

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

February 2005

BUDGET ACTIVITY

5 - System Development and Demonstration

PE NUMBER AND TITLE

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

COST (In Thousands)		FY 2004 Actual	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		1715355	2268236	3065629	3150136	3128860	3058300	2950951	2600280	Continuing	Continuing
F52	FCS- RECON PLATFORMS & SENSORS	25028	147267	105333	114117	88023	75796	50382	33637	Continuing	Continuing
F53	FCS- UNMANNED GROUND VEHICLES (UGV)	30221	130935	86445	106341	116608	118798	117904	81003	Continuing	Continuing
F54	UNATTENDED SENSORS	6000	28173	2504	5304	6557	6353	5315	2906	Continuing	Continuing
F55	SUSTAINMENT	96339	51191	61581	80020	194036	266860	267032	268028	Continuing	Continuing
F57	MANNED GROUND VEHICLES	184611	409714	549150	778022	818073	793008	840463	576124	Continuing	Continuing
F59	COMMON COMPONENTS	27500	0	0	0	0	0	0	0	0	459755
F60	FAMILY OF SYSTEMS, ANAL&INT	165302	0	0	0	0	0	0	0	0	874746
F61	S O S ENGINEERING AND PROGRAM MANAGEMENT	313348	1500956	2260616	2066332	1905563	1797485	1669855	1638582	Continuing	Continuing
F62	MISSION EQUIPMENT PLATFORMS	132537	0	0	0	0	0	0	0	0	3443026
F63	NETWORK SOFTWARE	111745	0	0	0	0	0	0	0	0	1761406
F64	OTHER CONTRACT COSTS	313536	0	0	0	0	0	0	0	0	1453316
F65	S OF S ENGR & PROG MGT	190331	0	0	0	0	0	0	0	0	1915890
F66	S OF S TEST AND EVALUATION	56347	0	0	0	0	0	0	0	0	446248
F67	SUPPORTABILITY	5252	0	0	0	0	0	0	0	0	214760
F69	TRAINING	7756	0	0	0	0	0	0	0	0	113983
F70	NLOS LAUNCH SYSTEM	49502	0	0	0	0	0	0	0	0	1261043

A. Mission Description and Budget Item Justification: Future Combat Systems (FCS) will operate as a System of Systems (SoS) that will network existing systems, systems already under development, and new systems to be developed to meet the needs of the Unit of Action (UA) (UA will be fielded to M-BCT). 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 UA to connect to the Unit of Employment (UE) (UE is analogous to a division), joining capabilities, and national assets making these capabilities available to the small units of the UA.

FCS enables the networked UA to develop the situation in and out of contact, set conditions, maneuver to positions of advantage to close with and

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destroy the enemy through standoff attack and combat assault as articulated in the Future Force UA Operations and Organizational (O&O) plan.

The FCS program is contained in three Program Elements (PEs): Non-Line of Sight - Launch System (NLOS-LS), Non-Line of Sight - Cannon (NLOS-C) and Armored Systems Modernization (ASM). The NLOS-LS PE develops the NLOS-LS family of missiles including the Container Launch Unit (CL/U) and the Precision Attack Missile (PAM). The NLOS-C PE develops the NLOS-C work and some Manned Ground Vehicles (MGV) common components. PE ASM contains the development effort for the balance of the MGV common components, Unmanned Ground Vehicles (UGVs), Unmanned Air Vehicles (UAVs) and SoS development efforts including network, integration, and software.

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

FCS is comprised of a family of advanced, networked air and ground based maneuver, maneuver support, and sustainment systems that will include manned and unmanned platforms which are networked via a Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) architecture, including networked communications, network operations, sensors, battle command systems, and manned and unmanned reconnaissance and surveillance capabilities. This will enable FCS to achieve improved situational understanding and operations at a level of synchronization heretofore unachievable.

The FCS budget is based on the Work Breakout Structure (WBS). This will provide Congress the same program baseline data for budget justification as the Program Manager uses for program management. The three PEs and eight projects reflect the WBS reporting structure that will be provided to Congress quarterly. A full description of the projects can be found in the project level R2 form. The following is a description of the projects:

F52 includes Class I, Class II, Class III, Class IVa Air Platforms and sensors.

