CLASSIFICATION:	UNCLASSIFIED		
EXHIBIT R-2, RDT&E BUDGET ITEM JUSTIFICATION			DATE May 2009
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 7**	R-1 ITEM NOMENCLATURE **0204311N/INTEGRATED SURVEILLANCE SYSTEM**		

COST (In Millions)	FY 2008	FY 2009	FY 2010
Total PE Cost	30.743	28.677	24.835
0766 / IUSS Detect/Classif System	27.166	20.499	24.835
9999 / Congressional Adds	3.577	8.178	0.000

A. MISSION DESCRIPTION:

This Program Element (P.E.) comprises two projects - 0766 and 9999. 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. A portion of project 0766 (FSS) is classified, with details available at a higher classification level. Project 9999 consists of three Congressional Adds. Projects 9C54A (Autonomous Anti-Submarine Vertical Beam Array), 9C55A (Distributed Maritime Surveillance System) and 9C56A (Low-Cost, Expendable, Fiber Optic Sensor Array) are all FY09 Congressional Plus-Ups. Project 9C54A provides funding to investigate incorporation of vertical beam arrays into existing fixed surveillance system hardware designs to provide a volumetric array capability for increased detection and system performance. Project 9C55A provides funding for an anchored buoy-based underwater acoustic system. Project 9C56A provides funding for continued development of a low-cost, expendable, ultra-thin fiber-optic array with applications to littoral, high fishing density OPAREAs.

U) JUSTIFICATION FOR BUDGET ACTIVITY:

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.

(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.

(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.

CLASSIFICATION:	UNCLASSIFIED	
EXHIBIT R-2, RDT&E BUDGET ITEM JUSTIFICATION (CONTINUATION)		DATE May 2009
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 7**	R-1 ITEM NOMENCLATURE **0204311N/INTEGRATED SURVEILLANCE SYSTEM**	

B. PROGRAM CHANGE SUMMARY:

Funding:	FY 2008	FY 2009	FY 2010
FY09 President's Budget	31.138	20.565	25.180
FY10 President's Budget	30.743	28.677	24.835
Total Adjustments	-0.395	8.112	-0.345
(U) Summary of Adjustments			
Congressional Rescissions	0.000	0.000	0.000
Congressional Adjustments		8.200	0.000
Program Adjustments	-0.395	-0.010	0.000
Rate/Misc Adjustments	0.000	-0.078	-0.345
Total	-0.395	8.112	-0.345

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. and Name	FY 2008	FY 2009	FY 2010						
OPN 2237	3.760	29.096	24.108						

D. ACQUISITION STRATEGY:

FY 2008: Engineering Milestones: ICP CLFA Update (9/08); T&E Milestones: CLFA/TL-29/ICP DT

FY 2009: Engineering Milestones: ICP LFA Variant (9/09); T&E Milestones: CLFA/TL-29A/ICP DT and CLFA/TL-29A/ICP OT&E ; Contract Milestones: CLFA Production

FY 2010: Engineering Milestones: ICP Bi-Static Variant (9/10); T&E Milestones: CLFA/TL-29A/ICP OT&E; LFA/TL-29A/ICP FOT&E

E. MAJOR PERFORMERS:

PERFORMER	LOCATION	DESCRIPTION OF WORK	AWARD DATE
SPAWAR SYSTEMS CENTER	San Diego CA	Technical Direction Agent for LFA/CLFA	Annually
NAVFAC ENG SERV CENTER	Port Hueneme CA	Technical Direction Agent for Handling Systems	Annually

CLASSIFICATION:	UNCLASSIFIED		
EXHIBIT R-2a, RDT&E PROJECT JUSTIFICATION			DATE May 2009
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 7**	PROGRAM ELEMENT NUMBER AND NAME **0204311N/INTEGRATED SURVEILLANCE SYSTEM**		PROJECT NUMBER AND NAME **0766/IUSS Detect/Classif System**

COST (In Millions)	FY 2008	FY 2009	FY 2010
Project Cost	27.166	20.499	24.835
RDT&E Articles Qty	0	0	0

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

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

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.

