

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

February 2003

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604645A - Armored Systems Modernization (ASM)-Eng. Dev.

COST (In Thousands)	FY 2002 Actual	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	0	239213	1701331	2458373	2596341	2094897	2067071	2086678	Continuing	13243904
470 FUTURE COMBAT SYSTEM - SDD	0	157649	1245118	1967611	1853885	1074551	1046145	807495	0	8152454
F49 NETWORKED FIRES SYSTEMS TECHNOLOGY SDD	0	81564	102971	127827	223829	438065	490255	652553	0	2117064
F50 OBJECTIVE FORCE INDIRECT FIRES - SDD	0	0	353242	362935	518627	582281	530671	626630	Continuing	2974386

A. Mission Description and Budget Item Justification: Future combat systems are comprised of a family of advanced, networked air and ground based maneuver, maneuver support, and sustainment systems that will include manned and unmanned platforms...networked via a C4ISR architecture, including networked communications, network operations, sensors, battle command systems, and manned and unmanned reconnaissance and surveillance capabilities that will enable improved situational understanding and operations at a level of synchronization heretofore unachievable.

Future combat systems will operate as a system of systems that will network existing systems, systems already under development, and new systems to be developed to meet the needs of the Unit of Action. The network will enable improved intelligence, surveillance, and reconnaissance, battle command, real time sensor-shooter linkages, and increased synergy between echelons and within small units. It will also enable the Unit of Action to connect to the Unit of Employment, joint capabilities, and national assets making these capabilities available to the small units of the Unit of Action.

Future combat systems enable the networked Unit of Action to develop the situation in and out of contact, set conditions, maneuver to positions of advantage, and to close with and destroy the enemy through standoff attack and combat assault as articulated in the Objective Force Unit of Action operational & organizational plan.

Army transformation is grounded in the operational framework of joint doctrine and the concepts for future joint and combined operations. Transforming to the Objective Force and developing the Future Combat Systems (FCS) is the Army's number one priority. The FCS family of systems is being designed with the joint fight in mind.

The System Development and Demonstration (SDD) Program Element 0604645A, Project F49, Networked Fires Systems Technology was transitioned from the Concept & Technology Demonstration (CTD) Program Element 0603645A, Project F48, Networked Fires System Technology.

The System Development and Demonstration (SDD) Program Element 0604645A, Project F50, Objective Force Indirect Fires was transitioned from the

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

February 2003

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604645A - Armored Systems Modernization (ASM)-Eng. Dev.

Concept & Technology Demonstration (CTD) Program Element 0603845A, Project F47, Objective Force Indirect Fires.

This system supports the Objective transition path of the Transformation Campaign Plan (TCP).

<u>B. Program Change Summary</u>	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2003)	0	59860	399887	771353
Current Budget (FY 2004/2005 PB)	0	239213	1701331	2458373
Total Adjustments	0	179353	1301444	1687020
Congressional program reductions				
Congressional rescissions		-3179		
Congressional increases		190750		
Reprogrammings		-1373		
SBIR/STTR Transfer		-6845		
Adjustments to Budget Years			1301444	1687020

Funding increased due to FCS System Development and Demonstration (SDD) program acceleration.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

February 2003

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604645A - Armored Systems Modernization (ASM)-
Eng. Dev.

PROJECT
470

COST (In Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Cost to Complete	Total Cost
	Actual	Estimate								
470 FUTURE COMBAT SYSTEM - SDD	0	157649	1245118	1967611	1853885	1074551	1046145	807495	0	8152454

A. Mission Description and Budget Item Justification: This project funds the System Development and Demonstration (SDD) of Future Combat Systems (FCS), a DARPA/Army collaborative program established by an MOA signed in February 2000. FCS is the centerpiece of the Army's strategy to achieve the Objective Force.