F53 includes Armed Robotic Vehicles (ARV-R (Reconnaissance); ARV-A (Assault); ARV-A(L) (Assault(Light))), Small Unmanned Ground Vehicle (SUGV), Multi-function Utility/Logistics Equipment (MULE-T (Transport), MULE-CM (Countermines)) and the Autonomous Navigation System (ANS)

F54 includes Unattended Ground Sensors (UGS)

F55 includes SDD FCS-UA contractor logistics and training support

F57 includes contractor efforts of all Manned Ground Vehicle (MGV) variants including ICV, MCS, NLOS-M, C2V, RSV, MV, FRMV, MV, XM307 / MK-44 AMMMO Development, Common C4ISR and Common Mobility and Software

F61 includes Government and Contractor efforts associated with the SoS Engineering Family of Systems Analysis, Network Software, SoS Test and Evaluation and Program Management.

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<u>B. Program Change Summary</u>	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2005)	2700455	3791837	3334654
Current Budget (FY 2006/2007 PB)	2268236	3065629	3150136
Total Adjustments	-432219	-726208	-184518
Net of Program/Database Changes			
Congressional Program Reductions	-367170		
Congressional Rescissions			
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer	-65049		
Adjustments to Budget Years		-726208	-184518

Change Summary Explanation: Funding - FY 05-07 funds realigned to new program elements for NLOS Cannon and NLOS Launcher as per Congressional direction.

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BUDGET ACTIVITY 5 - System Development and Demonstration				PE NUMBER AND TITLE 0604645A - Armored Systems Modernization (ASM)-Eng. Dev.				PROJECT F52		
COST (In Thousands)	FY 2004 Actual	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
F52 FCS- RECON PLATFORMS & SENSORS	25028	147267	105333	114117	88023	75796	50382	33637	Continuing	Continuing
<p><u>A. Mission Description and Budget Item Justification:</u> This project covers all air platforms (Class I, Class II, Class III, and Class IVa) and includes contractor development, engineering, prototype procurement and integration, test, and assembly. As part of the Army's restructuring of the FCS program, the previously deferred UAV Class II and Class III systems were reinstated for company-level and battalion-level reconnaissance and target acquisition.</p>										
<u>Accomplishments/Planned Program</u>							FY 2004	FY 2005	FY 2006	FY 2007
Class I: FY05 - The FCS program will build upon the DARPA Micro Air Vehicle (MAV) program. The LSI placed an engineering contract with DARPA's MAV supplier, Honeywell, to mature the prime item development specification, the system architecture, and the risk management plans. This effort will complete the Class I Systems Requirements Review (SRR) to ensure that US Army requirements have been properly identified and captured in the system specifications. FY06 - Following the successful demonstration of MAV technology the LSI will award a contract to Honeywell to develop the Class I system. The LSI, Honeywell, and One Team Partners will build upon the earlier engineering work to mature the specifications, architecture models, and risk management plans that culminates in the conduct of the SFR for the Class I system to demonstrate convergence on and achievability of the system requirements and readiness to initiate system design. FY07- The LSI, Honeywell, and its One Team Partners will conduct the system PDR, which confirms that the system requirements are defined and initial detailed design is ready to be initiated. Major sub-systems and avionics will be delivered to Honeywell's production facility in New Mexico.							0	13254	9602	9961

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)			February 2005			
BUDGET ACTIVITY		PE NUMBER AND TITLE			PROJECT	
5 - System Development and Demonstration		0604645A - Armored Systems Modernization (ASM)-Eng. Dev.			F52	
Accomplishments/Planned Program (continued)			FY 2004	FY 2005	FY 2006	FY 2007
Class II & III: FY 05-The LSI will solicit engineering contracts to selected suppliers to begin Class II and Class III technology analysis and assessment to show how their solutions meet the FCS UAV requirements. These potential solutions are in addition to continued collaboration with DARPA to transition technology from their Organic Air Vehicle (OAV) II and DP-5 programs. The LSI will also award engineering contracts to selected DARPA suppliers to attain similar information and maintain competitive equality. FY 06- The LSI, Army, and DARPA will conduct technology suitability assessments based on the information provided by the selected suppliers, and select finalists for Class II and Class III to continue technology maturation in parallel with the DARPA contractors. Selected components will be delivered by the competing suppliers to demonstrate the technical maturity. FY07- Each of the selected suppliers will contribute to the initial prime item development specs, systems architecture models, and interface definitions and develop risk management plans that demonstrate the suitability of their proposed design solutions. Sub-tier suppliers will deliver air frame, navigation, communication, and control equipment to the competing Class II & III suppliers for integration prior to the flight demonstration that will occur in FY08 to support the final source selections.			0	80996	58130	61882
Class IVa: FY 04 & 05 - The LSI, Northrop Grumman, and its One Team Partners will conduct the System Functional Review (SFR) to confirm the technical feasibility of the design concept, demonstrate convergence on and achievability of the system requirements, and readiness to initiate system design. Long lead authorization to begin fabrication of engines, transmissions, and selected airframe components to maintain production alignment with the Navy Joint program. FY 06- The LSI, Northrop Grumman, and its One Team Partners will conduct the Preliminary Design Review (PDR) to verify that functional allocations, detailed performance specifications, processes and plans are defined and initial detailed design is ready to be initiated. Rolls-Royce will deliver eight power train systems to Schweizer Aircraft to integrate into the Class IV airframes. Subsystem level testing will be preformed at Schweizer Aircraft prior to delivery to Northrop Grumman Unmanned Systems Center in Mississippi. FY 07- The LSI, Northrop Grumman, and its One Team Partners will conduct the system Critical Design Review (CDR) to verify that the majority of design has been completed, will meet requirements, and fabrication and build of the system prototypes is initiated. Schweizer Aircraft will deliver eight Class IV airframes with propulsion systems to Northrop Grumman in Mississippi.			16345	53017	37601	42274
Sensors			8683	0	0	0
Totals			25028	147267	105333	114117

