

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Navy									DATE: February 2010		
APPROPRIATION/BUDGET ACTIVITY 1319: Research, Development, Test & Evaluation, Navy BA 5: Development & Demonstration (SDD)				R-1 ITEM NOMENCLATURE PE 0604264N: Air Crew Systems Development							
COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
Total Program Element	15.675	12.513	8.689	0.000	8.689	3.786	3.410	8.306	13.956	Continuing	Continuing
0606: Aircrew System Development	15.675	12.513	8.689	0.000	8.689	3.786	3.410	8.306	13.956	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Aircrew Systems Development program provides Engineering and Manufacturing Development (EMD) of Aviation Life Support Systems to protect aircrews from current and future threats including: directed energy weapons, chemical/biological/radiological agents/fallout, ballistic projectiles, temperature extremes, heat/fire, low concentration oxygen environments, high dynamic forces during emergency egress, and high "G" forces. The program also provides development for the following capabilities: night vision capability, head protection, communications, clothing, in flight restraint and stability emergency egress and descent, escape and evasion, survival and rescue, crash protection, and anthropometric sizing for small aircrew. Acquisition initiatives include: competition, the application of streamlining initiatives, use of non-developmental items (NDI), joint and tri-service developments, and the pursuit of NATO/allied cooperative ventures, which expedite introduction of new products into Navy and Marine Corps fixed and rotary wing aircraft, reduce costs, and promote commonality.

FY11-FY15 Wide Field of View (WFOV) - Night Vision program realigns from Other Procurement Navy (OPN) to Research Development Test & Evaluation (RDT&E) due to the program being placed back into Science & Technology (S&T) development. Procurement will not begin until FY18. This resulted in a reduction of \$2.686M in FY11 which was transferred to the lab for additional S& T efforts, and increases in FY12-15 taken from the WFOV Other Procurement Navy (OPN) line.

UNCLASSIFIED

R-1 Line Item #93

Page 1 of 12

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Navy				DATE: February 2010	
APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOMENCLATURE			
1319: Research, Development, Test & Evaluation, Navy BA 5: Development & Demonstration (SDD)		PE 0604264N: Air Crew Systems Development			
B. Program Change Summary (\$ in Millions)					
	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Previous President's Budget	15.985	14.265	0.000	0.000	0.000
Current President's Budget	15.675	12.513	8.689	0.000	8.689
Total Adjustments	-0.310	-1.752	8.689	0.000	8.689
• Congressional General Reductions		-0.052			
• Congressional Directed Reductions		-1.700			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds		0.000			
• Congressional Directed Transfers		0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.310	0.000			
• Program Adjustments	0.000	0.000	8.689	0.000	8.689
Change Summary Explanation					
Schedule:					
1. Acquisition Milestones:					
A. CMARS Milestone B changed from 3Q09 to 4Q09. Aligned to coincide with current acquisition strategy.					
B. CMARS PDR changed from 1Q10 to 3Q10. Aligned to coincide with current acquisition strategy.					
C. CMARS CDR changed from 1Q10 to 4Q10. Aligned to coincide with current acquisition strategy.					
2. Test and Evaluation:					
A. JHMCS NVCD-DT/OT changed from 1Q07-2Q11 to 1Q07-1Q11. Aligned JHMCS NVCD with JHMCS JPO Program.					
B. LEP-DT changed from 3Q09-1Q10 to 3Q10-2Q11. Delay in Acquisition Decision for contract award.					
C. FDC-DT changed from 4Q08-4Q09 to 4Q08-3Q10. Realigned component & system level test requirements.					
D. CMARS-DT/OT changed from 3Q10-4Q10 to 4Q10-1Q11. Delay in RDT&E contract award.					
E. AE-DT changed from 3Q08-3Q10 to 1Q09-1Q11. Realigned component & system level test requirements.					
3. Production Milestones:					
A. CMARS-DEL changed from 3Q09-4Q15 to 1Q11-4Q15. Realigned with multiple platforms mod schedule.					