This project supports the detailed design, integration, and demonstration necessary to begin implementation of advanced architectures, to include detailed architectures for Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR); software and hardware; development including prototype build; and plans for logistics support, environmental issues, training, and fielding.

This project contains funding for all RDT&E activities for the FCS family of systems except for Non-Line of Sight-Launch Systems (F49) and Non-Line of Sight-Cannon (F50). These developmental efforts include manned and unmanned ground vehicles, unmanned aerial systems, unattended sensors, common sensors, and unattended munitions.

The FY04-05 budget supports initiation of the FCS System Development and Demonstration (SDD) phase and conduct of Preliminary Design Reviews (PDR) for FCS subsystems, systems, and System of Systems. FY04 funds the beginning of prototypes manufacturing, integration and testing of subsystems, C4ISR fabrication, testing and integration of prototypes. FY05 funds the delivery of the first prototype, completion of final design, initiation of prototype testing, and Critical Design Reviews (CDR) for FCS subsystems, systems, and System of Systems Increment 1.

To satisfy the Army's urgent capability requirement and to keep up with the pace of technology, the FCS uses an evolutionary acquisition strategy that ensures insertion of mature technologies and capabilities in manageable pieces over time. Component and Technology Development (CTD) and System Development and Demonstration (SDD) for subsequent blocks of capability will be ongoing throughout system development and fielding.

<u>Accomplishments/Planned Program</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Detailed design of platforms, components, and subsystems to include development of the overarching network system of systems	0	85100	438588	551172
Prototype design, development, and manufacturing	0	2400	204600	564500
Software Engineering	0	46149	396250	628219
System Test, Simulation, and Analysis	0	1600	29120	33040

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

February 2003

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604645A - Armored Systems Modernization (ASM)-
Eng. Dev.

PROJECT
470

<u>Accomplishments/Planned Program (continued)</u>	FY 2002	FY 2003	FY 2004	FY 2005
Systems Engineering Program Management (Contractor)	0	4200	77200	92820
Extension of the Advanced Collaborative Environment (classified and unclassified), support for core, matrix and program support and other government agencies.	0	7100	31260	33860
Systems Engineering and Technical Assistance	0	1100	5400	5700
Modeling and Simulation to support the development of FCS	0	0	62700	58300
Intelligent Munitions System	0	10000	0	0
Totals	0	157649	1245118	1967611

<u>B. Other Program Funding Summary</u>	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Compl	Total Cost
PE 0602601A/HH7	19475	0	0	0	0	0	0	0	0	19475
PE 0603005A/53G	110587	114351	114051	111102	48998	0	0	0	0	499089
PE 0603845A/F47	0	356651	0	0	0	0	0	0	0	356651
PE 0604645/F49	0	81564	102971	127827	223829	438065	490255	652553	0	2117064
PE 0604645/F50	0	0	353242	362935	518627	582281	530671	626630	0	2974386
G86100	0	0	0	225289	829206	1038022	3562240	2918987	0	8573744

C. Acquisition Strategy: In September 2001, the Army Leadership synchronized the DARPA/Army efforts to attain an Initial Operational Capability in FY10. This refined direction targets MS B in FY03, transition of program leadership from DARPA to the Army, and initiation of the SDD phase at that time. The Army Leadership approved the Draft Mission Need Statement in Oct 01 clearing the way for continued work in the Concept and Technology Development phase and clarifying requirements to be fulfilled by FCS during the SDD and production phase. The Unit of Action Operational and Organizational Concept was approved in Jul 02.

In February 2002, DARPA awarded the lead systems integrator (LSI) contract to the Boeing/SAIC team. The Acquisition Strategy will be presented to the MDA for approval prior to MS B. It envisions continued development of FCS via the LSI, and includes a contracting strategy that relies upon the Joint LSI/Government team to select the contractor teams for the families of vehicles, sensors, and architecture to be developed in this phase.