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B. Other Program Funding Summary	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Compl	Total Cost
0604645 F52 UAV RECON & SENSORS	0	147267	105333	114117	88023	75796	50382	33637	Continuing	Continuing
0604645 F53 UGV	0	130935	86445	106341	116608	118798	117904	81003	Continuing	Continuing
0604645 F54 UGS	0	28173	2504	5304	6557	6353	5315	2906	Continuing	Continuing
0604645 F55 SUSTAINMENT	0	51191	61581	80020	194036	266860	267032	268028	Continuing	Continuing
0604645 F57 MANNED GROUND VEHICLES	0	409714	549150	778022	818073	793008	840463	576124	Continuing	Continuing
0604645 F61 SoS Engineering & Program Management	0	1500956	2260616	2066332	1905563	1797485	1669855	1638582	Continuing	Continuing
0604646 F72 Non -LINE OF SIGHT (NLOS-LS)	0	55794	231554	329412	280225	261362	90950	18100	Continuing	Continuing
0604647 F58 Non -LINE OF SIGHT CANON (NLOS-LS-C)	0	476736	107587	262492	273226	140428	139569	72325	Continuing	Continuing
WTCV	0	0	0	0	167402	328778	1520447	3621968	Continuing	Continuing
0604645 F59 Common Components	27500	0	0	0	0	0	0	0	0	27500
0604645 F60 Family of systems, Anal & INT	165302	0	0	0	0	0	0	0	0	165302
0604645 F62 Mission Equipment Platforms	132537	0	0	0	0	0	0	0	0	132537
0604645 F63 Network software	111745	0	0	0	0	0	0	0	0	111745
0604645 F64 Other Contract Costs	313536	0	0	0	0	0	0	0	0	313536
0604645 F65 S of S Engineering & Prog Mgt	190331	0	0	0	0	0	0	0	0	190331
0604645 F66 S of S Test and Evaluation	56347	0	0	0	0	0	0	0	0	56347
0604645 F67 Supportability	5252	0	0	0	0	0	0	0	0	5252
0604645 F69 Training	7756	0	0	0	0	0	0	0	0	7756
0604645 F70 NLOS Launch System	49502	0	0	0	0	0	0	0	0	49502

C. Acquisition Strategy: During the FY06-11 POM process, the Army restructured the PM UA Acquisition Program. The Army announced this restructured plan which strengthen the FCS Program and simultaneously improve the Current Force through early delivery of selected FCS capabilities. The adjustments maintain the Army focus on FCS-equipped UA development and substantially reduce program risk.

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<p>The adjustments to the FCS Program acquisition strategy fall into four primary categories:</p> <ul style="list-style-type: none"> o The development priority in descending order will be the 1) Network, 2) Unattended Munitions, 3) Unmanned systems, and finally 4) Manned Ground Vehicles (MGV). Consequently the MGV development duration will be extended. However, Non Line of-Sight-Cannon (NLOS-C) will lead MGV development and deliver prototype NLOS-C systems in 2008 and deliver Block 0 NLOS-C prototypes in 2010. o The five previously deferred FCS core systems: 1) UAV Class II, 2) UAV III, 3) Armed Robotic Vehicle (ARV) –Assault, 4) ARV-Reconnaissance and 5) FCS Maintenance and Recovery Vehicle will be funded and fielded with the first FCS-equipped UA, allowing UA fielding of the complete 18 + 1 FCS core systems to begin delivery to the Army in 2014. o More robust experimentation and evaluation are included in the program to prove revolutionary concepts, mature the architecture and components, and assist in spiral development. o A series of Spiral Out packages will begin in 2008 and continue every two years through 2014 to insert FCS capability into Current Force Modular Brigade Combat Teams (M-BCTs) to include Stryker, Heavy, and Infantry. <p>The current OTA was modified on 6 Aug 2004 to cover the new Scope of Work (SOW) of the approved POM program. The definitization of the modification is scheduled for February 2005. The PM will be submitting reprogramming request for the FY05 to reflect the above definitization of the modification to the OTA. While the FY06 and beyond reflect the adjusted Army Cost Position (FY06-11 POM approved program), the funding profile for these years may be adjusted upon completion of contract definitization and development of contract/program budget baseline that supports the above program restructure.</p>		

