EXHIBIT R-2, RDT&E Budget Item Justification							DATE: May 2009	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-7**					R-1 ITEM NOMENCLATURE 0204136N F/A-18 SQUADRONS			
COST ($ in Millions)	FY 2008	FY 2009	FY 2010					
Total PE Cost	43.047	73.050	127.733					
1662 F/A-18 Improvements	36.706	63.479	111.860					
2065 F/A18 RADAR Upgrade	4.028	7.177	15.873					
9999 Congressional Adds	2.313	2.394						

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The F/A-18 is required to perform multiple missions. Capabilities of the F/A-18 weapon system and ancillary equipment can be upgraded to accommodate and incorporate new or enhanced weapons as well as advances in technology to respond effectively to emerging threats. Continued F/A-18 E/F "Flight Plan" spiral capability development is critical to the baseline of the Super Hornet next generation mission system capability and maintaining tactical relevance in support of OPNAV N88 NAvPLAN 2030. Additionally, continued advanced development engineering for improvements in reliability and maintainability are required to ensure maximum benefit is achieved through reduced cost of ownership and to provide enhanced availability.

F/A-18 Improvements (1662): The F/A-18 is a multi-mission strike fighter aircraft that is used in strike, surveillance, reconnaissance and tanking roles through selected use of external equipment (fuel tanks, tactical and reconnaissance pods, and various ordnance launching racks). Additional capabilities are required for interoperability in a network-centric tactical environment. In order to respond effectively to emerging future threats, F/A-18 aircraft capabilities are being upgraded to incorporate new/enhanced weapons systems and upgraded avionics including Dual Mode Weapons, an Infrared Search and Track (IRST), Integrated Defensive Electronic Counter Measures (IDECM) integrated with the Active Electronically Scanned Array (AESA) to provide Narrow Band High Gain Electronic Attack, Distributed Targeting capability through a Distributed Targeting Processor/Mass Storage Unit (DTP/MSU), and Sensor Integration through Multi-Sensor Integration (MSI) Phase I capability. Continued advanced development engineering and analysis of hardware/software is required to successfully optimize fleet F/A-18 weapon systems for interoperability in a network centric tactical environment, to include: enhanced software capabilities, potential new hardware development, enhanced existing hardware, and enhanced network centric capabilities. Additionally, continued effort is needed to perform technical evaluations, modeling and simulations, investigative flight testing, and enhanced software modifications based on reported fleet deficiencies. This funding line continues F/A-18E/F "Flight Plan" spiral capability development, which includes Sensor Integration – Multi-Ship Emitter Geo-Location capability and Sensor Integration – MSI Phase II capability. This budget also continues funding for F/A-18A-F Test Wing Maintenance support.

F/A-18 Radio Detection and Ranging (RADAR) Upgrade (2065): The F/A-18 RADAR Upgrade, Active Electronically Scanned Array (AESA) development program, which began in FY 1999, is the last of three pre-planned upgrades to the F/A-18 Type/Model/Series RADAR. The AESA system corrects operational test deficiencies noted in the AN/APG-73. It provides for multi-target tracking, Synthetic Aperture RADAR (SAR) imagery, SAR Target Location Error (TLE), and improved spotlight map resolution. In addition, it provides for greater lethality than previous F/A-18 RADARs by allowing for full tactical support of existing and planned air-to-air (A/A) and air-to-ground (A/G) weapons and it significantly increases A/A and A/G detection and tracking ranges. The AESA system provides greater survivability through self-protection and standoff jamming capabilities, while its greater range allows for reduced detection by enemy radar. This budget continues spiral capability development of AESA by increased efforts to address Phase II Operational Requirements Document requirements such as Electronic Protection (EP) against multiple Radio Frequency emitters (Distributed Targeting - AESA Multi-Jammer EP), Electronic Attack and improved Fixed/Ground Mobile Target detection and tracking via minimal hardware/ maximum software changes. The effort will provide upgrades for EP capability against multiple radio frequency emitters. Continue software development and integration is also required for expanded A/A and A/G capabilities while in a tactical A/A and A/G threat Electronic Attack environment.

EXHIBIT R-2, RDT&E Budget Item Justification	DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY BA-7	0204136N F/A-18 SQUADRONS

Congressional Adds:

(9C48A) Airborne Tactical Server (ATS). ATS is a potential replacement solution for analog cockpit video recorders and has digital functionality to enhance platform net centric capability. ATS allows for digital imagery within the aircraft cockpit for real-time mission assessment and/or off-board image transfer for ground based assessments via Mulitple Information Display System (MIDS) and Variable Message Format (VMF). These functions contribute to real time net centric solution that shortens kill chain, the time from target detection to engagement, and other enhanced capabilities.

(9E13A) Distributed Targeting Processor - Continue integration of the Distributed Targeting Processor (DTP) to provide a baseline capability that can generate precision targeting coordinates for the F/A-18 E/F.

B. PROGRAM CHANGE SUMMARY:

Funding:	FY 2008	FY 2009	FY 2010
FY2009 President's Budget:	49.580	71.232	93.109
Current President's Budget:	43.047	73.050	127.733
Total Adjustments	-6.533	1.818	34.624
Summary of Adjustments			
Congressional Reductions			
Congressional Adjustments	-7.565	2.017	
SBIR/STTR/FTT Assessments	-0.082		
Program Adjustments	1.114		34.652
Rate/Misc Adjustments		-0.199	-0.028
Subtotal	-6.533	1.818	34.624

Schedule:

E1662: Full Rate Production (FRP) was removed from the IDECM with AESA schedule because this effort will not produce or deliver hardware. This effort is software related. The schedule change to the Infrared Search and Track (IRST) program is due to a previous assumption that a "lab only" Operational Assessment (OA) would be acceptable. Naval Command Operational Test and Evaluation Force (COTF) stated that an IRST Engineering Development Model (EDM) must be in-flight before they would provide an OA to the Milestone Decision Authority for Milestone C (MS C). MS C slipped, which caused a waterfall affect on the rest of the schedule. Also, FY08 MS B has been pushed to FY09 due to new DoD 5000 series. Due to Acquisition Category designation, schedules for Network Centric Operations and Distributed Targeting Processor / Mass Storage Unit have been merged to more accurately reflect Distributed Targeting Capability Development. The delay in starting Network Centric Operations algorithm development is due to a delay in contracting actions. The schedule changes beginning in FY 2010 are due to new start efforts for Sensor Integration: Multi-Ship Emitter Geo-Location and Air to Air, Air to Ground and Maritime Multi-Sensor Integration Phase II.

