0.000																																																							
9A72 Tunable Laser and Laser Array	0.000	1.395	0.000	0.000	0.000	0.000	0.000	0.000																																																							
9A73 Program Increase	0.000	8.169	0.000	0.000	0.000	0.000	0.000	0.000																																																							
Quantity of RDT&E Articles																																																															
<p>Defense Emergency Response Fund (DERF): Not Applicable</p> <p>(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</p> <p>This Program Element (P.E.) comprises seven projects - 0766, 9792, 9793, 9A71, 9A72, and 9A73. Project 0766 provides for Integrated Undersea Surveillance Systems (IUSS) Research and Development Projects under the Maritime Surveillance Systems (MSS) Program Office (PEO LMW PMS 485). IUSS provides the Navy with its' primary means of submarine detection both nuclear and diesel. The program has undergone a major transition from emphasis on maintaining a large dispersed surveillance force keyed to detection and tracking of submarines to a much smaller force that is effective against modern diesel and nuclear submarines in regional/littoral or broad ocean areas of interest. This transition preserves the ability to continue open ocean surveillance. A portion of project 0766 (FSS) is classified, with details available at a higher classification level. Project 9792 (IUSS Common Processor automation) & Project 9793 (Ultra-thin disposable fiberoptic undersea surveillance) are FY06 Congressional Plus-Ups. Project 9792 supports researching sonar automation for technical insertion into Integrated Common Processor to improve probability of detection performance. Project 9793 supports research and development of a low cost ultra-thin fiber-optic array for potential deployment in the most hazardous environments which may reduce life cycle repair and replacement costs associated with the more expensive TL-29A. Projects 9A71 (High Channel Count Interrogator for Sensor Arrays), 9A72 (Tunable Laser and Laser Array), and 9A73 (Program Increase) are all FY07 Congressional Plus-Ups. Project 9A71 supports development of a universal fiber sensor interrogator required for deploying next generation advanced towed arrays. Project 9A72 supports development of a low cost, non-microphonic, Tunable Laser and Laser Array suitable for driving the interferometric fiber sensor interrogators required for deploying next generation advanced towed arrays. Project 9A73 supports continued expansion of the ISS Common Processor Automation (ICPA) efforts in line tracking, in-buoy processing, bandwidth management, data fusion/view management and alerting, execution and prosecution aids, and operator interfaces for tactical view manipulation and assessments.</p> <p>(U) JUSTIFICATION FOR BUDGET ACTIVITY:</p> <p>The IUSS Research and Development project (0766) funds SURTASS Passive and SURTASS Low Frequency Active (LFA) developments. SURTASS provides the mobile, tactical arm of the Integrated Undersea Surveillance System, providing long range detection and cueing for tactical weapons platforms against both diesel and nuclear powered submarines. SURTASS LFA provides an active adjunct capability for IUSS passive and tactical sensors to assist in countering the quieter diesel and nuclear threats of the 1990s and beyond. The LFA tasks are directed at detection of slow quiet threats in harsh littoral waters.</p> <p>(U) In order to continue with reductions in life cycle costs and continue with system-wide consolidation, a short-term goal is to develop a common IUSS processor based on NAVSEA'S Acoustic Rapid COTS Insertion (ARCI) program. The IUSS Integrated Common Processor (ICP) will have the capability to process and display data from all fixed and mobile underwater systems. The IUSS ICP will be used for all new system installations and replace the legacy systems as they reach end of life and require upgrading. Additionally, SURTASS is consolidating on the TB-29A Twin-line array, a variant of the Submarine TB-29A Long line array. This will reduce the number of array variants employed by SURTASS from 3 to 1, and will enable development and logistics cost savings by leveraging off the submarine TB-29A program.</p> <p>(U) Future efforts will be focused on upgrading the LFA capability to the ICP baseline, support bi-static processing utilizing the TL-29A, support activation of fixed sensors, develop smaller, lighter weight acoustic sources for augmentation of small SWATH platforms (under the Compact LFA program), and for replacement of aging LFA sources. Together these efforts support an Active Improvement Program within IUSS.