ARMY RDT&E COST ANALYSIS(R3)									February 2005			
BUDGET ACTIVITY 5 - System Development and Demonstration					PE NUMBER AND TITLE 0604645A - Armored Systems Modernization (ASM)- Eng. Dev.					PROJECT F52		
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	Target Value of Contract
a . CLASS I	OTA	THE BOEING CO., SEATTLE,WA SEE REMARK 1	0	7363	1-3Q	9602	1-3Q	9961	1-3Q	Continue	26926	0
b . CLASS II	OTA	THE BOEING CO., SEATTLE,WA SEE REMARK 4	0	13254	1-3Q	17259	1-3Q	18616	1-3Q	Continue	49129	0
c . CLASS III	OTA	THE BOEING CO., SEATTLE,WA SEE REMARK 4	0	29453	1-3Q	40871	1-3Q	43266	1-3Q	Continue	113590	0
d . CLASS IVa	OTA	THE BOEING CO., SEATTLE,WA SEE REMARK 2	16345	27981	1-3Q	37601	1-3Q	42274	1-3Q	Continue	124201	0
e . SENSORS	OTA	THE BOEING CO., SEATTLE,WA SEE REMARK 3	8683	69216	1-3Q	0		0		Continue	77899	0
Subtotal:			25028	147267		105333		114117		Continue	391745	0
Remarks: Remark 1: Subcontractor: Honeywell,- Albuquerque,New Mexico Remark 2: Subcontractor: Northrop Grumman Systems Corp.- San Diego, CA Remark 3: Subcontractor: Northrop Grumman, Electronics Systems Division, Linthieum, MD Remark 4: Subcontractor: Selected in FY06 and FY07.												

ARMY RDT&E COST ANALYSIS(R3)										February 2005		
BUDGET ACTIVITY 5 - System Development and Demonstration					PE NUMBER AND TITLE 0604645A - Armored Systems Modernization (ASM)- Eng. Dev.					PROJECT F52		
II. Support Cost	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	Target Value of Contract
			0	0		0		0		0	0	0
Subtotal:												
Remarks: All support costs for this project are included in F61 SoS Engineering and Program Management project.												
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	Target Value of Contract
			0	0		0		0		0	0	0
Subtotal:												
Remarks: All Test and Evaluation costs for this project are included in F61 SoS Engineering and Program Management project.												
IV. Management Services	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	Target Value of Contract
			0	0		0		0		0	0	0
Subtotal:												
Project Total Cost:			25028	147267		105333		114117		Continue	391745	0

Schedule Profile (R4 Exhibit)

