

CLASSIFICATION: UNCLASSIFIED

EXHIBIT R-2, RDT&E BUDGET ITEM JUSTIFICATION **DATE**
February 2008

APPROPRIATION/BUDGET ACTIVITY RD TEN/BA 5			R-1 ITEM NOMENCLATURE 0604378N/NAVAL INTEGRATED FIRE CONTROL				
COST (In Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	14.359	14.829	10.533	12.075	15.136	6.311	5.331
3159 / Naval Integrated Fire Control-Counter Air SE&I	14.359	11.252	10.533	12.075	15.136	6.311	5.331
9999 / CONGRESSIONAL ADD	0.000	3.577	0.000	0.000	0.000	0.000	0.000

A. MISSION DESCRIPTION:

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

3159 Naval Integrated Fire Control - Counter Air (NIFC-CA) Systems Engineering Integration and Test (SEI&T) will extend the Naval Theater Air and Missile Defense battlespace out to the maximum effective range of the weapon. It extends the battlespace to distances that are well beyond the existing, stand-alone capability of surface ship controlled air defense weapons. NIFC-CA is a capabilities based program that takes current and emerging technology from Core Pillar Programs (Cooperative Engagement Capability (CEC), Aegis, Standard Missile (SM-6) and E-2D Advanced Hawkeye (AHE)) and other related programs and integrates them together to form the successful implementation of a System of Systems (SoS) Capability. The NIFC-CA focus is on Integrated Fire Control for over-the-horizon (beyond visual range) and engage-on-remote capability. NIFC-CA is a key component of Navy Transformation "SEA SHIELD".

NIFC-CA is a SoS Systems Engineering capability designed to define the functional allocation for the pillar elements within NIFC-CA (SM-6, E-2D, CEC and Aegis). This PE will support SoS SE efforts including system definition, architecture, performance assessment, test design and strategy, modeling and simulation, risk reduction and capability demonstration for successful convergence of the pillar programs. The funding identified will provide for NIFC-CA SEI&T risk reduction for engage-on-remote capability and SoS integration.

Systems Engineering Integration and Test (SEI&T) for SoS is required for identification, tracking and management of SoS risks, and the integration and test of component programs. Project NIFC-CA SEI&T develops and recommends performance trade-offs and allocates functionality to systems in order to achieve a cost-effective, life-cycle balanced engage-on-remote, over the horizon SoS mission capability leading to a joint integrated fire control. NIFC-CA requires up-front SoS SE for Pillar contributions to From the Sea (FTS) Kill Chain. The FTS Kill Chain is one of 3 kill chains. The other two are the From the Air (FTA) Kill Chain and From the Land (FTL) Kill Chain. All 3 Kill Chains comprise the Naval contribution to Joint IFC. Proof of concept demonstration planned 2007/08 consisting of Air Directed Surface to Air Missile (ADSAM) demo with multiple kill chains. Potential FTS and FTL DT 2010/11. NIFC-CA IOC is 2014.

9999 The SPS-49 Radar received a Congressional Add in 2008 for supportability efforts required to bridge the gap between present supportability philosophy and the Common Digital Sensor Architecture (CDSA).

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EXHIBIT R-2, RDT&E BUDGET ITEM JUSTIFICATION (CONTINUATION)

DATE
February 2008

APPROPRIATION/BUDGET ACTIVITY
RD TEN/BA 5

R-1 ITEM NOMENCLATURE
0604378N/NAVAL INTEGRATED FIRE CONTROL

B. PROGRAM CHANGE SUMMARY:

Funding:	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY08 Pres Controls)	14.736	11.497	10.747
Current FY09 Presidents Budget Controls	14.359	14.829	10.533
Total Adjustments	-0.377	3.332	-0.214
Summary of Adjustments			
PR09 PDM II ADJUSTMENT	0.000	0.000	-0.145
Misc Adjustments	-0.377	-0.073	-0.069
Execution Realignments	0.000	-0.172	0.000
Congressional Add	0.000	3.577	0.000