The Operational Requirements Document was reviewed by the Army Requirements Oversight Council on 22 January 2003 and tentatively is scheduled to be reviewed by the Joint Requirements Oversight Council on 14 April 2003.

FCS will use evolutionary acquisition to field, develop and upgrade FCS throughout its lifecycle.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

February 2003

BUDGET ACTIVITY

5 - System Development and Demonstration

PE NUMBER AND TITLE

**0604645A - Armored Systems Modernization (ASM)-
Eng. Dev.**

PROJECT

470

The planned acquisition strategy focuses on growing increments of capability at the system of systems level and applying spiral development for individual systems within the FCS family of systems to get to full objective capability. Objective requirements represent the full Objective Force capabilities expected from the system of systems or individual systems. FCS system of systems threshold capability requirements identified in Key Performance Parameters (KPPs) are the minimum acceptable operational values below which the utility of FCS becomes questionable. Other initial threshold requirements represent desired baseline "increment 1" capabilities at system or system of systems level. Planning for subsequent increments or spirals, to include what they consist of and when they occur, is dependent on availability of future technologies, value to the operational concept, affordability, and integration considerations at the system and system of systems level.

ARMY RDT&E COST ANALYSIS(R-3)

February 2003

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - System Development and Demonstration

0604645A - Armored Systems Modernization (ASM)-Eng. Dev.

470

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Detailed System Design	CPAF	The Boeing Company, Seattle WA	0	85100	3Q	438588		551172		0	1074860	0
b . Prototype Design, Development, Manufacturing	CPAF	The Boeing Company, Seattle Wa	0	2400	3Q	204600		564500		0	771500	0
c . Software Engineering	CPAF	The Boeing Company, Seattle WA	0	46149	3Q	396250		628219		0	1070618	0
d . Systems Engineering Program Management (Contractor)	CPAF	The Boeing Company, Seattle WA	0	4200	3Q	77200		92820		0	174220	0
e . Detailed System Design - Intelligent Munitions System	CPIF	TBD	0	10000	2Q	0		0		0	10000	0
Subtotal:			0	147849		1116638		1836711		0	3101198	0

Remarks: The Army is pursuing Legislative permission to utilize "Other Transactions" agreements (OT) for all RDT&E activities for the FCS Family of Systems. Termination liability parameters are agreed to by parties within "Other Transactions" agreements, and do not require funding set-asides for termination liability.

ARMY RDT&E COST ANALYSIS(R-3)

February 2003

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - System Development and Demonstration

0604645A - Armored Systems Modernization (ASM)-Eng. Dev.

470

II. Support Cost	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0	0		0		0		0	0	0

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . System Test, Simulation, and Analysis-Government & Contractor	Various	TBD	0	1600	3Q	29120		33040		0	63760	0
b . Modeling and Simulation	Various	TBD	0	0		62700		58300		0	121000	0
Subtotal:			0	1600		91820		91340		0	184760	0

ARMY RDT&E COST ANALYSIS(R-3)	February 2003
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BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604645A - Armored Systems Modernization (ASM)-Eng. Dev.	PROJECT 470
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IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . ACE,Core Program Support and OGA's	Various	PM FCS	0	7100	1-2Q	31260		33860		0	72220	0
b . SETA Contracts	FFP	Booz-Allen Hamilton, Camber, Warren MI	0	1100	3Q	5400		5700		0	12200	0
Subtotal:			0	8200		36660		39560		0	84420	0

Project Total Cost:			0	157649		1245118		1967611		0	3370378	0
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Schedule Profile Detail (R-4a Exhibit)

February 2003

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - System Development and Demonstration

0604645A - Armored Systems Modernization (ASM)-Eng. Dev.

