## ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

February 2006

**BUDGET ACTIVITY** 

PE NUMBER AND TITLE

## 4 - Advanced Component Development and Prototypes | 0603827A - Soldier Systems - Advanced Development

	COST (In Thousands)	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total Cost
	Total Program Element (PE) Cost	0	12119	10605	18439	14559	16211	16415	0	86401
S51	AIRCREW INTEGRATED SYS AD	0	3325	3497	3579	3677	4111	4109	0	22298
S52	SOLDIER SUPPORT EQUIPMENT - AD	0	194	205	205	204	414	414	0	1636
S53	CLOTHING AND EQUIPMENT	0	6924	6903	9668	9184	6512	6718	0	45909
S54	SMALL ARMS IMPROVEMENT	0	1676	0	4987	1494	5174	5174	0	16558

A. Mission Description and Budget Item Justification: This is a new Program Element (PE) manages the soldier as a system in order to increase combat effectiveness, test and deliver tangible products that save soldiers' lives, and improve soldiers' quality of life. Starting in FY06, the following program elements and associated projects have been consolidated in this program element: PE 0603801 (Project DB45 ACIS Advanced Development); PE 0603747 (Project DC09 Soldier Support Equipment and Project D669 Clothing and Equipment); and PE 0603802 (Project AS2 Small Arms Improvements and Project AS3 Objective Individual Combat Weapons). The consolidation complies with guidance provided in the FY05 Appropriation Act provided by Congress. Combining these program elements into one common program element streamlines the management and efficiency of developing and testing soldier systems.

Project S51 (Aircrew Integrated Systems) was created upon transition from PE 0603801 (Project DB45 Aircrew Integrated System) in FY06. This project supports component development and prototyping of critical soldier support systems and other combat service support equipment that will improve unit sustainability and combat effectiveness. This project transitions from PE 0603801A.

Project S52 funding (Soldier Support Equipment) supports component development and prototyping of critical soldier support systems and other combat service support equipment that will improve unit sustainability and combat effectiveness. This project was created upon transition from PE 0603747A (Project DC09 Soldier Support Equipment) in FY06.

Project S53 funding (Clothing and Equipment) supports development of state-of-the-art technology to improve tactical and non-tactical clothing and individual equipment to enhance the lethality, survivability, and mobility of the individual Soldier. This project was created upon transition from PE 0603747A (Project 669 Clothing and Equipment) in FY06.

Project S54 (Small Arms Improvement) - Funding profile starts in FY06. This project was created upon transition from PE 0603802 (Project AS2 Small Arms Improvements) in FY06. Provides funds to develop system integration of subsystems and components and emerging technology designed to enhance lethality, target acquisition, fire control, training effectiveness and reliability for current and future small arms weapon systems and ammunition.

ARMY RDT&E BUDGET ITEM .	JUSTIFI	CATION	N (R2 Ex	xhibit)	February 2006
BUDGET ACTIVITY 4 - Advanced Component Development and Prototype		ER AND TITLE <b>A - Soldier</b>		Advanced Development	
B. Program Change Summary	FY 2005	FY 2006	FY 2007		
Previous President's Budget (FY 2006)	0	10595	10443		
Current BES/President's Budget (FY 2007)	0	12119	10605		
Total Adjustments	0	1524	162		
Congressional Program Reductions		-53			
Congressional Rescissions		-123			
Congressional Increases		1700			
Reprogrammings					
SBIR/STTR Transfer					
Adjustments to Budget Years			162		
Change Summary Explanation: Funding - 2006 Congressional incre	ase of \$1.7M f	for New Metal	Coating for G	Greaseless Weapons.	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)  February 2006										
	ET ACTIVITY Ivanced Component Development and Pr	PE NUMBER A <b>0603827A</b> -		stems - Ad	dvanced De	evelopmen	t	PRO <b>S51</b>	JECT	
	COST (In Thousands)	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total Cost
S51	AIRCREW INTEGRATED SYS AD	C	3325	3497	3579	3677	4111	4109	0	22298