UNCLASSIFIED

R-1 Line Item #93

Page 2 of 12

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: Research, Development, Test & Evaluation, Navy BA 5: Development & Demonstration (SDD)	R-1 ITEM NOMENCLATURE PE 0604264N: Air Crew Systems Development	
<p>Technical: N/A</p> <p>FY11 from previous President's Budget is shown as zero because no FY11-15 data was presented in President's Budget 2010.</p>		

UNCLASSIFIED

R-1 Line Item #93

Page 3 of 12

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy								DATE: February 2010			
APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 5: <i>Development & Demonstration (SDD)</i>				R-1 ITEM NOMENCLATURE PE 0604264N: <i>Air Crew Systems Development</i>				PROJECT 0606: <i>Aircrew System Development</i>			
COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
0606: <i>Aircrew System Development</i>	15.675	12.513	8.689	0.000	8.689	3.786	3.410	8.306	13.956	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		
A. Mission Description and Budget Item Justification AIRCREW SYSTEMS: Aircrew Endurance (AE), Laser Eye Protection (LEP), Flight Deck Cranial (FDC), Joint Helment Mounted Cueing System (JHMCS), Night Vision Cueing and Display (NVCD), Wide Field of View (WFOV) and Aircrew Systems (AS). AIRCREW SYSTEMS: AE includes Survival Vests & Armor, Waste Management, Hydration and Universal Camouflage. LEP includes Joint Service Advanced Aircrew Laser Eye Protection Visor (JALEPV) and Laser Eye Protection Improvement Program (LEPIP). FDC includes Improved Hearing Protection. JHMCS NVCD includes JHMCS Night Attack. WFOV includes Non-Ejection WFOV Night Vision Goggles (NVG), and future Ejection (Non-JHMCS) WFOV NVG. AS includes State of the Art (SOA), Common Helmet, Advanced Helmet Vision System, Waste Management, Hydration and Hypoxia Awareness. AIRCRAFT SYSTEMS: Ejection Seat Endurance (ESE) includes aircrew endurance modifications for F/A-18 aircraft. CMARS includes a retractor system for rotary wing aircraft. Aircraft systems include studies for Advanced Crash Protection (ACP), Crashworthy Troop Seats (CWTS), Oxygen Systems and Seat Endurance (NESE) for non-ejection seat aircraft.											
B. Accomplishments/Planned Program (\$ in Millions)											
						FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	
Aircrew System Development						12.008	11.620	7.188	0.000	7.188	
AIRCREW SYSTEMS: AE includes Survival Vests & Armor, Waste Management, Hydration and Universal Camouflage. LEP includes Joint Service Advanced Aircrew Laser Eye Protection Visor (JALEPV) and Laser Eye Protection Improvement Program (LEPIP). FDC includes Improved Hearing Protection. JHMCS NVCD includes JHMCS Night Attack. WFOV includes Non-Ejection WFOV Night Vision Goggles (NVG), and future Ejection (Non-JHMCS) WFOV NVG. AS includes State of the Art											

UNCLASSIFIED

R-1 Line Item #93

Page 4 of 12

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy				DATE: February 2010		
APPROPRIATION/BUDGET ACTIVITY 1319: Research, Development, Test & Evaluation, Navy BA 5: Development & Demonstration (SDD)		R-1 ITEM NOMENCLATURE PE 0604264N: Air Crew Systems Development		PROJECT 0606: Aircrew System Development		
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
(SOA), Common Helmet, Advanced Helmet Vision System, Waste Management, Hydration and Hypoxia Awareness.						
FY 2009 Accomplishments: AE: Developed design and initial prototypes for survival vest and armor and conducted component qualification testing, Preliminary Design Review (PDR) and Critical Design Review (CDR). Developed new universal camouflage color in fire retardant materials. Contract awarded for waste management kits for fleet assessment. LEP: Began development of self and self/threat protection LEP Spectacles and Step-in Visors. FDC: Continued development of an integrated modular FDC that provides improved impact protection, hearing, communications, and speech intelligibility to be used in Developmental Testing/Operational Testing (DT/OT). JHMCS NVCD: Completed Navy DT/OT events including final F/A-18 flight tests and 2 ejection seat sled tests. WFOV: Initiated program, formed team and began planning for execution. AS: SOA: Continued evaluation and authorization of state of the art survival and clothing items.						
FY 2010 Plans: AE: Test survival vest and armor system for integration, compatibility and performance to meet program KPP's and KSA's. Establish universal camouflage shade standards of new color in multiple materials for use in ALSS products. LEP: Award contract for fixed wavelength self/hazard and/or threat protection LEP Visors. Procure Engineering Development Models & First Article Test units to conduct testing to include optical, environmental, and laser saturation as part of Developmental Test. LEP: LEPIP: Procure Advanced Engineering & Development models (AE&D) and S & T units. Conduct testing to include optical, environmental, and laser saturation. FDC: Integrated modular FDC system fleet verification and system evaluation. JHMCS NVCD: Complete testing and logistics planning.						