E2065: The previous Material Support Date (MSD) was erroneously stated to begin in 3rd quarter FY08. The current MSD is 4th quarter FY08. The addition of software deliveries were not reflected in previous budgets as there was uncertainty on the frequency of future HOL tape releases. The current R-4/R-4a reflected the latest software release schedule.

Technical:

E1662: Technical changes beginning in FY 2010 are due to new start efforts for Sensor Integration (Multi-Ship Emitter Geo-Location and Sensor Integration - Air to Air, Air to Ground) and Maritime Multi-Sensor Integration Phase II.

E2065: Technical changes beginning in FY 2010 are due to additional funding for F/A-18 Distributed Targeting (AESA Multi-Jammer Electronic Protection)

EXHIBIT R-2a, RDT&E Project Justification							DATE: **May 2009**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**	PROGRAM ELEMENT NUMBER AND NAME 0204136N F/A-18 SQUADRONS				PROJECT NUMBER AND NAME 1662 F/A-18 Improvements			
COST ($ in Millions)	FY 2008	FY 2009	FY 2010					
Project Cost	36.706	63.479	111.860					
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

F/A-18 Improvements (1662): The F/A-18 is a multi-mission strike fighter aircraft that is used in strike, surveillance, reconnaissance and tanking roles through selected use of external equipment (fuel tanks, tactical and reconnaissance pods, and various ordnance launching racks). Additional capabilities are required for interoperability in a network-centric tactical environment. In order to respond effectively to emerging threats, F/A-18 aircraft capabilities are being upgraded to incorporate new/enhanced weapons systems and avionics including Dual Mode Weapons, an Infrared Search and Track (IRST), Integrated Defensive Electronic Counter Measures (IDECM) integrated with the Active Electronically Scanned Array (AESA) to provide Narrow Band High Gain Electronic Attack, Distributed Targeting capability through a Distributed Targeting Processor/Mass Storage Unit (DTP/MSU), and Sensor Integration through Multi-Sensor Integration (MSI) Phase I capability. Continued advanced development engineering and analysis of hardware/software is required to successfully optimize fleet F/A-18 weapon systems for interoperability in a network centric tactical environment, to include: enhanced software capabilities, potential new hardware development, enhanced existing hardware, and enhanced network centric capabilities. Additionally, continued effort is needed to perform technical evaluations, modeling and simulations, investigative flight testing, and enhanced software modifications based on reported fleet deficiencies. This funding line continues F/A-18E/F "Flight Plan" spiral capability development, which includes Sensor Integration – Multi-Ship Emitter Geo-Location capability and Sensor Integration – MSI Phase II capability. This budget also continues funding for F/A-18A-F Test Wing Maintenance support.

EXHIBIT R-2a, RDT&E Project Justification			DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-7	0204136N F/A-18 SQUADRONS	1662 F/A-18 Improvements	

B. Accomplishments/Planned Program

Weapons Systems/MIDS/ANAV/SIAP	FY 08	FY 09	FY10	
Accomplishments/Effort/Subtotal Cost	5.600			
RDT&E Articles Quantity				

Conducted engineering analysis and develop improvements to existing systems and subsystems for deficiencies identified during development and fleet use of the aircraft. Provided technical support for the integration of new weapons and associated systems. Began Network Centric Warfare capability development.

Air to Ground Maritime Attack - Dual Mode Wpns	FY 08	FY 09	FY10	
Accomplishments/Effort/Subtotal Cost	0.460	0.460		
RDT&E Articles Quantity				

Continued integration, validation, and verification of various weapon configurations on F/A-18E/F aircraft, to include Dual Mode Weapons and fleet-identified high priority weapons loads.

Sensor Integration - IDECM with AESA	FY 08	FY 09	FY10	
Accomplishments/Effort/Subtotal Cost	2.369	6.293	6.398	
RDT&E Articles Quantity				

Continues software development for Integrated Defensive Electronic Counter Measures (IDECM) integration with Active Electronically Scanned Array (AESA) to provide Narrow Band High Gain Electronic Attack (HGEA) and High Gain Electronic Support Measures (HGESM) capability.

EXHIBIT R-2a, RDT&E Project Justification			DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**	PROGRAM ELEMENT NUMBER AND NAME 0204136N F/A-18 SQUADRONS	PROJECT NUMBER AND NAME 1662 F/A-18 Improvements	

B. Accomplishments/Planned Program (Cont.)

Distributed Targeting - IRST Phase I	FY 08	FY 09	FY10	
Accomplishments/Effort/Subtotal Cost	5.900	16.373	21.780	
RDT&E Articles Quantity				

Systems design and development of an Infrared Search & Track sensor for the F/A-18 E/F.

Distributed Targeting - NCO / DTP / MSU / MPI	FY 08	FY 09	FY10	
Accomplishments/Effort/Subtotal Cost	12.683	20.511	35.650	
RDT&E Articles Quantity				

Continue Network Centric Operations (NCO) warfare capability development. Continue integration of the Distributed Targeting Processor (DTP), Mass Storage Unit (MSU) and Mission Planning Interface (MPI) to provide a baseline capability that can generate precision targeting coordinates for the F/A-18 E/F.

Sensor Integration - SSG / SEI / MSI Phase I	FY 08	FY 09	FY10	
Accomplishments/Effort/Subtotal Cost		8.107	14.900	
RDT&E Articles Quantity				

Continue software algorithm to correlate multiple ground and surface tracks from on-ship to off-ship sensor sources (Single Ship Geo-Location - SSG) to enhance target identification and location (Specific Emitter Identification (SEI)), and to begin integration with the Common Tactical Picture and Blue Force Track information (Multi-Sensor Integration Phase I).

Test Wing Maintenance Conversion	FY 08	FY 09	FY10	
Accomplishments/Effort/Subtotal Cost	9.694	11.735	11.602	
RDT&E Articles Quantity				

Perform aircraft maintenance on Test Wing aircraft.