</p> <p>(U) B. PROGRAM CHANGE SUMMARY:</p> <table border="1"> <thead> <tr> <th></th> <th>FY 2006</th> <th>FY 2007</th> <th>FY 2008</th> <th>FY 2009</th> </tr> </thead> <tbody> <tr> <td>(U) Funding:</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>FY07 President's Budget</td> <td>30.647</td> <td>30.740</td> <td>28.289</td> <td>24.184</td> </tr> <tr> <td>FY08 President's Budget</td> <td>27.010</td> <td>40.429</td> <td>27.740</td> <td>23.628</td> </tr> <tr> <td>Total Adjustments</td> <td>-3.637</td> <td>9.689</td> <td>-0.549</td> <td>-0.556</td> </tr> <tr> <td colspan="5">Summary of Adjustments</td> </tr> <tr> <td>Undistributed General Reductions</td> <td>-0.037</td> <td>-0.161</td> <td>0.164</td> <td>0.216</td> </tr> <tr> <td>Realignment</td> <td>-3.600</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Programmatic adjustments</td> <td></td> <td>-1.200</td> <td>-0.713</td> <td>-0.772</td> </tr> <tr> <td>FY 2007 Congressional Adds</td> <td></td> <td>11.050</td> <td></td> <td></td> </tr> <tr> <td>Subtotal</td> <td>-3.637</td> <td>9.689</td> <td>-0.549</td> <td>-0.556</td> </tr> </tbody> </table> <p>(U) Schedule: Not Applicable (U) Technical: Not Applicable</p>										FY 2006	FY 2007	FY 2008	FY 2009	(U) Funding:					FY07 President's Budget	30.647	30.740	28.289	24.184	FY08 President's Budget	27.010	40.429	27.740	23.628	Total Adjustments	-3.637	9.689	-0.549	-0.556	Summary of Adjustments					Undistributed General Reductions	-0.037	-0.161	0.164	0.216	Realignment	-3.600				Programmatic adjustments		-1.200	-0.713	-0.772	FY 2007 Congressional Adds		11.050			Subtotal	-3.637	9.689	-0.549	-0.556
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EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2007			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-7		PROGRAM ELEMENT NUMBER AND NAME				PROJECT NUMBER AND NAME 0766: IUSS Detection and Classification System			
COST (\$ in Millions)		FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost*		23.116	29.420	27.740	23.628	25.339	25.431	26.035	26.476
RDT&E Articles Qty									
<p>(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</p> <p>A. (U) This project includes efforts for both FSS* and SURTASS. The SURTASS project comprises the mobile, tactical arm of the Integrated Undersea Surveillance System, providing long range detection and cueing for tactical weapons platforms against both diesel and nuclear powered submarines. SURTASS also provides the undersea surveillance necessary to support regional conflicts and sea-lane protection. SURTASS has experienced recent passive and active success against diesel submarines operating in shallow water. SURTASS is leveraging existing developments and reducing costs by using Non-Developmental Items and commercial hardware; supporting common Navy Undersea Warfare processing and towed array developments; and increasing operator efficiency through computer aided detection and classification processing. SURTASS development efforts include: LFA improvements, common IUSS processing, twin-line array development and processing, improved detection and classification/passive automation to counter quieter threats; additional signal processing and bi-static active capability; integrated active and passive operations; improved Battle Group support; and improved information processing.</p> <p>(U) LFA provides an active adjunct capability for IUSS passive and tactical sensors to counter the quieter diesel and nuclear threats of the 1990s and beyond. The LFA tasks are directed at detection of slow quiet threats in harsh littoral waters. Improvements include TL-29A/LFA integration enhancements; advanced waveforms for littoral/shallow water operations including Doppler sensitive waveforms; and processing algorithms to reduce clutter and reverberation false alarms in shallow water. The LFA task includes development and testing of a compact LFA transmit source array for SWATH-P ships, and upgrade of LFA processing capability into the IUSS Integrated Common Processing architecture. The Integrated Common Processor (ICP) is a derivative of the NAVSEA Submarine Acoustic Rapid COTS Insertion (ARCI) program, and is being augmented for IUSS requirements. Together, the LFA improvements, TL-29A, and the ICP support the SURTASS Active Improvement Program.</p> <p>(U) Functional improvements are delivered to the Fleet in software "Builds", while hardware improvements are delivered through the "Tech Insertion" (TI) process. Software builds are based upon the Advanced Processor Build (APB) process begun by the NAVSEA Submarine USW program. Each APB will introduce new capabilities into SURTASS systems including improved automation, normalizer techniques, adaptive beam forming, and display enhancements. SURTASS participates in the process by contributing algorithms for consideration, supplying peer group members for review of candidate algorithms, participating in test evolutions, and incorporating improved algorithms into operational systems. The "Tech Insertion" process, modelled after the NAVSEA Submarine USW hardware improvement program, delivers processing technology improvements to platforms on roughly a 4-year cycle. Hardware upgrades for active and passive arrays and communications systems will also be provided during "TI" upgrades, but not on a regular planned development cycle as for the processing upgrades.</p> <p>B. (U) PEO LMW is involved with the development and maintenance of various IUSS systems. These systems include FDS, FDS-C, SDS, SURTASS, and ADS. The near-term goal is development of ICP, which will result in a single IUSS processor baseline, with minor maintenance efforts continuing on fielded systems. The existing system architecture, signal processing, contact management, and reporting requirements will be evaluated as well as the requirements for future systems. The development of the ICP will take advantage of automation advancement, array technology improvements, and IUSS, submarine, and surface USW system commonality. Additionally, a long term goal is to activate all IUSS sensors as part of a coordinated Active Improvement Program.</p> <p>*A portion of project 0766 (FSS) is classified, with details available at a higher classification level.</p>									