UNCLASSIFIED

R-1 Line Item #93

Page 5 of 12

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy				DATE: February 2010		
APPROPRIATION/BUDGET ACTIVITY 1319: Research, Development, Test & Evaluation, Navy BA 5: Development & Demonstration (SDD)		R-1 ITEM NOMENCLATURE PE 0604264N: Air Crew Systems Development		PROJECT 0606: Aircrew System Development		
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
WFOV: Conduct studies on digital technology development and monitor S & T to determine technology suitability for non-ejection seat NVG platforms. AS: SOA: Continue evaluation and authorization of state of the art survival and clothing items. FY 2011 Base Plans: AE: Complete fleet assessment for survival vest and armor and conduct Full Rate Production (FRP) Acquisition Decision Review (ADR). LEP: Finish Developmental Test to include cockpit compatibility, flight tests and system validation/ verification for spectacles and visor. FDC: Complete modifications to the FDC system based on fleet assessment results. JHMCS NVCD: Complete final systems integration and work any required engineering changes discovered during OT. WFOV: Conduct studies on digital technology development and monitor S & T determine technology suitability for non-ejection seat NVG platforms. AS: SOA: Continue evaluation and authorization of state of the art survival and clothing items.						
Aircraft Systems AIRCRAFT SYSTEMS: Ejection Seat Endurance (ESE) includes aircrew endurance modifications for F/A-18 aircraft. CMARS includes a retractor system for rotary wing aircraft. Aircraft systems include studies for Advanced Crash Protection (ACP), Crashworthy Troop Seats (CWTS), Oxygen Systems and Seat Endurance (NESE) for non-ejection seat aircraft. FY 2009 Accomplishments: CMARS: Began development of the CMARS retractor system. ESE: Awarded two contracts for GRU-7 and SJU-5/6 seat cushions to be used for fleet assessment. ACS: Continued studies and development of advanced crash protection systems. Awarded FY08/09 contract for for Non-Ejection Seat cushions to be used in fleet assessments.		3.667	0.893	1.501	0.000	1.501

UNCLASSIFIED

R-1 Line Item #93

Page 6 of 12

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy							DATE: February 2010				
APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 5: <i>Development & Demonstration (SDD)</i>			R-1 ITEM NOMENCLATURE PE 0604264N: <i>Air Crew Systems Development</i>			PROJECT 0606: <i>Aircrew System Development</i>					
B. Accomplishments/Planned Program (\$ in Millions)											
						FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	
<p><i>FY 2010 Plans:</i> CMARS: Continue system development. Conduct developmental testing and installation of system into test platform for Operational Tests. ESE: Continuing fleet assessment of aircrew endurance modifications for F/A-18, T-45, EA-6B and AV-8B aircraft and develop ECP. Award first production contract. ACS: Continue feasibility study and development of improved crash worthy troop seats. Conduct improvements on onboard Oxygen systems.</p> <p><i>FY 2011 Base Plans:</i> CMARS: Complete DT/OT and systems integration testing. Award initial procurement contract. ESE: Complete fleet assessments on remaining platforms and conduct engineering change proposals as necessary based upon fleet assessment results.</p>											
Accomplishments/Planned Programs Subtotals						15.675	12.513	8.689	0.000	8.689	
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• OPN/4244: <i>Aviation Life Support</i>	21.609	48.157	40.696	26.024	66.720	65.841	48.871	45.561	43.957	Continuing	Continuing
• APN/0575: <i>Aviation Life Support</i>	1.984	5.577	8.084	0.000	8.084	5.261	5.439	6.813	6.794	77.886	124.968
<i>Mods</i>											
D. Acquisition Strategy											
Commercial Off-The-Shelf (COTS)/NDI where possible, cost plus award fee contracts. Majority of programs non-ACAT programs.											
E. Performance Metrics											
AIRCREW ENDURANCE (AE) - CRITICAL DESIGN REVIEW - 4Q09											
AIRCREW ENDURANCE - MILESTONE C - 1Q11											

UNCLASSIFIED

R-1 Line Item #93

Page 7 of 12

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 5: <i>Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0604264N: <i>Air Crew Systems Development</i>	PROJECT 0606: <i>Aircrew System Development</i>
AIRCREW ENDURANCE - IOC - 1Q12 CMARS - MILESTONE B - 4Q09 CMARS - PROGRAM DESIGN REVIEW (PDR) - 3Q10 CMARS - CRITICAL DESIGN REVIEW (CDR) - 4Q10 CMARS - MILESTONE C - 2Q11 CMARS - INITIAL OPERATION CAPABILITY - 3Q12		