EXHIBIT R-2a, RDT&E Project Justification		DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	0204136N F/A-18 SQUADRONS	1662 F/A-18 Improvements

B. Accomplishments/Planned Program (Cont.)

Sensor Integration - Multi-Ship Emitter Geo-Location	FY 08	FY 09	FY10	
Accomplishments/Effort/Subtotal Cost			12.510	
RDT&E Articles Quantity				

Emitter Geo-Location spiral development and integration of Multi-Ship Emitter Geo-Location capability. Provides additional autonomous fix phase support for distributed targeting use, situational awareness and targeting information at maximum weapons deployment range increases survivability, and improves overall effectiveness of weapons inventory.

Sensor Integration - A/A, A/G & Maritime MSI Phase II	FY 08	FY 09	FY10	
Accomplishments/Effort/Subtotal Cost			9.020	
RDT&E Articles Quantity				

Phase II spiral development of the Air to Air (A/A), Air to Ground (A/G) and Maritime Multi-Sensor Integration capability to integrate with the Common Tactical Picture and Blue Force Track information (Multi-Sensor Integration Phase I). This effort provides for reduced air to air, air to ground, and maritime Target Location Error (TLE) ellipsoid error and moving target track accuracy. It improves target Identification (ID) and Remote On Engage (ROE) support by merging additional sensor sources to multiple on-board and off-board sensors. It also provides capability to locate, target and engage re-locatable, time sensitive targets.

EXHIBIT R-2a, RDT&E Project Justification		DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	0204136N F/A-18 SQUADRONS	1662 F/A-18 Improvements

C. OTHER PROGRAM FUNDING SUMMARY:

Related Procurement

Line Item No. & Name	FY 2008	FY 2009	FY 2010
F/A-18E/F APN-1 (P-1 Line Item #4)	2716.223	1,814.322	1,009.537
F/A-18E/F Adv Procurement (P-1 Line Item #5)	46.501	42.490	51.431
EA-18G APN-1 (P-1 Line Item #2)	1474.596	1,547.224	1,611.837
EA-18G Adv Procurement (P-1 Line Item #3)	50.771	46.693	20.559
APN-5			
F-18 Series Modification (P-1 Line Item #30)	485.036	480.718	580.129

Related RDT&E

Line Item No. & Name	FY 2008	FY 2009	FY 2010
(U) P.E. 0604269N EA-18G (R-1 Line Item #93)	269.379	128.689	55.446

D. ACQUISITION STRATEGY:

The F/A-18 Improvements program consists of extensive spiral development efforts mapped out in the capability-based approach F/A-18 E/F "Flight Plan." These efforts are critical to the baseline of the Super Hornet next generation mission system capability and maintaining tactical relevance in support of NAvPLAN 2030. The major programs within the F/A-18 Improvements project are based six Weapon System Capabilities: Distributed Targeting Air to Ground (A/G) and Maritime, Distributed Targeting Air to Air (A/A), Net Centric Operations/Battle Space Management, Sensor Integration, A/G & Maritime Attack, and A/A Attack. The major efforts included in this project are: Dual Mode Weapons integration; an Infrared Search and Track (IRST); Integrated Defensive Electronic Counter Measures (IDECM) integrated with the Active Electronically Scanned Array (AESA) to provide Narrow Band High Gain Electronic Attack; Distributed Targeting capability through a Distributed Targeting Processor/Mass Storage Unit (DTP/MSU); Sensor Integration through Multi-Ship Emitter Geo-Location capability and Multi-Sensor Integration (MSI) Phase I & Phase II capability; continued advanced development and F/A-18E/F Flight Plan engineering and analysis; continued enhanced software capabilities development; and engineering support to perform technical evaluations, modeling and simulations, investigative flight testing.

- Infrared Search & Track (IRST). The IRST Phase 1 program is a Navy program that entered the Systems Design and Development phase at Milestone B in FY09. A Phase 1 system will be developed by the Navy that will meet requirements for a counter electronic attack capability.
- Distributed Targeting - Distributed Targeting development is provided on a sole source cost plus fixed fee contract on an Research & Development (R&D) Basic Ordering Agreement to Boeing.
- Sensor Integration - Sensor Integration development is provided on a sole source cost plus fixed fee contract on an Research & Development (R&D) Basic Ordering Agreement to Raytheon.

Exhibit R-3 Cost Analysis (page 1)						DATE: May 2009						
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**			PROGRAM ELEMENT 0204136N F/A-18 SQUADRONS			PROJECT NUMBER AND NAME 1662 F/A-18 Improvements						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 09 Cost	FY 09 Award Date	FY 10 Cost	FY 10 Award Date					
Prior Years Costs	Various	Various	454.785									
Primary Hdw Development ANAV	Various	Boeing, St Louis, MO	0.175									
Weapons Integration - Dual Mode	TBD	NAWCAD-PAX RIVER, MD		0.460	01/09							
Primary Development EW Sensor	TBD	Raytheon, Goleta CA		0.550	01/09	1.250	01/10					
Primary Development EW Sensor	TBD	Boeing, St Louis, MO		2.250	01/09	2.750	01/10					
Primary Hardware Dev IRST	CPFF	Boeing, St Louis, MO	2.342	11.560	01/09	14.329	01/10					
Primary Hdw Dev NCO/DTP	FFP	Boeing, St Louis, MO	4.633	7.278	01/09	12.467	01/10					
Aircraft Integration IDECM	WX	NAWCWD-CHINA LAKE, CA	1.476	1.456	01/09	1.500	01/10					
Subtotal Product Development			463.411	23.554		32.296						

Remarks:

Exhibit R-3 Cost Analysis (page 1)							DATE: May 2009					
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**			PROGRAM ELEMENT 0204136N F/A-18 SQUADRONS			PROJECT NUMBER AND NAME 1662 F/A-18 Improvements						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 09 Cost	FY 09 Award Date	FY 10 Cost	FY 10 Award Date					
Prior Years Cost	Various	Various	2,901.493									
Software Development (Misc)	Various	Various	1.868									
Software Development IRST	WX	NAWCWD-CHINA LAKE, CA										
SW Dev IDECM - HGEA/HGESM	WX	NAWCWD-CHINA LAKE, CA	1.023	2.640	01/09	9.300	01/10					
Development Support IRST	WX	NAWCWD-CHINA LAKE, CA	0.843	2.028	11/08	2.634	11/09					
Development Support IRST	WX	NAWCAD-PAX RIVER, MD	1.218	1.634	11/08	2.158	11/09					
Development Support IRST	WX	NAWCAD-LAKEHURST, NJ	0.035	0.048	11/08	0.099	11/09					
Development Support IRST	WX	FRC-SOUTHEAST	0.233	0.432	11/08	0.446	11/09					
Development Support IRST	WX	FRC-SOUTHWEST		0.040	11/08	0.042	11/09					
SW Dev (TDL) - NCO/DTP	TBD	Boeing, St Louis, MO	2.105	7.278	01/09	12.534	01/10					
Dev Support - Sen Int (SSG / SEI)	WX	NAWCWD-CHINA LAKE, CA		1.436	01/09	1.500	01/10					
Dev Support - Sen Int (SSG / SEI)	TBD	Raytheon, Goleta CA		0.550	01/09	1.250	01/10					
Dev Support - Sen Int (SSG / SEI)	TBD	Boeing, St Louis, MO		2.250	01/09	2.750	01/10					
Dev Support - Sen Int (MSI Phase II)	TBD	NAWCWD-CHINA LAKE, CA				1.533	01/10					
Dev Support - Sen Int (MSI Phase II)	TBD	Boeing, St Louis, MO				4.998	01/10					
Dev Support - Sen Int (Multi Ship Geo)	WX	NAWCWD-CHINA LAKE, CA				6.745	01/10					
Dev Support - Sen Int (Multi Ship Geo)	TBD	Raytheon, Goleta CA				2.714	01/10					
Dev Support - Sen Int (Multi Ship Geo)	TBD	Boeing, St Louis, MO				2.715	01/10					
Subtotal Support			2,908.818	18.336		51.418						

Remarks:

Exhibit R-3 Cost Analysis (page 2)								DATE: May 2009				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**		PROGRAM ELEMENT 0204136N F/A-18 SQUADRONS				PROJECT NUMBER AND NAME 1662 F/A-18 Improvements						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 09 Cost	FY 09 Award Date	FY 10 Cost	FY 10 Award Date					
Prior Years Costs	Various	Various	76.085									
DT&E - ANAV	WX	NAWCAD-PAX RIVER, MD	1.800									
DT&E - ANAV	WX	NAWCWD-CHINA LAKE, CA	1.557									
OT&E - ANAV	WX	OPTEVFOR, NORFOLK, VA	0.200									
DT&E - IRST	WX	NAWCAD-PAX RIVER, MD	0.484	0.626	11/08	1.793	11/09					
DT&E - IRST	WX	NAWCWD-CHINA LAKE, CA	0.609			0.150	11/09					
OT&E - IRST	WX	OPTEVFOR / VX-9	0.003	0.005	02/09	0.005	02/10					
DT&E Dist Targeting - NCO/DTP	WX	NAWCWD-CHINA LAKE, CA	0.883	2.004	01/09	3.049	01/10					
DT&E Dist Targeting - NCO/DTP	WX	NAWCWD-CHINA LAKE, CA	0.030	0.055	01/09	0.065	01/10					
OT&E Dist Targeting - NCO/DTP	WX	OPTEVFOR, NORFOLK, VA	0.300	0.050	01/09	0.100	01/10					
DT&E Sen Integ - SSG/SEI/MSI Ph 1	WX	NAWCWD-CHINA LAKE, CA										
OT&E Sen Integ - SSG/SEI/MSI Ph 1	WX	OPTEVFOR, NORFOLK, VA				1.000	01/10					
DT&E Sen Integ-MSI Ph II	WX	NAWCAD-PAX RIVER, MD				1.830	01/10					
Subtotal T&E			81.951	2.740		7.992						
Remarks:												
Prior Years Costs	Various	Various	23.156									
Program Mgmt Support - NCO/DTP	WX	TBD	1.046	0.770	01/09	0.232	01/10					
Government Eng Support-NCO/DTP	WX	NAWCAD-PAX RIVER, MD	1.456	1.429	01/09	1.400	01/10					
Program Mgmt Support (Misc)	Various	NAWCAD-PAX RIVER, MD	0.733									
Prog Mgmt Support (PMMAC-MSS)	CPFF	NAWCAD-PAX RIVER, MD	1.954	2.500	01/09	2.400	11/09					
Travel	Various	NAWCAD-PAX RIVER, MD	0.900	0.850	Various	0.800	Various					
Flight Plan Engineering	Various	NAWCAD-PAX RIVER, MD	0.600	1.100	01/09	1.100	01/10					
Flight Plan Engineering	Various	NAWCWD-CHINA LAKE, CA	1.400	2.500	01/09	2.200	01/10					
Govt Eng Support-MSI Ph II	WX	NAWCAD-PAX RIVER, MD				0.260	01/10					
Test Wing Maint Conversion	WX	Various	8.800	9.700	01/09	11.762	01/10					
Subtotal Management			40.045	18.849		20.154						
Remarks:												
Total Cost			3,494.225	63.479		111.860						

EXHIBIT R4, Schedule Profile			DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**		PROGRAM ELEMENT NUMBER AND NAME 0204136N F/A-18 SQUADRONS	PROJECT NUMBER AND NAME 1662 F/A-18 Improvements