(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 derivitive 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.

(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.

B. (U) PEO LMW is involved with the development and maintenance of various IUSS systems. These systems include FDS, FDS-C, SDS and SURTASS. The near-term goal is development

of ICP, which will result in a 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.

*A portion of project 0766 (FSS) is classified, with details available at a higher classification level.

CLASSIFICATION:	UNCLASSIFIED	
EXHIBIT R-2a, RDT&E PROJECT JUSTIFICATION		DATE May 2009
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 7**	PROGRAM ELEMENT NUMBER AND NAME **0204311N/INTEGRATED SURVEILLANCE SYSTEM**	PROJECT NUMBER AND NAME **0766/IUSS Detect/Classif System**

B. ACCOMPLISHMENTS/PLANNED PROGRAM:

	FY 2008	FY 2009	FY 2010
N74 ASW Study	0.700	0.700	0.689
RDT&E Articles Quantity	0	0	0

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.

FY10: 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 2008	FY 2009	FY 2010
Classified Effort	11.956	6.575	5.980
RDT&E Articles Quantity	0	0	0

A portion of project 0766 (FSS) is classified, with details available at higher classification level.

	FY 2008	FY 2009	FY 2010
Compact Low Frequency Active	5.385	6.595	2.309
RDT&E Articles Quantity	0	0	0

FY 08: Install EDM and begin at-sea development testing and begin incorporation final design changes.

FY 09: Complete incorporation and at-sea test of final design changes in support of CLFA production program. Continue DT for Active Improvement Program (CLFA/TL-29A/IUSS Common Processor). Conduct OT for CLFA/TL-29A/IUSS Common Processor.

FY 10: Complete OT for CLFA/TL-29A/IUSS Common Processor. Development of product improvements and corrections recommended or required from DT/OT. Conduct FOT&E for LFA/TL-29A/IUSS Common Processor.

	FY 2008	FY 2009	FY 2010
TB-29A/Twin-Line	2.000	2.000	1.970
RDT&E Articles Quantity	0	0	0

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. Develop and test additional fishing net mitigation approaches.

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. Continue development and test of fishing and mitigation approaches.

FY 10: 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. Continue development and test of additional fishing net mitigation approaches.

CLASSIFICATION:	UNCLASSIFIED		
EXHIBIT R-2a, RDT&E PROJECT JUSTIFICATION (CONTINUATION)			DATE May 2009
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 7**	PROGRAM ELEMENT NUMBER AND NAME **0204311N/INTEGRATED SURVEILLANCE SYSTEM**	PROJECT NUMBER AND NAME **0766/IUSS Detect/Classif System**	

	FY 2008	FY 2009	FY 2010
SURTASS Active Improvement Program	1.500	0.000	0.000
RDT&E Articles Quantity	0	0	0

FY08: Begin developmental testing for Active Improvement Program (CLFA/TL-29A/IUSS Common Processor).

	FY 2008	FY 2009	FY 2010
Integrated Common Processor (ICP)	5.625	4.629	13.887
RDT&E Articles Quantity	0	0	0