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EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2007
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA 7	PROGRAM ELEMENT NUMBER AND NAME 0204311N-Integrated Surveillance Systems	PROJECT NUMBER AND NAME 0766: IUSS Detection and Classification System
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(U) B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
N74 ASW Study	0.690	0.700	0.700	0.700
RDT&E Articles Quantity				

FY06: N74 ASW Study – Continue conducting trade-off and mission studies to explore networked ASW system concepts, investment alternatives and development of a community-wide strategy for common performance models.
FY07: N74 ASW Study – Continue conducting trade-off and mission studies to explore networked ASW system concepts, investment alternatives and development of a community-wide strategy for common performance models.
FY08: N74 ASW Study – Continue conducting trade-off and mission studies to explore networked ASW system concepts, investment alternatives and development of a community-wide strategy for common performance models.
FY09: N74 ASW Study – Continue conducting trade-off and mission studies to explore networked ASW system concepts, investment alternatives and development of a community-wide strategy for common performance models.

	FY 06	FY 07	FY 08	FY 09
Compact Low Frequency Active	10.400	10.200	5.385	6.643
RDT&E Articles Quantity				

FY 06: Continue development of Compact Low Frequency Active (CLFA) capability for SWATH-P platforms. Design CLFA Handling System. Develop CLFA EDM components (Sources, Amplifiers, Tow cable, Marine Mammal Mitigation sonar). Complete SWATH-P SOC modification designs
FY 07: Complete development of Compact Low Frequency Active (CLFA) capability for SWATH-P platforms. Convert first SWATH-P platform to support CLFA system. Install EDM and begin at-sea development testing.
FY 08: Continue at-sea development testing and begin incorporation of final design changes.
FY 09: Complete incorporation and at-sea test of final design changes in support of CLFA production program.