A. Mission Description and Budget Item Justification: This project supports advanced component development and prototyping of critical soldier support systems with improved aviator safety, survivability, and human performance that amplify the warfighting effectiveness, and facilitates full-spectrum dominance of the Army aircraft including the AH-64 Apache/Longbow, CH-47 Chinook, UH/HH-60 Blackhawk, Light Utility Helicopter, and Armed Reconnaissance helicopter. These programs include soldier systems and equipment which are unique and necessary for the sustainment, survivability, and performance of Army aircrews and troops on the future integrated battlefield. The Air Warrior program will provide the aircrew with a system approach to noise protection, three-dimensional audio and external audio capability, crash and post-crash survivability, concealment and environmental protection, ballistic protection, night vision and heads-up display, directed energy eye protection and flame/heat protection. Air Warrior enables the Army Aviation Warfighter to meet the approved Operational Requirements Document mission length of 5.3 hours with aviators in full chemical/biological protective gear. Preplanned block improvements integrating new technologies into the Air Warrior system will continue to enhance and maximize aircrew mission performance, comfort, aircrew station interface, safety, and survivability. These funds also resource improved laser protection against emerging new threat systems and product improvement of existing helmets to improve performance and increased commonality. Maximum advantage will be taken of simulation to reduce program technical risk through early user evaluation and to reduce program design and test cost and schedules.

Funds for prior year efforts were funded in PE 0603801A (Project B45 - Aviation Advanced Development).

Accomplishments/Planned Program	FY 2005	FY 2006	FY 2007
Concept exploration of pilot situational awareness and cognitive decision aiding tools.	0	1225	1106
Explore technology to upgrade environmental control and waste management systems.	0	500	502
Concept exploration of helmet technologies and helmet mounted devises.	0	1350	1477
Continue advanced component development of Air Warrior preplanned technology improvements.	0	250	412
Total	0	3325	3497

B. Other Program Funding Summary	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Compl	Total Cost
RDTE, A PE 0603801A PROJ DB45 Adv Dev	6173	0	0	0	0	0	0	0	13274
RDTE, A PE 0604801A PROJ DC45-EMD	3236	0	0	0	0	0	0	CONT	CONT
RDTE, A PE 0604601A PROJ S61-EMD	0	2216	2326	2562	2662	2751	2852	CONT	CONT
Aircraft Procurement, Army SSN AZ3110 - ACIS	32267	31820	35346	42727	39430	57404	42849	CONT	CONT

ARMY RDT&E BUDGET ITEM JU	JSTIFICATION (R2a Exhibit)	February 2006
BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes	PE NUMBER AND TITLE 0603827A - Soldier Systems - Advanced Development	PROJECT <b>S51</b>
capabilities will include a fully compliant Modular Integrated Helmet a 2 components as emerging technologies become available. The MIHD	regrator contract will integrate the Air Warrior (AW) Block 3 features. S and Display System (MIHDS), Chemical, Biological (CB) waste disposal S helmet will provide a day heads up display, nuclear flash protection, exact is a 5 year delivery order cost plus fixed fee and was awarded in Aug	system and upgrades to AW block sternal audio, don in flight CB

Type	4 - Advanced Componen	Contract	ent and Prototypes		FR AND TI						February 2006					
Method & Type	I. Product Development		- Advanced Component Development and Prototype				ms - Adv	anced D	evelopm	ent			Т			
Concept Development						Award		Award		Award			Target Value of Contract			
III. Support Costs		C - CPFF		0	0		2387	1Q	2523	1Q	0	0	0			
Method & Location   PYs Cost   Cost   Award   Date   Cost   Date   Dat	Subto	otal:		0	0		2387		2523		0	0	0			
Subtotal:   0   0   444   465   0   0   0   0   0   0   0   0   0	II. Support Costs	Method &				Award		Award		Award			Target Value of Contract			
III. Test And Evaluation   Contract   Method & Location   PYs Cost   Cost   Award   Cost   Award   Cost   Date   D	Matrix Support	MIPR	Various Government	0	0		444	1-4Q	465	1-4Q	0	0	0			
III. Test And Evaluation	Subto	otal:	<b>-</b>	0	0		444		465		0	0	0			
IV. Management Services  Contract Method & Location Prys Cost Type  Method & Location Prys Cost Type  PM Administration  Allotment Various Government  O O O 494  1-4Q  509  1-4Q  0 O O O O O O O O O O O O O O O O O O	III. Test And Evaluation	Method &				Award		Award		Award			Target Value of Contract			
Method & Location PYs Cost Cost Award Date Cost Award Date PM Administration Allotment Various Government 0 0 0 494 1-4Q 509 1-4Q 0 0 0 Subtotal: 0 0 0 494 509 509 0 0 0	Subto	otal:		0												
Type         Date         Date <th< th=""><th>IV. Management Services</th><th>Contract</th><th>Performing Activity &amp;</th><th>Total</th><th>FY 2005</th><th>FY 2005</th><th>FY 2006</th><th>FY 2006</th><th>FY 2007</th><th>FY 2007</th><th>Cost To</th><th>Total</th><th>Target</th></th<>	IV. Management Services	Contract	Performing Activity &	Total	FY 2005	FY 2005	FY 2006	FY 2006	FY 2007	FY 2007	Cost To	Total	Target			
Subtotal: 0 0 0 494 509 0 0	-		Location	PYs Cost	Cost		Cost		Cost		Complete	Cost	Value of Contract			
	PM Administration	Allotment	Various Government	0	0		494	1-4Q	509	1-4Q	0	0	0			
Project Total Cost.	Subto	otal:		0	0		494		509		0	0	0			
President Total Costs																
Froject rotal Cost:	Project Total	Cost:		0	0		3325		3497		0	0	0			