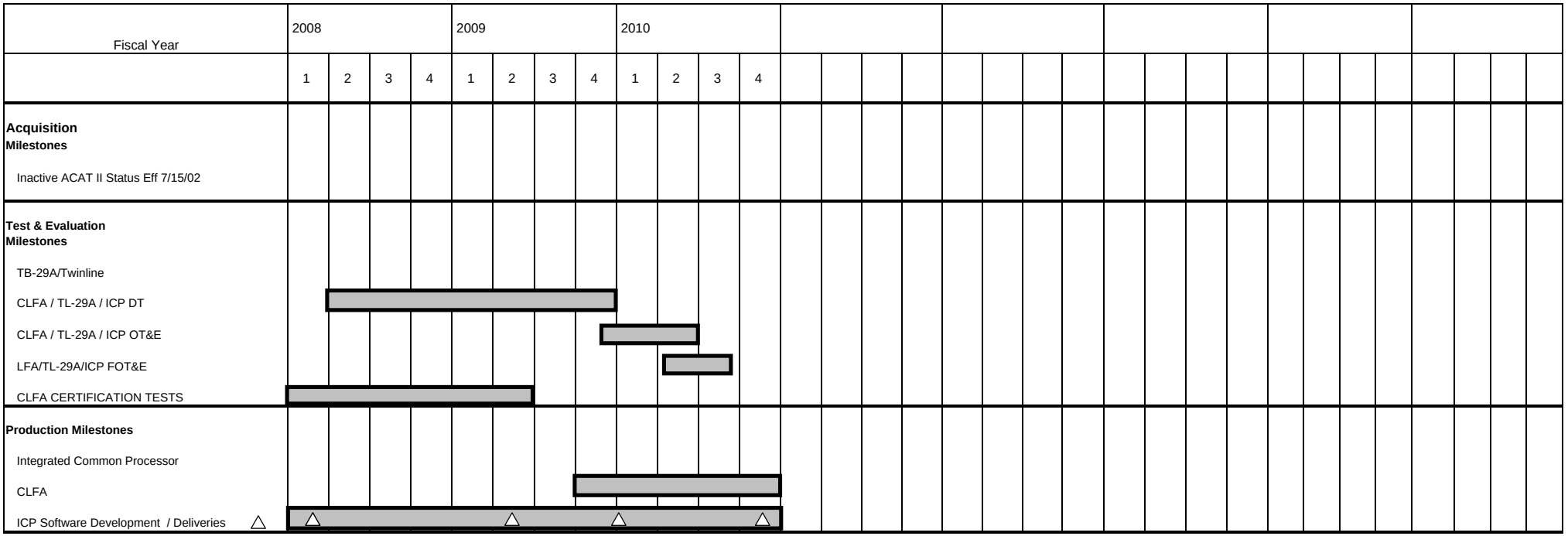
FY 08: Complete development of SURTASS active processing capability. Continue development of new automation algorithms and techniques for addressing multi-array, high beam count requirements. Begin development of bi-static receive processing for SURTASS. Begin development of littoral LFA improvements.

FY 09: Continue development of new automation algorithms and techniques for addressing multi-array, high beam count requirements. Continue development of Littoral LFA and bi-static receive improvements.

FY 10: Begin development of Active Receive processing capability for fixed sensors. Begin tech refresh development in coordination with the Submarine Acoustic Rapid COTS Insertion (ARCI) Program Advanced Processing Build (APB) tech refresh. Continue development of new automation algorithms and techniques for addressing multi-array, high beam count requirements. Continue development of Littoral LFA and bi-static receive improvements.

CLASSIFICATION:	UNCLASSIFIED						
EXHIBIT R-3, RDT&E PROJECT COST ANALYSIS							DATE May 2009
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 7**		PROGRAM ELEMENT NUMBER AND NAME **0204311N/INTEGRATED SURVEILLANCE SYSTEM**				PROJECT NUMBER AND NAME **0766/IUSS Detect/Classif System**	
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY Cost ($000)	FY 2009 Cost ($000)	FY 2009 Award Date	FY 2010 Cost ($000)	FY 2010 Award Date
IUSS COMMON ARCHITECTURE	CPFF	GDAIS/LM/ARL	53.083	2.313	NOV-08	9.587	NOV-09
ACTIVE IMPROVEMENT/CLFA/LFA	CPFF/AF	BAE / GDAIS / NFESC/VARIOUS	117.224	2.352	NOV-08	0.909	NOV-09
N74 ASW STUDY	WR/PD	NUWC / APL	6.654	0.700	NOV-08	0.689	NOV-09
ARRAY IMPROVEMENTS	CPFF/WR	APL / SSC / VARIOUS	5.854	1.800	NOV-08	1.770	NOV-09
Subtotal Product Development			**182.815**	**7.165**		**12.955**	
Remarks:							
IUSS COMMON ARCHITECTURE	WR	VARIOUS	2.100	0.600	NOV-08	1.000	NOV-09
ACTIVE IMPROVEMENTS/CLFA/LFA	CPFF	NGC/VARIOUS	7.120	0.200	NOV-08	0.200	NOV-09
Subtotal Support Costs			**9.220**	**0.800**		**1.200**	
Remarks:							
IUSS COMMON ARCHITECTURE	VAR / WR	VARIOUS	3.337	0.500	NOV-08	2.500	NOV-09
ACTIVE IMPROVEMENTS/CLFA/LFA	VAR / WR	VARIOUS	19.009	4.859	NOV-08	1.000	NOV-09
ARRAY IMPROVEMENTS	VAR / WR	VARIOUS	2.390	0.200	NOV-08	0.200	NOV-09
Subtotal Test and Evaluation			**24.736**	**5.559**		**3.700**	
Remarks:							
IUSS COMMON ARCHITECTURE	VAR / WR	VARIOUS	2.837	0.000	NOV-08	0.800	NOV-09
ACTIVE IMPROVEMENTS/CLFA/LFA	VAR / WR	VARIOUS	15.119	0.400	NOV-08	0.200	NOV-09
Subtotal Management Services			**17.956**	**0.400**		**1.000**	
Remarks:							
Total Cost			**234.727**	**13.924**		**18.855**	