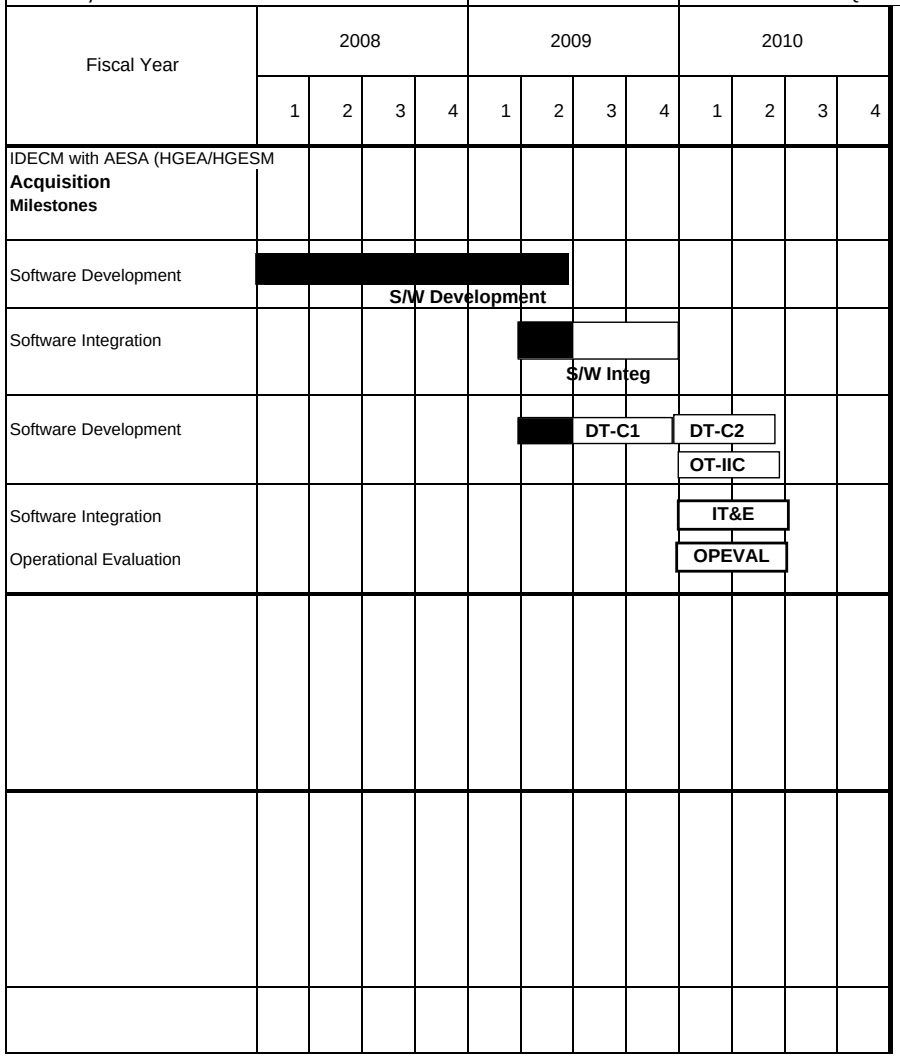

Exhibit R-4a, Schedule Detail					DATE: May 2009			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**					PROJECT NUMBER AND NAME 1662 F/A-18 Improvements			
Schedule Profile for IDECM with AESA (HGEA & HGESM)	FY 2008	FY 2009	FY 2010					
Software Development	1Q-4Q	1Q-2Q						
Software Integration		2Q-4Q						
Developmental Testing (DT-C1)		2Q-4Q						
Developmental Testing (DT-C2)			1Q-2Q					
Integrated Test Evaluation (IT&E old TECHEVAL)			1Q-2Q					
Operational Evaluation (OT-IIC)			1Q-2Q					
Operational Evaluation (OPEVAL)			1Q-2Q					

EXHIBIT R4, Schedule Profile | DATE: **May 2009**

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	0204136N F/A-18 SQUADRONS	1662 F/A-18 Improvements

Fiscal Year	2008				2009				2010			
	1	2	3	4	1	2	3	4	1	2	3	4
IRST Acquisition Milestones							MS B					
Design & Development							System Integration/Development					
IRST System Development				SRR			PDR, IBR, SRR		CDR	DRR		TRR
IRST EDM Delivery												
Software Development/Delivery												
Test & Evaluation Milestones												
Development Test												
Operational Test												
Production Milestones												
Production Deliveries												

Exhibit R-4a, Schedule Detail					DATE: May 2009			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**					PROJECT NUMBER AND NAME 1662 F/A-18 Improvements			
Schedule Profile for IRST	FY 2008	FY 2009	FY 2010					
Milestone B (MS B)		3Q						
System Integration/Development		3Q-4Q	1Q-4Q					
System Readiness Review (SRR)	4Q	3Q						
Integrated Baseline Review (IBR)		3Q						
Preliminary Design Review (PDR)		3Q						
Critical Design Review (CDR)			1Q					
Design Readiness Review (DRR)			2Q					
Test Readiness Review (TRR)			4Q					

EXHIBIT R4, Schedule Profile			DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**	PROGRAM ELEMENT NUMBER AND NAME 0204136N F/A-18 SQUADRONS	PROJECT NUMBER AND NAME 1662 F/A-18 Improvements	