470

<u>Schedule Detail</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
Mission Needs Statement	1Q							
O&O	4Q							
ASR		2Q						
ORD		2Q						
SDD Solicitation		2Q						
Milestone B		3Q						
SDD Contract Award for FCS		3Q						
PDR for system of systems increment 1		4Q						
Long Lead for Prototypes		3-4Q						
Begin Manufacturing of Prototypes			1-2Q					
Integration and Testing of Subsystems			2-3Q					
C4ISR Fabrication, Testing and Integration in Manufacturing of Prototypes			2-3Q					
First Prototype delivered				2Q				
Final Design Complete				2Q				
Begin Prototype Testing				2Q				
CDR for system of systems increment 1				3Q				
LRIP Long Lead Procurement Decision				4Q				
Milestone C					4Q			
FUE							4Q	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

February 2003

BUDGET ACTIVITY 5 - System Development and Demonstration				PE NUMBER AND TITLE 0604645A - Armored Systems Modernization (ASM)- Eng. Dev.					PROJECT F49		
COST (In Thousands)	FY 2002 Actual	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost	
F49 NETWORKED FIRES SYSTEMS TECHNOLOGY - SDD	0	81564	102971	127827	223829	438065	490255	652553	0	2117064	

A. Mission Description and Budget Item Justification: This project supports the Non-Line-of-Sight Launch System (NLOS-LS) and the Networked Fires and Effects (NFE) Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) capability.

The NLOS-LS effort focuses on the development of a materiel solution to meet the requirements of the NLOS-LS operational requirement as delineated in the Future Combat Systems (FCS) Operational Requirements Document (ORD). NLOS-LS provides lethality for the FCS. NLOS-LS consists of a family of missiles and a highly deployable, platform-independent Container Launch Unit (CLU) with self-contained technical fire control, electronics, and software for remote, unmanned operations. The NLOS-LS Block I configuration will consist of Precision Attack Missiles (PAM) focused on defeating hard targets and Loitering Attack Missiles (LAM) focused on defeating fleeting, high-value targets as well as providing organic targeting information. Each of the missiles will be vertically launched directly from the CLU based on fire missions received via the FCS Unit of Action (UA) network and be capable of being updated in-flight via on-board radios by the network. The vertical launch capability provides a system that is highly deployable and able to engage a wide spectrum of targets in diverse environments and terrain. Both Block I missiles will have Automatic Target Recognition (ATR) capability. Future missile variants in future blocks may include Air Defense and non-lethal variants.

FY03 NLOS-LS effort focuses on maturing technology, thus reducing risk for development of the NLOS-LS missiles and CLU. This effort will transition the Defense Advanced Research Projects Agency (DARPA) NetFires demonstration technologies to the Army and perform trade studies and risk mitigation activities. Further, a preliminary definition of the Block I configuration to meet the requirements of the ORD and FCS schedule will be accomplished based on the trades and risk assessments. Areas of concentration include all elements of the missiles and CLU. As one of the FCS core systems, this risk reduction effort is critical for the NLOS-LS program to meet the program schedule so that the NLOS-LS achieves the system of systems schedule requirement.

FY 04-05 budget supports the initiation of a System Development and Demonstration (SDD) program and conduct of a Preliminary Design Review for NLOS-LS. Efforts will be focused on maturing the design of the Defense Advanced Research Projects Agency (DARPA) NetFires technologies for qualification and producibility, developing warheads and electronic safe and arm devices (ESAD) for PAM and LAM, performing component level testing, and designing interfaces for NLOS-LS to integrate to FCS platforms and the network.

NFE C4ISR provides tactical and technical fire control for a number of systems including Army and Joint mortars, cannons, rockets, missiles, naval gunfire, attack aviation and air support. NFE C4ISR provides attack analysis, system-target pairing, develops mission data, mission planning, ballistics solutions, airspace management and deconfliction.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

February 2003

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
**0604645A - Armored Systems Modernization (ASM)-
 Eng. Dev.**

PROJECT
F49

NFE C4ISR also includes the planning and management of non-lethal systems including the use of information operations capabilities such as operations security (OPSEC), military deception, psychological operations (PSYOP) and electronic warfare (EW). NFE C4ISR provides tactical fire control for the NLOS-LS including missile mission planning and management, CLU Command and Control (C2), munition-target pairing, the ability to designate and employ PAM and LAM, conduct in-flight retargeting and retargeting of in-flight missiles via the tactical information grid. This effort will also develop the communications interface between the NLOS-LS CLU, LAM/PAM, C2 Systems and Observers.