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EXHIBIT R-2a, RDT&E PROJECT JUSTIFICATION					DATE February 2008		
APPROPRIATION/BUDGET ACTIVITY RD TEN/BA 5		PROGRAM ELEMENT NUMBER AND NAME 0604378N/NAVAL INTEGRATED FIRE CONTROL			PROJECT NUMBER AND NAME 3159/Naval Integrated Fire Control-Counter Air SE		
COST (In Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	14.359	11.252	10.533	12.075	15.136	6.311	5.331
RDT&E Articles Qty	0	0	0	0	0	0	0
A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:							
<p>Naval Integrated Fire Control - Counter Air (NIFC-CA) Systems Engineering Integration and Test (SEI&T) will extend the Naval Theater Air and Missile Defense battlespace out to the maximum effective range of the weapon. It extends the battlespace to distances that are well beyond the existing, stand-alone capability of surface ship controlled air defense weapons. NIFC-CA is a capabilities based program that takes current and emerging technology from Core Pillar Programs (Cooperative Engagement Capability (CEC), Aegis, Standard Missile (SM-6) and E-2D Advanced Hawkeye (AHE)) and other related programs and integrates them together to form the successful implementation of a System of Systems (SoS) Capability. The NIFC-CA focus is on Integrated Fire Control for over-the-horizon (beyond visual range) and engage-on-remote capability. NIFC-CA is a key component of Navy Transformation "SEA SHIELD".</p> <p>NIFC-CA is a SoS Systems Engineering capability designed to define the functional allocation for the pillar elements within NIFC-CA (SM-6, E-2D, CEC and Aegis). This PE will support SoS SE efforts including system definition, architecture, performance assessment, test design and strategy, modeling and simulation, risk reduction and capability demonstration for successful convergence of the pillar programs. The funding identified will provide for NIFC-CA SEI&T risk reduction for engage-on-remote capability and SoS integration.</p>							

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APPROPRIATION/BUDGET ACTIVITY RD TEN/BA 5	PROGRAM ELEMENT NUMBER AND NAME 0604378N/NAVAL INTEGRATED FIRE CONTROL	PROJECT NUMBER AND NAME 3159/Naval Integrated Fire Control-Counter Air SE&I	
B. ACCOMPLISHMENTS/PLANNED PROGRAM:			
	FY 2007	FY 2008	FY 2009
Accomplishments/Effort/Subtotal Cost	0.754	2.197	2.064
RDT&E Articles Quantity	0	0	0
<p>Efforts: The Integration and Test IPT is responsible for the development and execution of the test plan to validate the From the Sea (FTS) operational capability. The NIFC-CA I&T IPT will Verify, Validate, and Accredite (VV&A) the end-to-end high-fidelity federated simulation. The VV&A process will utilize existing test events and will also include land based and at sea testing.</p> <p>The tasks assigned to the I&T IPT are:</p> <ul style="list-style-type: none"> - Perform risk mitigation on risks assigned to the IPT - Develop the Test and Integration Management Plan (TIMP) - Develop the Integrated Test and Evaluation Plan (ITEP) - Collect and Review Program of Records test plans - Interface with the System Definition IPT - Interface with the Performance Assessment IPT - Support Advanced Area Defense Interceptor (AADI) test planning - Develop a FTS Master Test Schedule, to include Contract Data Requirements List (CDRL) (i.e., TIMP, ITEP) delivery dates. 			
	FY 2007	FY 2008	FY 2009
Accomplishments/Effort/Subtotal Cost	4.555	3.339	3.096
RDT&E Articles Quantity	0	0	0
<p>Efforts: The SEI&T Integrated Engineering Master Schedule (IEMS) will be used as the primary tool for project planning and monitoring the efforts being performed by the NIFC-CA SEI&T government/industry team. The Integrated Engineering Master Plan (IEMP) is a higher level plan/schedule that shows the initial Naval FTS Programs of Record and how they relate to deploying a FTS capability and the critical path to an IOC in 2014. The SEI&T IEMS defines the tasking required to execute the objectives of the NIFC-CA Project, with additional focus on the current scope for which the industry team is under contract. It is a subset of the IEMP and aids in establishing the proper relationships between the SOW and contract deliveries. The SEI&T IEMS will contain all IPT schedules as well as each of the IPTs plans, tasks, product deliveries, and NIFC-CA FTS quarterly meetings. Funding will also be applied to the security requirements of the NIFC-CA project.</p>			
	FY 2007	FY 2008	FY 2009
Accomplishments/Effort/Subtotal Cost	9.050	5.392	5.049
RDT&E Articles Quantity	0	0	0
<p>Efforts: Engineering management and System Definition including the development of the Systems Performance Document (SPD), SoS functional allocations, requirements traceability, System Trade studies, SoS interface documents, sensor net capability analysis, performance analysis, risk mitigation, and scenario development. Architecture development with supporting documentation is also an on going effort. Modeling and simulation activities will be an area of effort. Performance analysis in terms of SoS</p>			