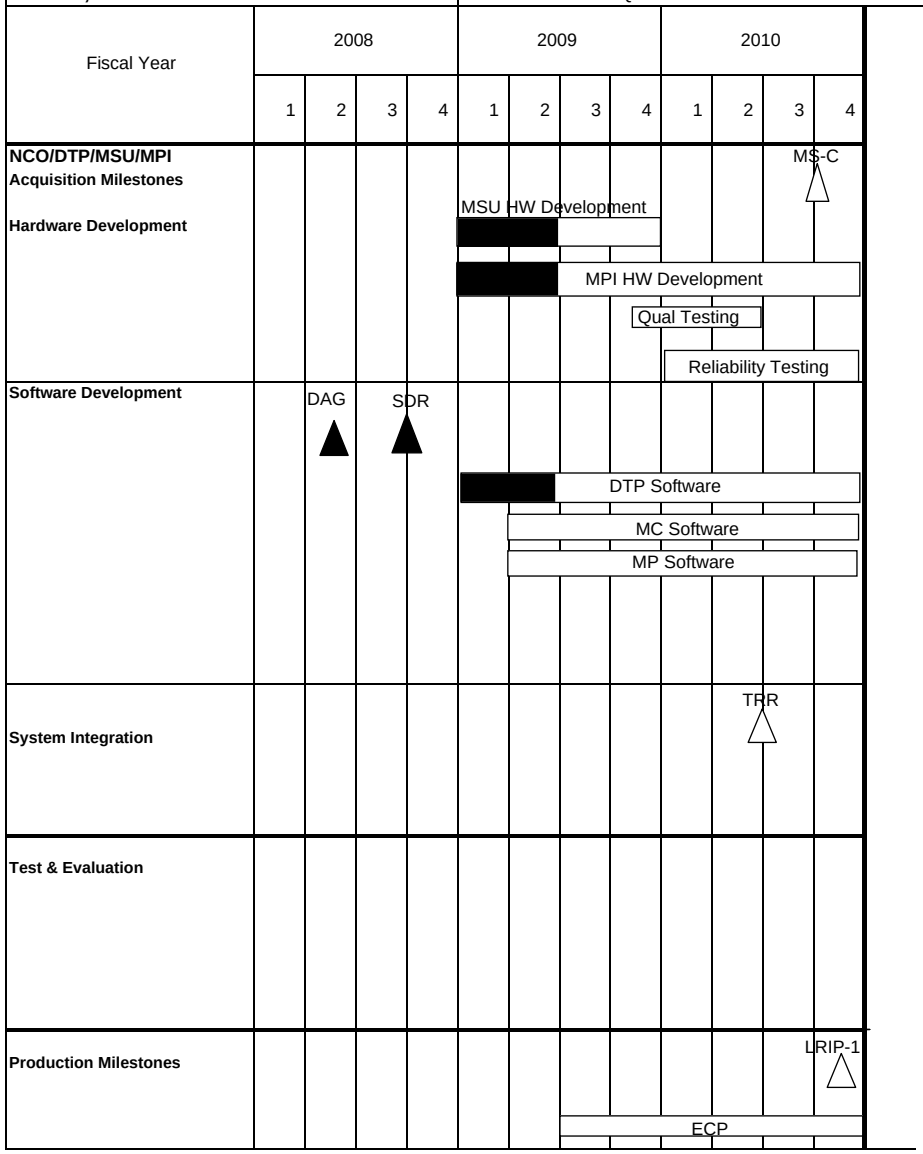

Exhibit R-4a, Schedule Detail				DATE: May 2009				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**				PROJECT NUMBER AND NAME 1662 F/A-18 Improvements				
Schedule Profile for NCO/DTP/MSU/MPI	FY 2008	FY 2009	FY 2010					
Net centric Operations (NCO),Distributed Targeting Processor (DTP),								
Mass Storage Unit (MSU), and Mission Planning Interface (MPI)								
Mass Storage Unit HW Development		1Q-4Q						
Mission Planning Interface HW Development		1Q-4Q	1Q-4Q					
Milestone C			3Q					
Qual Testing		4Q	1Q-2Q					
Reliability Testing			1Q-4Q					
Geo-reg/JSOW Template Design Assessment Group	2Q							
Geo-reg/JSOW Template System Design Review	3Q							
Distributed Targeting Processor SW Development		1Q-4Q	1Q-4Q					
Mission Computer SW Development		2Q-4Q	1Q-4Q					
Mission Planning SW Development		2Q-4Q	1Q-4Q					
Test Readiness Review			2Q					
Low Rate Initial Production (LRIP 1)			4Q					
Engineering Change Proposal (ECP)		3Q-4Q	1Q-4Q					

EXHIBIT R4, Schedule Profile			DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**	PROGRAM ELEMENT NUMBER AND NAME 0204136N F/A-18 SQUADRONS	PROJECT NUMBER AND NAME 1662 F/A-18 Improvements	

Fiscal Year	2008				2009				2010			
	1	2	3	4	1	2	3	4	1	2	3	4
Sensor Integration Multi-Sensor Integ Phase I Single-Ship Emitter Geo-Loc Specific Emitter Identification												
Acquisition Milestones Requirements Definition				Rqmts Definition								
Software Design Interfaces						Design Int						
ALR-67(V)3 Op Flt Program (OFP) Mod								OFP Mod				
Mission Computer (MC) OFP Mod								MC OFP Mod				
H8 Software Release												
Test & Evaluation Milestones										TRR △		
Development Test										DT		

Exhibit R-4a, Schedule Detail					DATE: May 2009			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**					PROJECT NUMBER AND NAME 1662 F/A-18 Improvements			
Schedule Profile for Sen Integ - MSI Phase I	FY 2008	FY 2009	FY 2010					
Requirements Definition		1Q						
Software Design Interfaces		2Q-3Q						
ALR-67(V)3 Operational Flight Program (OFP) Mod		4Q	1Q-2Q					
Mission Computer (MC) OFP Mod		4Q	1Q-2Q					
Test Readiness Review (TRR)			2Q					
Development Test			2Q-4Q					

EXHIBIT R4, Schedule Profile			DATE: **May 2009**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**	PROGRAM ELEMENT NUMBER AND NAME 0204136N F/A-18 SQUADRONS	PROJECT NUMBER AND NAME 1662 F/A-18 Improvements	

Fiscal Year	2008				2009				2010			
	1	2	3	4	1	2	3	4	1	2	3	4
Sensor Integration Multi-Ship Geo-Loc												
Acquisition Milestones Requirements Definition								Rqmts Definition				
Software Design Interfaces										Design Int		
ALR-67(V)3 Op Flt Program (OFP) Mod											OFP Mod	
Mission Computer (MC) OFP Mod										MC OFP Mod		
H8 Software Release												
Test & Evaluation Milestones Development Test Operational Test												
ALR-67(V)3 ECP MC ECP												

Exhibit R-4a, Schedule Detail					DATE: May 2009			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**					PROJECT NUMBER AND NAME 1662 F/A-18 Improvements			
Schedule Profile for Sen Integ-Multi-Ship Geo Loc	FY 2008	FY 2009	FY 2010					
Requirements Definition			1Q					
Software Design Interfaces			2Q-3Q					
ALR-67(V)3 Operational Flight Program (OFP) Mod			4Q					
Mission Computer (MC) OFP Mod			4Q					

EXHIBIT R4, Schedule Profile			DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**	PROGRAM ELEMENT NUMBER AND NAME 0204136N F/A-18 SQUADRONS	PROJECT NUMBER AND NAME 1662 F/A-18 Improvements	

Fiscal Year	2008				2009				2010			
	1	2	3	4	1	2	3	4	1	2	3	4
SENSOR INTEGRATION A/A, A/G & Maritime Multi-Sensor Integ Ph II												
Acquisition Milestones												
Requirements Definition						**Rqmts Definition**						
Design & Development									**Design & Development**			
System Integration												
Integration Testing												
Test & Evaluation												
Test Readiness Review												
Operational Test												
Production Milestones												

Exhibit R-4a, Schedule Detail				DATE: May 2009				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**				PROJECT NUMBER AND NAME 1662 F/A-18 Improvements				
Sensor Integration - A/A, A/G & Maritime MSI Ph II	FY 2008	FY 2009	FY 2010					
Requirements Definition		2Q-4Q						
Design & Development			1Q-4Q					

EXHIBIT R-2a, RDT&E Project Justification							DATE: **May 2009**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**	PROGRAM ELEMENT NUMBER AND NAME 0204136N F/A-18 SQUADRONS				PROJECT NUMBER AND NAME 2065 F/A-18 RADAR Upgrade			
COST ($ in Millions)	FY 2008	FY 2009	FY 2010					
Project Cost	4.028	7.177	15.873					
RDT&E Articles Qty								