Schedule Profile (R4 Exhibit						February 20	006
BUDGET ACTIVITY 4 - Advanced Component Development and I	PF NIIMR	ER AND TITLE  A - Soldier Sy	ystems - Advai	nced Devel	opment		ROJECT
Event Name	FY 05	FY 06	FY 07	FY 08	FY 09	FY 10	FY 11
Block 3 Component Development and Demonstration	1 2 3 4	1 2 3 4	1 2 3 4 1 Bloc	2   3   4	1 2 3 4	1 2 3 4	1 2 3
(1) VCOP Components Demo in Adv Prototyping Engr Experimentation Sim		<b>^</b>					

Schedule Detail (R4a Exhibit)							I	February 20	006	
BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes	BER AND 1 27 <b>A - Sol</b>	ystems	- Advar	nced	l Deve	elopm	ent	_	ROJEC <b>551</b>	CT

Schedule Detail	<b>FY 2005</b>	FY 2006	FY 2007	FY 2008	<b>FY 2009</b>	<b>FY 2010</b>	FY 2011
Advanced Component Development of Air Warrior Block 3 improvements.	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
VCOP components demonstration in Adv. Prototyping Engr. Experimentation (APEX) simulator.		3Q					

UDGET	ARMY RDT&E BUDGET I  ACTIVITY anced Component Development and I		PE NUMBER A	AND TITLE	<u> </u>		avolonmont		<b>February 2</b> PRO <b>S52</b>	JECT
- Auv	anced Component Development and I	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Cost to	Total Cost
	COST (In Thousands)	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Complete	Total Cos
2	SOLDIER SUPPORT EQUIPMENT - AD	0	194	205	205	204	414	414	0	16
	on Description and Budget Item Justification: sition Strategy Not applicable for this item	Not applicable	e for this item.							

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)									February 2	006
	ACTIVITY  canced Component Development and Properties of the component of	PE NUMBER A <b>0603827A</b> -		ystems - Ad	lvanced De	evelopment	t	PRO. <b>S53</b>	JECT 5	
	COST (In Thousands)	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total Cost
S53	CLOTHING AND EQUIPMENT	0	6924	6903	9668	9184	6512	6718	0	45909

A. Mission Description and Budget Item Justification: FY07 funding supports the project development and state-of-the-art technology to improve tactical and non-tactical clothing and individual equipment to enhance the survivability, mobility and sustainment affecting the individual Soldier. This project transitioned from PE 0603747 (Project 669 Clothing and Equipment) in FY06.