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DATE:

February 2007

APPROPRIATION/BUDGET ACTIVITY

PROGRAM ELEMENT NUMBER AND NAME

PROJECT NUMBER AND NAME

RDT&E, N / BA 7

0204311N-Integrated Surveillance Systems

0766: IUSS Detection and Classification System

(U) B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
TB-29A/Twin-Line	1.000	1.000	2.000	2.000
RDT&E Articles Quantity				

FY 06: Support development of Single-Line Tow Capability. Develop mitigation devices for fishing net entanglements. Model tow characteristics and test in tow basin.
FY 07: Complete developments of Single-Line Tow Capability and fishing net mitigation approaches.
FY 08: Development of connectionless array technologies and true fiber-optic arrays. Investigate Twin-line variants of new submarine Long-line arrays for future application to SURTASS.
FY 09: Continue development of connectionless array technologies and true fiber-optic arrays. Continue efforts to explore Twin-line variants of new submarine Long-line arrays for future application to SURTASS.

	FY 06	FY 07	FY 08	FY 09
SURTASS Active Improvement Program	1.500	1.500	1.500	1.500
RDT&E Articles Quantity				

FY06: Begin Sea Test Planning and DT/OT preparations for Active Improvement Program (LFA/TL-29A/IUSS Common Processor). Begin development of Off-Board Sensor capabilities.
FY07: Conduct DT for Active Improvement Program (LFA/TL-29A/IUSS Common Processor). Continue development of Off-Board Sensor capabilities.
FY08: Conduct OT for Active Improvement Program (LFA/TL-29A/IUSS Common Processor). Continue development of Off-Board Sensor capabilities. Begin development of Bi-static processing capabilities and activation of fixed sensors.
FY09: Continue development of Off-Board Sensor capabilities. Continue development of Bi-static processing capabilities and activation of fixed sensors.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA 7	PROGRAM ELEMENT NUMBER AND NAME 0204311N-Integrated Surveillance Systems	PROJECT NUMBER AND NAME 0766: IUSS Detection and Classification System
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(U) B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Integrated Common Processor (ICP)	5.615	4.942	6.123	6.200
RDT&E Articles Quantity				

FY 06: Develop ICP for SURTASS arrays. Continue development of SURTASS passive and active processing capabilities for replacement of legacy systems.

FY 07: Complete development of SURTASS passive processing capability. Continue development of SURTASS active processing capability. Develop new automation algorithms and techniques for addressing multi-array, high beam count requirements.

FY 08: Complete development of SURTASS active processing capability. Continue development of new automation algorithms and techniques for addressing multi-array, high beam count requirements. Development of bi-static receive processing for SURTASS. Begin development of littoral LFA improvements.

FY 09: Begin development of Active Receive processing capability for fixed sensors. Continue development of new automation algorithms and techniques for addressing multi-array, high beam count requirements. Continue development of Littoral LFA improvements.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-7			PROGRAM ELEMENT NUMBER AND NAME 0204311N-Integrated Surveillance Systems				PROJECT NUMBER AND NAME 0766: IUSS Detection and Classification System			
(U) C. OTHER PROGRAM FUNDING SUMMARY:										
<u>Line Item No. & Name</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>Complete</u>	<u>Total Cost</u>
OPN 2237	3.797	7.850	10.484	23.753	24.179	1.487	1.513	1.540	Continuing	Continuing
(U) D. ACQUISITION STRATEGY:										
	<u>FY 2006</u>		<u>FY2007</u>		<u>FY 2008</u>		<u>FY2009</u>			
Program Milestones										
Engineering Milestones	Integrated Common Processor (ICP) TL-29A Variant 9/06		ICP LFA/CLFA Variant (7/07)			ICP Bi-Static Variant (9/09)				
T&E Milestones					CLFA SEA TESTS LFA/TL-29A/ICP DT		CLFA SEA TESTS LFA/TL-29A/ICP OT&E			
Contract Milestones		CLFA					CLFA Production			
(U) E. MAJOR PERFORMERS:										
<u>Performer</u>	<u>Location</u>	<u>Description of Work</u>				<u>Award Date</u>				
BAE Systems SPAWAR SYSTEMS CENTER	Nashua NH San Diego CA	CLFA Engineering Development Model Technical Direction Agent for LFA/CLFA				Jan-06 Annually				