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EXHIBIT R-2a, RDT&E PROJECT JUSTIFICATION (CONTINUATION)	DATE February 2008
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APPROPRIATION/BUDGET ACTIVITY RD TEN/BA 5	PROGRAM ELEMENT NUMBER AND NAME 0604378N/NAVAL INTEGRATED FIRE CONTROL	PROJECT NUMBER AND NAME 3159/Naval Integrated Fire Control-Counter Air SE&I
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performance documents, distributed weapons control and engagement time lines are completed within the systems capabilities arena. System Integrator (industry) efforts supporting systems capabilities with a collaborative role alongside of government rounds out the system capability efforts. Project NIFC-CA will support implementation of the Integrated Architecture Behavior Model (IABM), as directed by OPNAV, as the Navy's way ahead for Integrated Air and Missile Defense. The Navy has provided capability requirements for the IABM. The Navy requirements incorporate Track Management, Combat ID, Distributed Resource Management, Common Services, Communications, Automated Battle Management Aides, Integrated Fire Control and Interface Requirements for the IABM. These requirements are directed by ref (a). Project NIFC-CA will also support Aegis Weapon integration with CEC, SM-6 and E-2D Advanced Hawkeye in support of Engineering Development and support of the NIFC-CA System of Systems capability to utilize CEC and the full capabilities of the SM-6 missile for support of Sea Shield. This capability will allow AEGIS Ships to extend their air defense capability beyond their current stand-alone limits utilizing Integrated Fire Control. This will allow for earlier engagements and destruction of new and evolving air threats at a further range. Additionally, in support of the sensor net project, NIFC-CA will incorporate the Single Integrated Air Picture (SIAP) encompassed in the IABM as described in the Single Integrated Air Picture Acquisition Decision Memorandum, ref (b).

Reference (a): Memorandum for Assistant Secretary of the Navy, Research Development and Acquisition, dated 14 March 2006, Subj: Single Integrated Air Picture Implementation Guidance.

Reference (b): Memorandum for Secretaries of the Military Departments Chairman, Joint Chiefs of Staff Commander, Joint Forces Command, dated 03 May, 2006, Subj: Single Integrated Air Picture Acquisition Decision Memorandum

	FY 2007	FY 2008	FY 2009
Accomplishments/Effort/Subtotal Cost	0.000	0.324	0.324
RDT&E Articles Quantity	0	0	0

Efforts: Modeling and Simulation development and support, Predictive Analysis across the Joint kill chain, White Sands Missile Range (WSMR) Test Planning, Execution and Analysis, WSMR Range Support (Instrumentation, Telemetry, Safety, Data Collection). Support for Joint Working Groups.

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. and Name	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
Other RDT&E Related:									
0603658N (CEC)	4.700	1.100	2.850	2.080	2.080	4.490	3.730		
0604366N (Standard Missile SM-6)	158.461	202.640	222.557	159.264	68.573	33.102	26.703		
0604307N (AEGIS)	12.685	7.920	19.421	24.989	21.497	11.996	8.828		
0604234N (E-2D Advanced Hawkeye)	484.031	808.993	487.456	216.732	124.398	48.459	15.681		