CLASSIFICATION	UNCLASSIFIED	
	EXHIBIT R-4, SCHEDULE PROFILE	DATE May 2009
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 7**	PROGRAM ELEMENT NUMBER AND NAME **0204311N/INTEGRATED SURVEILLANCE SYSTEM**	PROJECT NUMBER AND NAME **0766/IUSS Detect/Classif System**



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

FOT & E: Follow-on Test and Evaluation

CLASSIFICATION:	UNCLASSIFIED	
EXHIBIT R-4a, SCHEDULE DETAIL		DATE May 2009
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 7**	PROGRAM ELEMENT NUMBER AND NAME **0204311N/INTEGRATED SURVEILLANCE SYSTEM**	PROJECT NUMBER AND NAME **0766/IUSS Detect/Classif System**

Schedule Profile	FY 2008	FY 2009	FY 2010
TB-29A TL SYSTEM INSTALLATION / TEST (T-23)		4Q	1Q
FOT & E (TB29A TL / ICP / LFA)			2Q-3Q
CLFA DEVELOPMENT TEST SHAKEDOWN	4Q	1Q	
CLFA DEVELOPMENT EVALUATION		2Q-4Q	
CLFA PRODUCTION SYSTEMS		3Q-4Q	1Q - 4Q
ICP SOFTWARE DEVELOPMENT	1Q-4Q	1Q-4Q	1Q - 4Q
ICP SOFTWARE DELIVERIES	1Q	2Q	1Q & 4Q

CLASSIFICATION:	UNCLASSIFIED		
EXHIBIT R-2a, RDT&E PROJECT JUSTIFICATION			DATE May 2009
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 7**	PROGRAM ELEMENT NUMBER AND NAME **0204311N/INTEGRATED SURVEILLANCE SYSTEM**	PROJECT NUMBER AND NAME **9999/Congressional Adds**	

B. ACCOMPLISHMENTS/PLANNED PROGRAM:

	FY 2008	FY 2009	FY 2010
9C56A Low-Cost, Expendable, Fiber Optic Sensor Array	0.994	4.986	0.000
RDT&E Articles Quantity	0	0	0

Funding for continued development of a low cost, expendable, ultra-thin fiber-optic array with applications to littoral, high fishing density OPAREAs.

	FY 2008	FY 2009	FY 2010
9C55A Distributed Maritime Surveillance System	1.589	1.596	0.000
RDT&E Articles Quantity	0	0	0

Funding for anchored buoy-based underwater acoustic system.

	FY 2008	FY 2009	FY 2010
9C54A Autonomous Anti-Sub Vertical Beam Array	0.994	1.596	0.000
RDT&E Articles Quantity	0	0	0

Funds will be used to investigate incorporation of vertical beam arrays into existing fixed surveillance system hardware designs to provide a ready volumetric array capability for increased decision and system performance.