This System Development and Demonstration (SDD) Program Element (0604645A), Project F49 was transitioned from The Concept and Technology Demonstration (CTD) Program Element 0603645A, Project F48.

<u>Accomplishments/Planned Program</u>	FY 2002	FY 2003	FY 2004	FY 2005
(NLOS-LS) Perform trade studies, risk assessments and maturation effort for potential NLOS-LS technologies	0	8947	0	0
(NLOS-LS) Define NLOS-LS increment 1 configuration to include platform and network integration requirements.	0	27650	0	0
(NLOS-LS) Detailed system design	0	0	21780	29422
(NLOS-LS) Prototype design, development, and manufacturing	0	0	10214	13803
(NLOS-LS) System test, Simulation, and Analysis	0	4066	5389	7881
(NLOS-LS) Systems Engineering and Technical Assistance	0	0	1550	1894
(NLOS-LS) Extension of the Advanced Collaborative Environment (ACE), classified and unclassified, support for core, matrix and program support and other government agencies.	0	0	7749	15260
(NLOS-LS) Modeling and Simulation to support the development of FCS	0	0	1642	2401
(NLOS-LS) Software Engineering	0	0	5473	8002
(NFE C4ISR) Mature technology building blocks for key Networked Fires and Effects C4ISR software modules to facilitate subsequent transition of capabilities into FCS.	0	20112	0	0
(NFE C4ISR) Software Engineering. Develop NFE software to provide tactical and technical fire control for Army and Joint mortars, cannons, rockets, missiles, attack aviation, air support, non-lethal effects systems and NLOS-LS PAMs and LAMs. Develop interface between C2 systems, CLU, LAM/PAM and observers.	0	17489	42124	41914
(NFE C4ISR) Extension of the ACE, classified and unclassified, support for core, matrix and program support and other government agencies.	0	3300	5850	6050
(NFE C4ISR) Systems Engineering and Technical Assistance	0	0	1200	1200
Totals	0	81564	102971	127827

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

February 2003

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604645A - Armored Systems Modernization (ASM)-
Eng. Dev.

PROJECT
F49

B. Other Program Funding Summary	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Compl	Total Cost
PE 0602601A/HH7	19475	0	0	0	0	0	0	0	0	19475
PE 0603005A/53G	110587	114351	114051	111102	48998	0	0	0	0	499089
PE 0603845/F47	32000	356651	0	0	0	0	0	0	0	388651
G86100	0	0	0	225289	829206	1638022	3562240	2918987	0	9173744

C. Acquisition Strategy: The SDD NLOS-LS effort will be competed between the CTD contractors. The NFE C4ISR efforts will continue to use existing prime contractors to develop incremental software release, synchronized and coordinated with Missile and CLU efforts to minimize technical and schedule risk in support of FCS FUE in 2008.

ARMY RDT&E COST ANALYSIS(R-3)

February 2003

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - System Development and Demonstration

0604645A - Armored Systems Modernization (ASM)-Eng. Dev.