Accomplishments/Planned Program	FY 2005	FY 2006	FY 2007
FY06: Army Combat Uniform (ACU) II: Conducts technical research and performs laboratory evaluation of enhancements to the ACU that may incorporate permetherin, fire retardant, water repellent and antimicrobial protection.	0	1146	0
FY06: Fully Integrated Combat Helmet (FICH): Continues Product Improvement of helmet components in support of fielding and developmental efforts. Researches technologies to mitigate the effects of high-speed ballistic blunt trama and low-rate impact (crash) protection. Integrates communications headset technologies into the helmet, incorporating hearing protection, radio/intercom and face-to-face communication.	0	777	0
FY06: Modular Lightweight Load Carrying Equipment (MOLLE): Continues design improvements to existing fielded systems as a result of constantly evolving tactics, techniques and procedures for the loadbearing system.	0	548	0
FY06: Modular Boot System: Completes Technical testing initiated in FY05 (under 603747.669) to downselect to one boot that will replace multiple Organizational Clothing and Individual Equipment (OCIE) boots. Completes User test.	0	1091	0
FY06: Soldier Body Armor (SBA) Enhancements: Initiates efforts to investigate technologies that will verify structural integrity of existing ballistic plates and collaborate with industry to mature non-ceramic ballistic materials.	0	747	0
FY06: Organizational Clothing and Individual Equipment (OCIE)Modernization/Moisture Management: Initiates efforts to explore fabric blends, weaves and treatments to assess water repellency, breathability, wearable sensors, mechanical stretch, comfort and durability impacts. Conducts market surveys.	0	373	0
FY06: Combat Eye Protection (CEP): Initiates efforts to leverage and incorporate laser eye protection technology advancements (i.e., scratch and fog resistance) into ballistic goggles and spectacles and assess capability improvements.	0	547	0
FY06: Chemical Protective Ensemble: Initiates development to reduce bulk/weight of current level A/B suit (Self-Contained Toxic Environmental Protective Outfit(STEPO)/Improved Toxicological Agent Protective Ensemble (ITAP)), increase cooling and improve movement capabilities. Builds test samples and performs physical testing and chemical agent testing.	0	483	0
FY06: Self Regulating Thermal Systems (Cold Weather Clothing System/Sleeping System/Medical Blanket): Initiates effort for a Non-layered ensemble that is capable of providing comfort in a wide temperate range. Develops adaptive material and system design features combined with the capability of thermostatic control of the heat/insulation properties of the item by the wearer.	0	667	0
FY06: Army Combat Environmental Clothing System (ACECS): Continues to identify new fabrics, treatments and constuction methods to increase the performance of the Cold Wet Weather Clothing System. Constructs garments for initial technical testing.	0	299	0

ARMY RDT&E BUDGET		February 2006									
BUDGET ACTIVITY 4 - Advanced Component Development and	nt	PROJECT <b>S53</b>									
FY06: Nuclear, Biological, and Chemical (NBC) Hydration FY05 (under 0603747.669). Initiates NBC Hydration Block environment using commercial off the shelf (COTS) on the hydration on the move. Builds samples and performs physical process.	k II to provide th move hydration	e capability to hy concept of opera	ydrate hands fro ation. Complete	ee while in an l	NBC		0	246	0		
FY07: Individual Soldier Ballistic Protection: Leverages ad weight, cube and cost. Integrates and enhances the capabilit Protective Footwear and Combat Helmet capabilities provid Conducts test and evaluation of prototype ballistic ensemble modular layered/integrated ballistic protection system.	0	0	2483								
FY07: Soldier Uniforms and Clothing: Leverages advanced management, flame resistance, antimicrobial treatments, instruments, instruments of the capabilities and durability prototypes. Develops commonality across as broad a spectra system from skin out and head-to-toe.	0	0	1846								
FY07: Individual Equipment: Leverages advancements in t filtration and NBC hydration, and other mission essential ar prototype systems. Develop as much commonality as feasil	nd/or mission spe	ecific equipment	for Soldiers. In	nitiates Test an			0	0	1719		
FY07: Soldier Cooling: Develops, tests and evaluates advar protection ensembles. Conducts trade-off analyses and syst longer periods of time in extreme environments.							0	0	855		
Total							0	6924	6903		
B. Other Program Funding Summary	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	10 FY 2011 To Cor		7 2010 FY 2011		ol Total Cost
RDTE, 0604713.DL40, Clothing and Equipment	5114	0	0	0	0	0	0		0 5114		
RDTE, 0603747.669, Clothing and Equipment	7946	0	0	0	0	0	0		0 7946		
RDTE, 0604601A.S60, Clothing and Eq	0	7805	9222	9466	9387	5998	6101	CON	T CONT		
OMA, 121017, Central Funding and Fielding	146876	150897	167266	112788	96765	98513	50068	CON	T CONT		

<u>C. Acquisition Strategy</u> Programs will pursue normal transition to System Development and Demonstration (SDD) and production. This Project will continue to exercise competitively awarded contracts using best value source selection procedures.