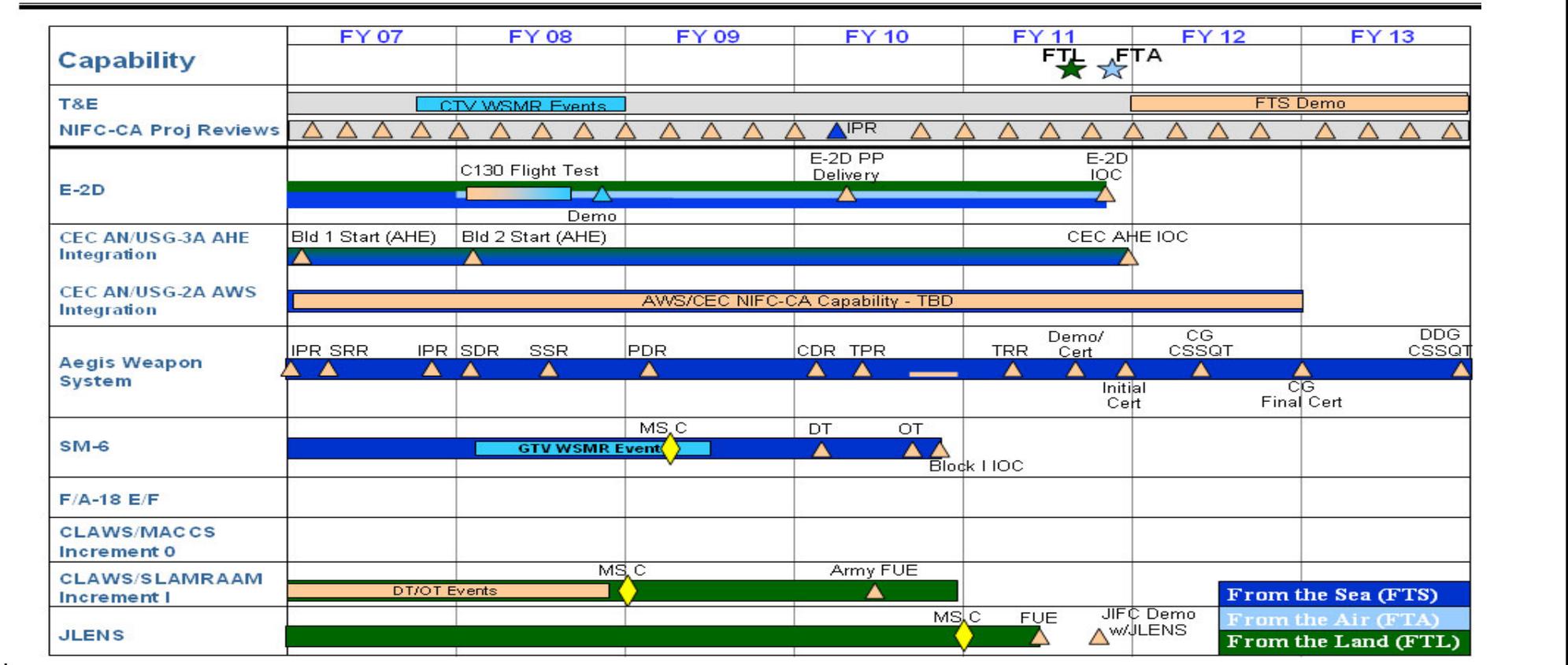
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EXHIBIT R-2a, RDT&E PROJECT JUSTIFICATION (CONTINUATION)			DATE February 2008
APPROPRIATION/BUDGET ACTIVITY RD TEN/BA 5	PROGRAM ELEMENT NUMBER AND NAME 0604378N/NAVAL INTEGRATED FIRE CONTROL	PROJECT NUMBER AND NAME 3159/Naval Integrated Fire Control-Counter Air SE&I	
<p>D. ACQUISITION STRATEGY: Not Applicable.</p> <p>E. MAJOR PERFORMERS: NSWC Dahlgren Division (NSWC DD)- Dahlgren, VA Lockheed Martin (LM) Maritime Systems and Sensors (MS2) - Moorestown, NJ Raytheon Co. , Tucson, AZ Northrop Grumman Corp. (NGC) Integrated Systems (IS), Bethpage, NY Boeing Integrated Defense Systems (IDS), St. Louis, MO Northrop Grumman Corp. (NGC) Mission Systems (MS), Reston, VA Johns Hopkins University (JHU) Applied Physics Laboratory (APL), Laurel , MD</p>			