UNCLASSIFIED

R-1 Line Item #93

Page 8 of 12

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy											DATE: February 2010			
APPROPRIATION/BUDGET ACTIVITY 1319: Research, Development, Test & Evaluation, Navy BA 5: Development & Demonstration (SDD)					R-1 ITEM NOMENCLATURE PE 0604264N: Air Crew Systems Development					PROJECT 0606: Aircrew System Development				
Product Development (\$ in Millions)														
				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Systems Eng Aircrew Endurance	WR	Various Various	3.746	1.920	Mar 2010	1.063	Dec 2010	0.000		1.063	2.572	9.301	Continuing	
Systems Eng LEP	WR	NAWCAD Patuxent River, MD	2.700	1.157	Mar 2010	1.096	Dec 2010	0.000		1.096	2.120	7.073	Continuing	
Systems Eng LEP	Various/FP	Various Various	1.547	0.575	Mar 2010	0.658	Dec 2010	0.000		0.658	0.000	2.780	2.780	
Systems Eng Flight Deck Cranial	WR	NAWCAD Patuxent River, MD	1.700	1.000	Mar 2010	0.514	Dec 2010	0.000		0.514	0.946	4.160	Continuing	
Systems Eng Flight Deck Cranial	Various/CPFF	Various Various	2.050	2.112	Mar 2010	0.791	Dec 2010	0.000		0.791	0.000	4.953	4.953	
Systems Eng JHMCS NVCD	Various/Various	Various Various	6.553	1.105	Mar 2010	0.071	Dec 2010	0.000		0.071	0.227	7.956	Continuing	
Systems Eng WFOV	Various/TBD	Various Various	0.470	0.916	Mar 2010	0.464	Dec 2010	0.000		0.464	19.800	21.650	Continuing	
Systems Eng Aircrew Systems	WR	Various Various	3.225	1.560	Mar 2010	1.546	Dec 2010	0.000		1.546	17.775	24.106	Continuing	
Systems Eng CMARS	Various/Various	Various Various	10.317	0.020	Mar 2010	0.705	Dec 2010	0.000		0.705	0.000	11.042	Continuing	
Systems Eng Aircraft Sys	WR	Various Various	38.327	0.873	Mar 2010	0.796	Dec 2010	0.000		0.796	2.732	42.728	Continuing	
Subtotal			70.635	11.238		7.704		0.000		7.704	46.172	135.749	7.733	
Remarks														

UNCLASSIFIED

R-1 Line Item #93

Page 9 of 12

UNCLASSIFIED

Navy

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2011 Navy																							DATE: February 2010									
APPROPRIATION/BUDGET ACTIVITY										R-1 ITEM NOMENCLATURE										PROJECT												
1319: Research, Development, Test & Evaluation, Navy BA 5: Development & Demonstration (SDD)										PE 0604264N: Air Crew Systems Development										0606: Aircrew System Development												
Fiscal Year	2009				2010				2011				2012				2013				2014				2015							
	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																																
AIRCREW ENDURANCE				CDR ▲					MS C ▲					IOC ▲																		
CMARS				MS B ▲			PDR ▲	CDR ▲	MS C ▲						IOC ▲																	
Test & Evaluation Milestones																																
AIRCREW ENDURANCE	DT																															
CMARS									DT/OT																							
JHMCS	DT								OT																							
LEP									DT																							
FLIGHT DECK CRANIAL	DT																															
Production Milestones																																
Production Deliveries																																
AIRCREW ENDURANCE									FRP ▲																							
CMARS													FRP ▲																			
JHMCS NCVD																																

UNCLASSIFIED

R-1 Line Item #93

Page 11 of 12

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2011 Navy			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 5: <i>Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0604264N: <i>Air Crew Systems Development</i>	PROJECT 0606: <i>Aircrew System Development</i>	

Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
Aircrew Endurance: CDR	4	2009	4	2009
Aicrew Endurance: MS C/FRP	1	2011	1	2011
Aircrew Endurance: IOC	1	2012	1	2012
CMARS: MS B	4	2009	4	2009
CMARS: PDR	3	2010	3	2010
CMARS: MS C/FRP	2	2011	2	2011
CMARS: CDR	4	2010	4	2010
CMARS: IOC	3	2012	3	2012
Aircrew Endurance: DT	1	2009	1	2011
CMARS: DT	4	2010	1	2011
JHMCS NVCD: DT/OT	1	2009	1	2011
LEP: DT	3	2010	2	2011
Flight Deck Cranial: DT	1	2009	3	2010
Aircrew Endurance: Deliverables	2	2009	4	2015
CMARS: Deliverables	1	2011	4	2015
JHMCS NVCD: Deliverables	4	2010	4	2015

UNCLASSIFIED