F49

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Detailed System Design	CPAF	The Boeing Company - Seattle Washington	0	0		21780	1Q	29422	1Q	0	51202	0
b . Prototype Design, Development, Manufacturing	CPAF	The Boeing Company - Seattle Washington	0	0		10214	1Q	13803	1Q	0	24017	0
c . Software Engineering	CPAF	The Boeing Company - Seattle Washington	0	0		47597	1Q	49916	1Q	0	97513	0
d . Prime Contracts (NFE C4ISR)	Sole Source to LSI w/ Primes Full & Open	Boeing LSI, CA ; TBD	0	37601	2Q	0		0		0	37601	0
e . Define FCS NLOS-LS Increment I Configuration and define integration requirements	CPIF	TBD	0	27650	2Q	0		0		0	27650	0
f . Perform Trade Studies, risk assessments and maturation effort for potential NLOS-LS technologies	Various	TBD	0	6460	2Q	0		0		0	6460	0

ARMY RDT&E COST ANALYSIS(R-3)									February 2003			
BUDGET ACTIVITY					PE NUMBER AND TITLE					PROJECT		
5 - System Development and Demonstration					0604645A - Armored Systems Modernization (ASM)-Eng. Dev.					F49		
I. Product Development (continued)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0	71711		79591		93141		0	244443	0
Remarks: The Army is pursuing Legislative permission to utilize "Other Transactions" agreements (OT) for all RDT&E activities for the FCS Family of Systems. Termination liability parameters are agreed to by parties within "Other Transactions" agreements, and do not require funding set-asides for termination liability.												
II. Support Cost	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0	0		0		0		0	0	0
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . System Test, Simulation, and Analysis-Government & Contractor	Various	TBD	0	4066	2Q	5389	1Q	7881	1Q	0	17336	0
b . Modeling and Simulation			0	0		1642	1Q	2401	1Q	0	4043	0
Subtotal:			0	4066		7031		10282		0	21379	0

ARMY RDT&E COST ANALYSIS(R-3)

February 2003

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - System Development and Demonstration

0604645A - Armored Systems Modernization (ASM)-Eng. Dev.

F49

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . ACE, Core Program Support and OGAs	Various	PM FCS	0	5787	2-4Q	13599	1-4Q	21310	1-4Q	0	40696	0
b . SETA Contracts	FFP	Booz-Allen Hamilton, Camber, Warren, Mi	0	0	2Q	2750	1-4Q	3094	1-4Q	0	5844	0
c . Transition DARPA Technologies			0	0		0		0		0	0	0
Subtotal:			0	5787		16349		24404		0	46540	0
Project Total Cost:			0	81564		102971		127827		0	312362	0

Schedule Profile Detail (R-4a Exhibit)

February 2003

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - System Development and Demonstration

0604645A - Armored Systems Modernization (ASM)-Eng. Dev.

F49

<u>Schedule Detail</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
Milestone B		3Q						
SDD Contract award for FCS		3Q						
PDR for system of systems increment I		4Q						
NLOS-LS Increment I SDD Contract Award			1Q					
Integration and Testing of Sub-systems			2-3Q					
C4ISR Fabrication, Testing and Integration in Manufacturing of Prototypes			2-3Q					
NLOS-LS Critical Design Review				4Q				
FCS Milestone C					4Q			
NLOS-LS Increment II SDD Contract Award							1Q	
NLOS-LS LRIP Award							1Q	
NLOS-LS Increment II Critical Design Review							4Q	
FCS FUE							4Q	
NLOS-LS Limited User Testing								3Q
NLOS-LS Increment I FUE								3Q
NFE C4ISR Program Management Review (PMR)		4Q	4Q	3Q	1Q	1Q	1Q	
NFE C4ISR Final Launcher C3 Interface Control Document				1Q				
NFE C4ISR Incremental Mission Planning/Mgmt Module and Launcher C3 Software delivery				1Q	1Q	2Q	1Q	1Q
NFE C4ISR Contract Award		3Q						
NFE C4ISR PDR			2Q					
NFE C4ISR Target Development Simulation			2-4Q					
NFE C4ISR CDR			4Q					
NFE C4ISR System Qualification				2-3Q	4Q	4Q	4Q	
NFE C4ISR LUT				3-4Q				