DTP Integration Spiral 1

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

F/A-18 Radio Detection and Ranging (RADAR) Upgrade: The F/A-18 RADAR Upgrade, Active Electronically Scanned Array (AESA) development program, which began in FY 1999, is the last of three pre-planned upgrades to the F/A-18 Type/Model/Series RADAR. The AESA system corrects operational test deficiencies noted in the AN/APG-73. It provides for multi-target tracking, Synthetic Aperture RADAR (SAR) imagery, SAR Target Location Error (TLE), and improved spotlight map resolution. In addition, it provides for greater lethality than previous F/A-18 RADARs by allowing for full tactical support of existing and planned air-to-air (A/A) and air-to-ground (A/G) weapons and it significantly increases A/A and A/G detection and tracking ranges. The AESA system provides greater survivability through self-protection and standoff jamming capabilities, while its greater range allows for reduced detection by enemy radar. This budget continues spiral capability development of AESA by increased efforts to address Phase II Operational Requirements Document requirements such as Electronic Protection (EP) against multiple Radio Frequency emitters (Distributed Targeting - AESA Multi-Jammer EP), Electronic Attack and improved Fixed/Ground Mobile Target detection and tracking via minimal hardware/ maximum software changes. The effort will provide upgrades for EP capability against multiple radio frequency emitters. Higher Order Language (HOL) Software development and integration is also required for expanded A/A and A/G capabilities while in a tactical A/A and A/G threat Electronic Attack environment.

EXHIBIT R-2a, RDT&E Project Justification			DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-7	0204136N F/A-18 SQUADRONS	2065 F/A-18 RADAR Upgrade	

B. Accomplishments/Planned Program

Distributed Targeting - AESA EP Eng & Mfg Dev	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	2.410	1.170	1.500	
RDT&E Articles Quantity				

Continue Engineering Manufacturing Development efforts. Continue hardware developmental and refinement to the inherent Electronic Protection (EP) efforts that will increase the number of channels within the Receiver to enable Multi-Channel future software Multi-Jammer Electronic Protection (EP) activities.

Dist Targeting - AESA EP SW Dev, DT, OT, & Integr	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	1.618	6.007	14.373	
RDT&E Articles Quantity				

Continue software development, Development Testing, systems integration efforts, and AESA Operational Test and Evaluation inclusive of some Follow-on Test and Evaluation for minimal hardware/software change efforts. Continue Multi-Jammer Electronic Protection (EP) efforts which expands and improves upon current software capability for Electronic Protection against multiple Radio Frequency emitters, Electronic Attack, and improved Fixed/Ground Mobile Target detection and tracking.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	0204136N F/A-18 SQUADRONS	2065 F/A-18 RADAR Upgrade

C. OTHER PROGRAM FUNDING SUMMARY:

Related Procurement

Line Item No. & Name	FY 2008	FY 2009	FY 2010
F/A-18E/F APN-1 (P-1 Line Item #4)	2762.724	1,856.812	1,060.968
EA-18G APN-1 (P-1 Line Item #2)	1525.367	1,593.917	1,632.396
APN-5			
F-18 Series Mod (P-1 Line Item #30) (OSIP 002-07)	96.913	105.829	120.827

D. ACQUISITION STRATEGY:

The AESA program continues developmental efforts following a successful Full Rate Production milestone decision, after completing a two-phase Acquisition approach during the FY1999 through FY2007 timeframe. This strategy continues utilization of reform initiatives such as: early partnering with industry; leveraging industry investment; optimizing use of Commercial Off-The Shelf (COTS) software and Non-Developmental Item; Cost as an Independent Variable; and Electronic Data Deliverables. Basic Ordering Agreement (BOA) orders for Request for Proposal (RFP) developments are in-place for Boeing, the airframe prime manufacturer/integrator, and Raytheon, the RADAR manufacturer, for focused risk reduction and sustainment of prior developmental activities.

Exhibit R-3 Cost Analysis (page 1)						DATE: May 2009						
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**			PROGRAM ELEMENT 0204136N F/A-18 SQUADRONS			PROJECT NUMBER AND NAME 2065 F/A-18 RADAR Upgrade						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 09 Cost	FY 09 Award Date	FY 10 Cost	FY 10 Award Date					
Primary Hardware Development	SS/CPFF	Boeing, St. Louis, MO	455.749									
GFE	SS/CPFF	Boeing, St. Louis, MO	3.517									
Primary Hardware Development	TBD	NSMA	2.410	1.917	11/08	1.500	11/09					
Subtotal Product Development			461.676	1.917		1.500						
Remarks:												
Software Development	WX	NAWCWD, China Lake, CA	22.515									
Integrated Logistics Support	WX	Various	1.511									
Software Development	WX	NAWCWD, China Lake, CA		2.100	11/08	10.400	11/09					
Subtotal Support			24.026	2.100		10.400						
Remarks:												

Exhibit R-3 Cost Analysis (page 2)						DATE: May 2009						
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**			PROGRAM ELEMENT 0204136N F/A-18 SQUADRONS			PROJECT NUMBER AND NAME 2065 F/A-18 RADAR Upgrade						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 09 Cost	FY 09 Award Date	FY 10 Cost	FY 10 Award Date					
Developmental Test & Evaluation	WX	Various	78.958									
Operational Test & Evaluation	WX	OPTEVFOR, Norfolk, VA	13.384									
Developmental Test & Evaluation	TDL	NAWCWD, China Lake, CA	0.062	1.885	11/08	3.873	11/09					
Developmental Test & Evaluation	TBD	NSMA	0.950									
Developmental Test & Evaluation	TBD	Eglin AFB, FL		1.175	11/08							
Developmental Test & Evaluation	WX	NAWCAD, Pax River, MD	0.382									
Subtotal T&E			93.736	3.060		3.873						
Remarks:												
Program Management Support	Various	NAVAIR Pax River, MD	2.269									
Travel	TO	NAVAIR Pax River, MD	0.868	0.100	11/08	0.100	11/09					
Subtotal Management			3.137	0.100		0.100						
Remarks:												
Total Cost			582.575	7.177		15.873						
Remarks:												

EXHIBIT R4, Schedule Profile		DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	0204136N F/A-18 SQUADRONS	2065 F/A-18 RADAR Upgrade