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EXHIBIT R-3, RDT&E PROJECT COST ANALYSIS										DATE		
										February 2008		
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NUMBER AND NAME					PROJECT NUMBER AND NAME					
RD TEN/BA 5		0604378N/NAVAL INTEGRATED FIRE CONTROL					3159/Naval Integrated Fire Control-Counter Air SE&I					
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY Cost (\$000)	FY 2007 Cost (\$000)	FY 2007 Award Date	FY 2008 Cost (\$000)	FY 2008 Award Date	FY 2009 Cost (\$000)	FY 2009 Award Date	Cost to Complete (\$000)	Total Cost (\$000)	Target Value of Contract
Systems Engineering	WR	NSWC/DD - DAHLGREN VA	0.000	1.285	NOV-06	0.838	OCT-07	0.549	OCT-08	0.000	2.672	0.000
Systems Engineering	See Remark	Various	0.000	2.353	NOV-06	1.226	OCT-07	1.334	OCT-08	0.000	4.913	0.000
Systems Engineering	CPAF	JHU/APL - LAUREL MD	0.000	0.100	NOV-06	0.200	OCT-07	0.200	OCT-08	0.000	0.500	0.000
Systems Engineering	CPAF	NGMS - RESTON VA	0.000	0.252	NOV-06	0.200	OCT-07	0.200	OCT-08	0.000	0.652	0.000
Systems Engineering	CPAF	NGIS - Bethpage NY	0.000	0.980	NOV-06	0.800	OCT-07	0.800	OCT-08	0.000	2.580	0.000
Systems Engineering	CPAF	LM MS2 - Moorestown NJ	0.000	0.855	NOV-06	0.800	OCT-07	0.800	OCT-08	0.000	2.455	0.000
Systems Engineering	CPAF	RAYTHEON CO - TUCSON AZ	0.000	2.403	NOV-06	1.000	OCT-07	1.001	OCT-08	0.000	4.404	0.000
Systems Engineering	CPAF	Boeing IDS - ST LOUIS, MO	0.000	0.498	NOV-06	0.200	OCT-07	0.200	OCT-08	0.000	0.898	0.000
Systems Engineering	CPAF	CSCI - Springfield VA	0.000	0.300	NOV-06	0.200	OCT-07	0.200	OCT-08	0.000	0.700	0.000
Systems Engineering	WR	SWDG - Norfolk, VA	0.000	0.125	NOV-06	0.111	OCT-07	0.103	OCT-08	0.000	0.339	0.000
Systems Engineering	WR	COTF - Norfolk, VA	0.000	0.045	NOV-06	0.111	OCT-07	0.103	OCT-08		0.259	0.000
Subtotal Systems Engineering			0.000	9.196		5.686		5.490		0.000	20.372	0.000
Remarks: There are various types of contract and field activity costs for this category (Various).												
Integration and Test	WR	NSWC/DD - Dahlgren, VA	0.000	0.250	NOV-06	0.251	OCT-07	0.300	OCT-08	0.000	0.801	0.000
Integration and Test	CPAF	Raytheon Co., Tucson, AZ	0.000	0.075	NOV-06	0.225	OCT-07	0.400	OCT-08	0.000	0.700	0.000
Integration and Test	CPAF	LM MS2 - Moorestown, NJ	0.000	0.050	NOV-06	0.050	OCT-07	0.200	OCT-08	0.000	0.300	0.000
Integration and Test	CPAF	NGIS - Bethpage, NY	0.000	0.050	NOV-06	0.050	OCT-07	0.200	OCT-08	0.000	0.300	0.000
Integration and Test	See Remark	Various	0.000	1.635	NOV-06	1.852	OCT-07	0.964	OCT-08	0.000	4.451	0.000
Subtotal Integration and Test			0.000	2.060		2.428		2.064		0.000	6.552	0.000
Remarks: These are various types of contract and field activity costs for this category (Various).												
Project Planning and Management	CPAF	Boeing IDS - St. Louis, MO	0.000	0.150	NOV-06	0.150	OCT-07	0.150	OCT-08	0.000	0.450	0.000
Project Planning and Management	CPAF	Raytheon Co. - Tucson, AZ	0.000	0.312	NOV-06	0.312	OCT-07	0.312	OCT-08	0.000	0.936	0.000
Project Planning and Management	CPAF	LM MS2 - Moorestown, NJ	0.000	0.297	NOV-06	0.297	OCT-07	0.297	OCT-08	0.000	0.891	0.000
Project Planning and Management	CPAF	NGIS - Bethpage, NY	0.000	0.297	NOV-06	0.297	OCT-07	0.297	OCT-08	0.000	0.891	0.000