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Exhibit R-3 Cost Analysis (page 2)											DATE: February 2007			
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME								
RD BA-7			0204311N-Integrated Surveillance Systems			0766: IUSS Detection and Classification System								
Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	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
IUSS Common Architecture	Var/ WX	VARIOUS	1.837	0.500	11/05	0.500	11/06	0.500	11/07	0.500	11/08	0.000	3.337	
Active Improvements/CLFA/LFA	Var/ WX	VARIOUS	9.219	2.500	11/05	3.000	11/06	4.685	11/07	4.859	11/08	Continuing	Continuing	
Passive Signal Processing	Var/ WX	VARIOUS	1.300	0.000		0.000		0.000		0.000		0.000	1.300	
Array Improvements	Var/ WX	VARIOUS	1.190	0.500	11/05	0.500	11/06	0.200	11/07	0.200	11/08	0.000	2.390	
													0.000	
													0.000	
													0.000	
Subtotal T&E			13.546	3.500		4.000		5.385		5.559		Continuing	Continuing	
Remarks:														
Active Improvements/CLFA/LFA	Var/ WX	VARIOUS	2.417	0.400	11/05	0.400	11/06	0.400	11/07	0.400	11/08	Continuing	Continuing	
Passive Signal Processing	Var/ WX	VARIOUS	0.250	0.000		0.000		0.000		0.000		0.000	0.250	
Array Improvements	Var/ WX	VARIOUS	0.600	0.000		0.000		0.000		0.000		0.000	0.600	
													0.000	
													0.000	
Subtotal Management			3.267	0.400		0.400		0.400		0.400		Continuing	Continuing	
Remarks:														
Total Cost			270.875	19.205		18.342		15.708		17.043		Continuing	Continuing	
Remarks:														

EXHIBIT R4, Schedule Profile																								DATE: February 2007								
APPROPRIATION/BUDGET ACTIVITY								PROGRAM ELEMENT NUMBER AND NAME								PROJECT NUMBER AND NAME																
RDT&E, N / BA-7								0204311N-Integrated Surveillance Systems								0766: IUSS Detection and Classification System																
Fiscal Year	2006				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	1	2	3	4
Acquisition Milestones																																
Inactive ACAT II Status Eff 7/15/02																																
Test & Evaluation Milestones																																
TB-29A/Twinline																																
LFA / TL-29A / ICP DT																																
LFA / TL-29A / ICP OT&E																																
CLFA CERTIFICATION TESTS																																
Production Milestones																																
Integrated Common Processor																																
CLFA																																
Tech Insertion																																

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

FOT & E: Follow-on Test and Evaluation

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CONGRESSIONAL PLUS-UPS:

	FY 06			
9792N				
IUSS Common Processor Automation, workload reduction	2.218			

Funding to research sonar automation for technical insertion into Integrated Common Processor to improve probability of detection performance.

	FY06			
9793N Ultra-thin Disposable Fiberoptic Undersea Surveillance Arrays	1.676			

Funding for research of feasibility of disposable arrays.

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RDT&E, N / BA-7	0204311N-Integrated Surveillance Systems	9999/ Congressional Plus-Ups : VARIOUS	
CONGRESSIONAL PLUS-UPS:			
		FY 07	
9A71N			
High Channel Count Interrogator for Sensor Arrays		1.445	
Funding for development of a universal fiber sensor interrogator that is required for deploying next generation advanced towed arrays in support of multiple Navy undersea surveillance programs.			
		FY07	
9A72N			
Tunable Laser and Laser Array		1.395	
Funding for development of a low cost, non-microphonic, Tunable Laser and Laser Array suitable for driving the interferometric fiber sensor interrogators that are required for deploying next generation advanced towed arrays			
		FY07	
9A73N			
Program Increase		8.169	
Funding increase to continue the expansion of the ISS Common Processor Automation (ICPA) efforts in line tracking, in-buoy processing, bandwidth management, data fusion/view management and alerting, execution and prosecution aids, and operator interfaces for tactical view manipulation and assessments. Emphasis will be placed on the demonstration of these capabilities			