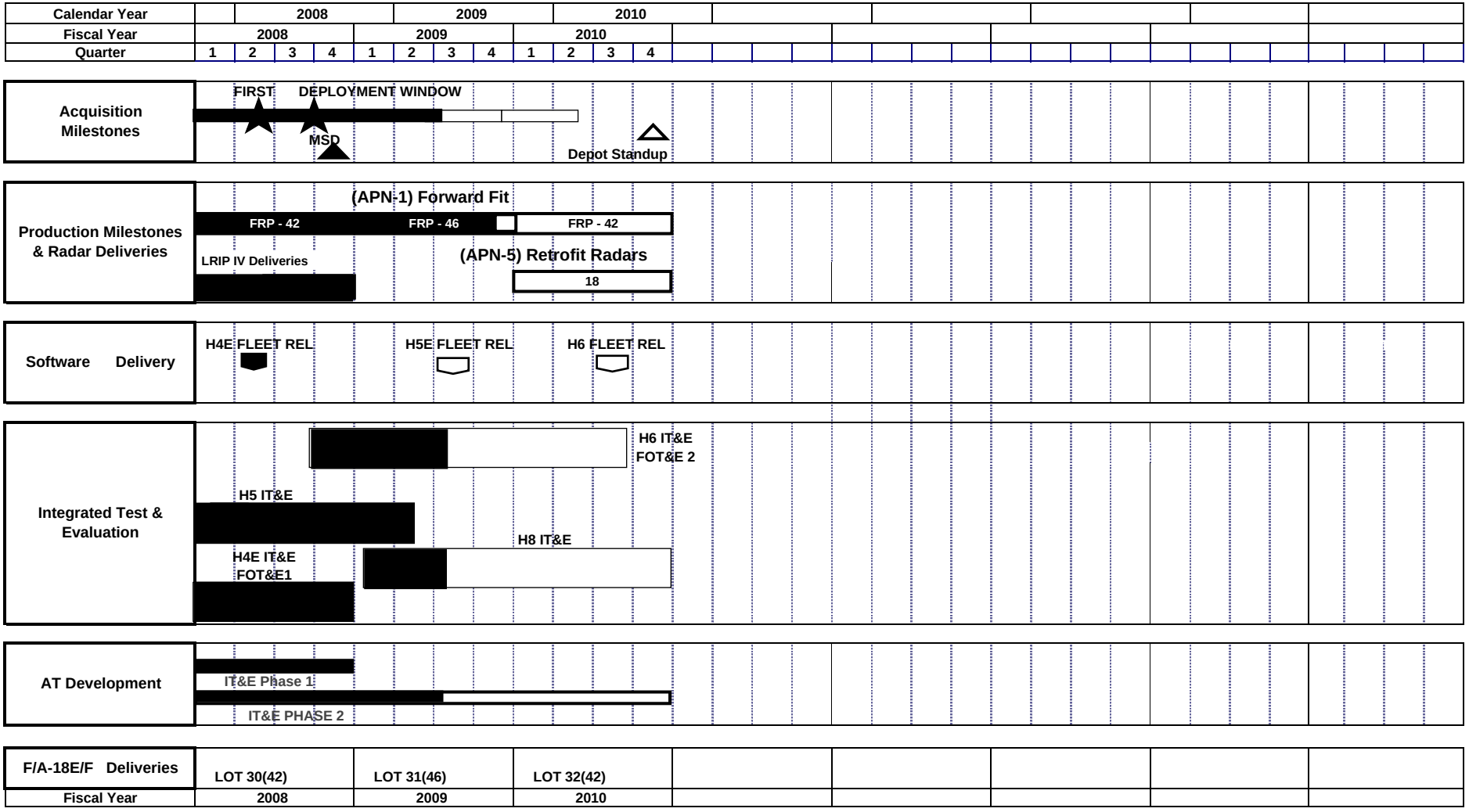

Exhibit R-4a, Schedule Detail							DATE: May 2009	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**	PROGRAM ELEMENT 0204136N F/A-18 SQUADRONS				PROJECT NUMBER AND NAME 2065 F/A-18 RADAR Upgrade			
Schedule Profile	FY 2008	FY 2009	FY 2010					
H4E Integrated Test & Eval (IT&E)	1Q-4Q							
Follow on Operational Test & Eval (OT&E) 1 Phase 1								
Low Rate Initial Production (LRIP) IV Deliveries	1Q-4Q							
Anti-Tamper (AT) IT&E Phase 1	1Q-4Q							
AT IT&E Phase 2	1Q-4Q	1Q-4Q	1Q-4Q					
H5 IT&E	1Q-4Q	1Q-2Q						
H6 IT&E FOT&E2	4Q	1Q-4Q	1Q-3Q					
H8 IT&E		1Q-4Q	1Q-4Q					
H4E Fleet Release	2Q							
First Deployment	3Q-4Q							
H5 Fleet Release		3Q						
Material Support Date (MSD)	4Q							
Full Rate Production (FRP) Deliveries (Lot 30)	1Q-4Q							
FRP Deliveries (Lot 31)		1Q-4Q						
FRP Deliveries (Lot 32)			1Q-4Q					
Depot Standup			4Q					
Retrofit Radar Delivers			1Q-4Q					
H6 FLEET RELEASE			3Q					

EXHIBIT R-2a, RDT&E Project Justification							DATE: May 2009	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**	PROGRAM ELEMENT NUMBER AND NAME 0204136N F/A-18 SQUADRONS				PROJECT NUMBER AND NAME 9999 Congressional Adds			
COST ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Project Cost	2.313	2.394						
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Congressional Adds.

EXHIBIT R-2a, RDT&E Project Justification			DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-7	0204136N F/A-18 SQUADRONS	9999 Congressional Adds	

B. Accomplishments/Planned Program

9C48A Airborne Tactical Server	FY 08	FY 09	FY10	FY11
Accomplishments/Effort/Subtotal Cost	2.313			
RDT&E Articles Quantity				

ATS is a potential replacement solution for analog cockpit video recorders and has digital functionality to enhance platform net centric capability. ATS allows for digital imagery within the aircraft cockpit for real-time mission assessment and/or off-board image transfer for ground based assessments via Mulitple Information Display System (MIDS) and Variable Message Format (VMF). These functions contribute to real time net centric solution that shortens kill chain, the time from target detection to engagement, and other enhanced capabilities.

9E13A Distributed Targeting Processor	FY 08	FY 09	FY10	FY11
Accomplishments/Effort/Subtotal Cost		2.394		
RDT&E Articles Quantity				

Continued integration of the Distributed Targeting Processor (DTP) to provide a baseline capability that can generate precision targeting coordinates for the F/A-18 E/F.