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ARMY RDT	&E COST	Γ ANALYSIS	(R3)					February 2006							
BUDGET ACTIVITY 4 - Advanced Componen	t Developme	ent and Prototypes	PE NUMBE <b>0603827</b>			ms - Adv	anced D	evelopmo	ent	CT					
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Targe Value o Contrac			
Various	MIPRS	Natick Soldier Center, Natick, MA	0	0		2000	1-2Q	1198	1-2Q	Continue	0	(			
Various	Contracts	Various	0	0		2168	1-2Q	2510	1-2Q	Continue	0	(			
Subto	otal:		0	0		4168		3708		Continue	0	(			
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Targe Value o Contrac			
Misc Support Costs	MIPR	Various	0	0		1000	1-2Q	1000	1-2Q	Continue	0	(			
Subto	otal:		0	0		1000		1000		Continue	0	(			
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Targe Value o Contrac			
Various	MIPRS	Various	0	0		400	1-4Q	655	1-4Q	Continue	0				
Subte	II.	1	0	0		400		655		Continue	0	(			
IV. Management Services	Contract Method &	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award	FY 2006 Cost	FY 2006	FY 2007 Cost	FY 2007	Cost To	Total Cost	Targe Value o			
	Type				Date		Award Date		Award Date	Complete		Contrac			
In-House Support		PM CIE Ft Belvoir, VA	0	0		1356	1-4Q	1540	1-4Q	Continue	0	(			
Subtotal:		0	0		1356		1540		Continue	0	(				

ARMY RDT&E COST ANALYS		February 2	006							
BUDGET ACTIVITY  - Advanced Component Development and Prototy	PE NUMBER A	AND TITLE  Soldier Sys	Development	PROJECT <b>S53</b>						
Project Total Cost:	0	0	6924	6903	Continue	0				

Schedule Profile (R4 Exhib	Schedule Profile (R4 Exhibit)												February 2006														
BUDGET ACTIVITY 4 - Advanced Component Development and	PE NU.	мве <b>327</b>	R A	ND TI	TLE ier S	Syst	tems	<b>S -</b> <i>A</i>	Adv	ano	ced	De	vel	opı	oment						PROJECT <b>S53</b>						
<b>Event Name</b>		FY 05		FY 06			FY 07				FY 08					FY 09					FY 10				11	_	
BALLISTIC	1	2 3	4	1	2 3	4	1	2	3	4	1	2	3	4	1	2	3	4		1	2	3	4	1	2	3	4
(1) Soft Body Armor trans to SDD									<u> </u>																		
(2) Adv EOD Prot Ensemble trans to SDD											4	2															
UNIFORM CLOTHING																											
(3) ACU Enhance trans to SDD								3																			
(4) ADV CVC Ensemble trans to SDD																											
(5) Moist Wick Flame Resist trans to SDD										5																	
(6) Modular Boot trans to SDD								6																			
INDIVIDUAL EQUIPMENT																											
(7) NBC Hydration trans to SDD											7																
SOLDIER COOLING																											
(8) Trans to SDD											•	8															

## Schedule Detail (R4a Exhibit)

February 2006

BUDGET ACTIVITY
4 - Advanced Component Development and Prototypes

PE NUMBER AND TITLE

0603827A - Soldier Systems - Advanced Development

S53

Schedule Detail	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Army Combat Uniform User Evaluation Test	2 2 2000	1-4Q	2 2 200	212000	2 2 2002	212010	2 2 2 2 2 2 2
NBC Hydration System User Evaluation Test		1Q					
Modular Boot System Technical Test		1-2Q					
BALLISTIC - SOFT BODY ARMOR TEST & EVAL			1-2Q				
BALLISTIC - SOFT BODY ARMOR TRANS TO SDD			3Q				
BALLISTIC - ADV EOD PROT ENSEMBLE TEST & EVAL			2-4Q	1Q			
BALLISTIC - ADV EOD PROT SENSEMBLE TRANS TO SDD				2Q			
UNIFORM CLOTHING - ACU ENHANCEMENTS TEST & EVAL			1Q				
UNIFORM CLOTHING - ACU ENHANCEMENTS TRANS TO SDD			2Q				
UNIFORM CLOTHING - ADV CVC ENSEMBLE TEST & EVAL			3-4Q	1-2Q			
UNIFORM CLOTHING - ADV CVC ENSEMBLE TRANS TO SDD				4Q			
UNIFORM CLOTHING - MOIST WICK FLAME RESIST UNDERGARMENTS TEST & EVAL			1-3Q				
UNIFORM CLOTHING - MOIST WICK FLAME RESIST UNDERGARMENTS TRANS TO SDD			4Q				
UNIFORM CLOTHING - MODULAR BOOT TEST & EVAL			1Q				
UNIFORM CLOTHING - MODULAR BOOT TRANS TO SDD			2Q				
INDIVIDUAL EQUIPMENT - NBC HYDRATION TEST & EVAL			1-4Q				
INDIVIDUAL EQUIPMENT - NBC HYDRATION TRANS TO SDD				1Q			
SOLDIER COOLING - TEST & EVAL			2-4Q	1Q			
SOLDIER COOLING - TRANS TO SDD				2Q			