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

February 2003

BUDGET ACTIVITY 5 - System Development and Demonstration				PE NUMBER AND TITLE 0604645A - Armored Systems Modernization (ASM)- Eng. Dev.					PROJECT F50	
COST (In Thousands)	FY 2002 Actual	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost
F50 OBJECTIVE FORCE INDIRECT FIRES - SDD	0	0	353242	362935	518627	582281	530671	626630	Continuing	2974386

A. Mission Description and Budget Item Justification: This project supports System Development and Demonstration (SDD) efforts for the Non Line of Sight-Cannon (NLOS-C) variant of the Future Combat Systems. The Army's Objective Force will require networked Indirect Fire capability that is an integral component of the Unit of Action, with overmatching combat power, sustainability, agility, and versatility. This will require analysis of the potential solutions and challenges of packaging an indirect fire capability into the FCS system architecture. The maturity of the technologies and components necessary for NLOS-C, (as part of the FCS family of systems) will be assessed, including automation, armaments and ammunition. System Development and Demonstration will include both real and virtual prototypes. Virtual prototypes will be developed using Modeling and Simulation. Modeling and Simulation will be utilized throughout the effort to describe and support design activities, technology feasibility, limitations, and NLOS-C capabilities within the Future Combat System of Systems. SDD will include analysis of multi-role concepts for lethality and resupply. Design and integration of available subsystem hardware (maximize for commonality among the FCS family of systems) will be conducted, leading to demonstrations of the viability/feasibility of selected concept components as applicable.

Future combat systems are comprised of a family of advanced, networked air and ground based maneuver, maneuver support, and sustainment systems that will include manned and unmanned platforms...networked via a C4ISR architecture, including networked communications, network operations, sensors, battle command systems, and manned and unmanned reconnaissance and surveillance capabilities that will enable improved situational understanding and operations at a level of synchronization heretofore unachievable.

Future combat systems will operate as a system of systems that will network existing systems, systems already under development, and new systems to be developed to meet the needs of the Unit of Action. The network will enable improved intelligence, surveillance, and reconnaissance, battle command, real time sensor-shooter linkages, and increased synergy between echelons and within small units. It will also enable the Unit of Action to connect to Unit of Employment, joint capabilities, and national assets making these capabilities available to the small units of the Unit of Action.

The System Development and Demonstration (SDD) Program Element 0604645A, Project F50, Objective Force Indirect Fires was transitioned from the Concept & Technology Demonstration (CTD) Program Element 0603845A, Project F47, Objective Force Indirect Fires.

This project is an integral component of the overall maturation plan for the FCS systems of systems. This supports the Objective Force transition path of the Transformation Campaign Plan (TCP).

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

February 2003

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604645A - Armored Systems Modernization (ASM)-
Eng. Dev.

PROJECT
F50

<u>Accomplishments/Planned Program</u>	FY 2002	FY 2003	FY 2004	FY 2005
Design Mission Module, detailed design of objective force indirect fires mission module components and subsystems.	0	0	99200	112100
Design Common, detailed design of platforms, components and subsystems to include development of the overarching network system of systems that support objective force indirect fires.	0	0	101712	85428
Software Common	0	0	77360	66277
Prototype design, development and manufacturing	0	0	40200	65400
System Engineering, Program Management (Contractor)	0	0	19300	16380
System Test and Evaluation	0	0	7280	8260
Systems Engineering and Technical Assistance	0	0	3000	3500
Extension of the Advanced Collaborative Environment (classified and unclassified), support for core, matrix and program support and other government agencies	0	0	5190	5590
Totals	0	0	353242	362935

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

February 2003

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604645A - Armored Systems Modernization (ASM)-
Eng. Dev.