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EXHIBIT R-3, RDT&E PROJECT COST ANALYSIS									DATE February 2008			
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Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY Cost (\$000)	FY 2007 Cost (\$000)	FY 2007 Award Date	FY 2008 Cost (\$000)	FY 2008 Award Date	FY 2009 Cost (\$000)	FY 2009 Award Date	Cost to Complete (\$000)	Total Cost (\$000)	Target Value of Contract
Project Planning and Management	WR	NSWC/DD - Dahlgren, VA	0.000	0.225	NOV-06	0.225	OCT-07	0.225	OCT-08	0.000	0.675	0.000
Project Planning and Management	CPFF	MEI - Arlington, VA	0.000	0.527	NOV-06	0.529	OCT-07	0.531	OCT-08	0.000	1.587	0.000
Project Planning and Management	See Remark	Various	0.000	1.295	NOV-06	1.328	OCT-07	1.167	OCT-08	0.000	3.790	0.000
Subtotal Project Planning and Management			0.000	3.103		3.138		2.979		0.000	9.220	0.000
Remarks: These are various types of contract and field activity costs for this category (Various).												
Total Cost			0.000	14.359		11.252		10.533		0.000	36.144	0.000

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EXHIBIT R-4, SCHEDULE PROFILE		DATE February 2008
APPROPRIATION/BUDGET ACTIVITY RDTEN/BA 5	PROGRAM ELEMENT NUMBER AND NAME 0604378N/NAVAL INTEGRATED FIRE CONTROL	PROJECT NUMBER AND NAME 3159/Naval Integrated Fire Control-Counter Air SE&I

NIFC-CA Planning Schedule



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EXHIBIT R-4a, SCHEDULE DETAIL						DATE February 2008		
APPROPRIATION/BUDGET ACTIVITY RD TEN/BA 5		PROGRAM ELEMENT NUMBER AND NAME 0604378N/NAVAL INTEGRATED FIRE CONTROL			PROJECT NUMBER AND NAME 3159/Naval Integrated Fire Control-Counter Air SE&I			
Schedule Profile		FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Demos ADSAM-L (FTL)						3Q		
Demos ADAAM (FTA)						4Q		
IPR					1Q			
FTS DEMO							1Q-4Q	1Q-4Q
C130 Flight Test			3Q					
Demo			3Q					
E-2D PP Delivery					2Q			
E-2D RMP IOC						4Q		
Bid 1 Start (C130) Integration		1Q						
Bid 2 Start (AHE)			1Q					
CEC IOC						4Q		
CEC NA/USG-2A AWS Integration		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	
CTV WSMR Events		4Q	1Q-4Q					
GTV WSMR Events			1Q-4Q	1Q-3Q				
MS C				1Q				
SM6 DT					1Q			
SM6 OT					4Q			
Block 1 IOC					4Q			
CRITICAL DESIGN REVIEW					1Q			
INITIAL CERTIFICATION						4Q		
FINAL CERTIFICATION								1Q
CSSQT - CG							2Q	
CSSQT - DDG								4Q
DT/OT Events		1Q-4Q	1Q-4Q					
MS C				1Q				
INCO, ARMY G/ATOR FUE					3Q			
MS C					4Q			
First Unit Equipped						2Q		
JIFC Demo w/ JLENS						3Q		

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COST (In Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	0.000	3.577	0.000	0.000	0.000	0.000	0.000
RDT&E Articles Qty	0	0	0	0	0	0	0
A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Congressional add in 2008 will be used to provide supportability efforts for the SPS-49 radar system to bridge the gap between present supportability philosophy and the Common Digital Architecture (CDSA).							