PROJECT
F50

B. Other Program Funding Summary	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Compl	Total Cost
PE 0604645A/470	0	157649	1245118	1967611	1853885	1074551	1046145	807495	0	8152454
G86100	0	0	0	225289	829206	1638022	3562240	2918987	0	9173744
PE 0603854A/F47	32000	356651	0	0	0	0	0	0	0	388651
PE 0603005/53G	110587	114351	114051	111102	48998	0	0	0	0	499089
PE 0604645/F49	0	81564	102971	127827	223829	438065	490255	652553	0	2117064
PE 0602601A/HH7	19475	0	0	0	0	0	0	0	0	19475

C. Acquisition Strategy: The AAE concurred with the Boeing request to change the FCS competitive strategy and designate United Defense and General Dynamics Land Systems (GDLS) as Vehicle Integrators for FCS Manned Ground Vehicle (MGV) development in System Design and Development and LRIP. Early designation of GDLS and United Defense as FCS Vehicle Integrators will reduce competitive barriers between these corporations and Boeing, allowing these companies to collaborate on common MGV subsystem designs.

ARMY RDT&E COST ANALYSIS(R-3)

February 2003

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - System Development and Demonstration

0604645A - Armored Systems Modernization (ASM)-Eng. Dev.

F50

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Design Mission Module	CPAF	The Boeing Company - Seattle, Washington	0	0		99200	2Q	112100	2Q	666259	877559	0
b . Design Common	CPAF	The Boeing Company - Seattle, Washington	0	0		101712	2Q	85428	2Q	590079	777219	0
c . Software Common	CPAF	The Boeing Company - Seattle, Washington	0	0		77360	2Q	66277	2Q	452908	596545	0
d . Prototype	CPAF	The Boeing Company - Seattle, Washington	0	0		40200	2Q	65400	2Q	332972	438572	0
e . Systems Engineering - Program Management (Contractor)	CPAF	The Boeing Company - Seattle, Washington	0	0		19300	2Q	16380	2Q	112504	148184	0
Subtotal:			0	0		337772		345585		2154722	2838079	0

Remarks: The Army is pursuing Legislative permission to utilize "Other Transactions" agreements (OT) for all RDT&E activities for the FCS Family of Systems. Termination liability parameters are agreed to by parties within "Other Transactions" agreements, and do not require funding set-asides for termination liability.

ARMY RDT&E COST ANALYSIS(R-3)	February 2003
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BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604645A - Armored Systems Modernization (ASM)-Eng. Dev.	PROJECT F50
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II. Support Cost	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0	0		0		0		0	0	0

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . System Test and Evaluation	TBD	TBD	0	0		7280	1-2Q	8260	1-2Q	49000	64540	0
Subtotal:			0	0		7280		8260		49000	64540	0

ARMY RDT&E COST ANALYSIS(R-3)	February 2003
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BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604645A - Armored Systems Modernization (ASM)-Eng. Dev.	PROJECT F50
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IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . ACE, Core Program Support and OGA's	various	PM FCS Lethality	0	0		5190	1-3Q	5590	1-3Q	33992	44772	0
b . SETA Contracts	TBD	TBD	0	0		3000	1-3Q	3500	1-3Q	20495	26995	0
Subtotal:			0	0		8190		9090		54487	71767	0

Project Total Cost:			0	0		353242		362935		2258209	2974386	0
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Schedule Profile Detail (R-4a Exhibit)

February 2003

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604645A - Armored Systems Modernization (ASM)-Eng. Dev.

PROJECT
F50

<u>Schedule Detail</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
Milestone B		3Q						
SDD Contract Award for FCS		3Q						
Long Lead for prototypes		3-4Q						
PDR for system of systems increment I		4Q						
Begin manufacturing of prototypes			1-2Q					
Integration and Testing of Subsystems			2-3Q					
C4ISR Fabrication, Testing and Integration in Manufacturing of Prototypes			2-3Q					
First Prototype delivered				2Q				
Final Design Complete				2Q				
Begin Prototype testing				2Q				
CDR for system of systems Increment I				3Q				
LRIP Long Lead Procurement Decision				4Q				
Milestone C					4Q			
FUE							4Q	