February 2005

BUDGET ACTIVITY

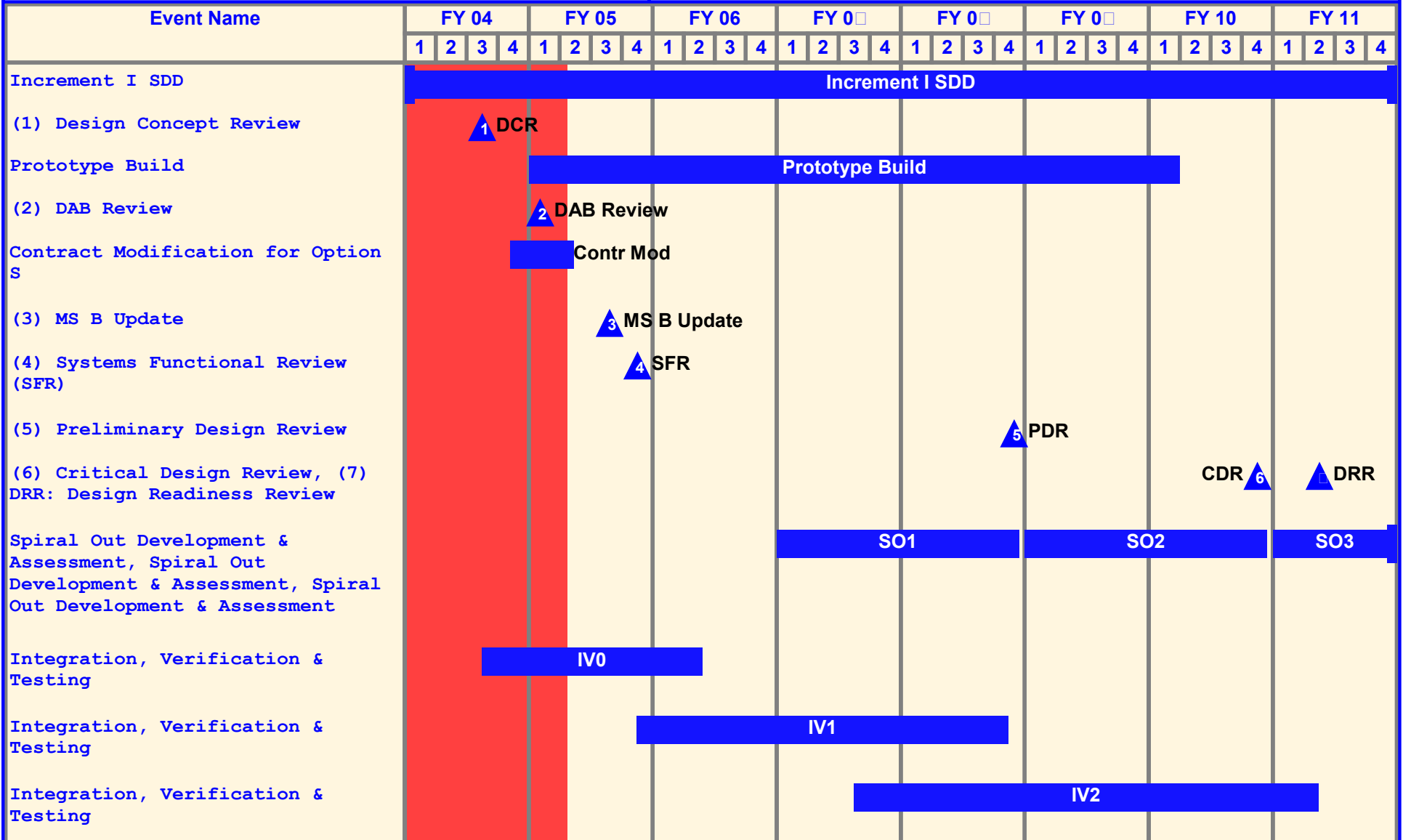
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Schedule Detail (R4a Exhibit)

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<u>Schedule Detail</u>	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
ADM Required MS B Update		3Q						
Definitization of Contract modification for POM-adjusted Program		2Q						
SoS Functional Review (FR)		4Q						
SoS Preliminary Design Review (PDR)					4Q			
Phase 1 Integration at Test Completion		4Q						
Phase 2 Integration at Test Completion				3Q				
Phase 3 Integration at Test Completion					2Q			
SoS Critical Design Review (CDR)							4Q	
Design Ready Review								2Q

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COST (In Thousands)		FY 2004 Actual	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
F53	FCS- UNMANNED GROUND VEHICLES (UGV)	30221	130935	86445	106341	116608	118798	117904	81003	Continuing	Continuing
<p>A. Mission Description and Budget Item Justification: This Project includes Armed Robotic Vehicles (ARV-R (Reconnaissance); ARV-A (Assault); ARV-A(L) (Assault(Light))), Small Unmanned Ground Vehicle (SUGV), Multi-function Utility/Logistics Equipment (MULE-T (Transport) and MULE-CM (Countermine)). In addition the Unmanned Ground Vehicles this project includes the development of the hardware and software for the Autonomous Navigation System (ANS) required for operation of the UGV and leader-follower capability for the Manned Ground Vehicles (MGVs).</p> <p>Major Program Milestones</p> <p>FY05 SUGV: The primary focus will be the refinement of the SUGV development specifications. In January '05, a SRR will be held to access the requirements maturity entering the FCS functional decomposition activity. This will result in the establishment of a baseline SUGV Prime Item Development Specification (PIDS). Finally, SUGV functional requirements will be reviewed at the FCS System of Systems Functional Review (SoSFR), in August '05, which demonstrates convergence on and achievability of the SUGV system requirements and readiness to initiate system design. ANS: The primary focus will be the refinement of the ANS development specifications. In March '05, a SRR will be held to access the requirements maturity entering the FCS functional decomposition activity. This will result in the establishment of a baseline ANS Configuration Item Development Specification (CIDS). Finally, ANS functional requirements will be reviewed at the FCS System of Systems Functional Review (SoSFR), in August '05, which demonstrates convergence on and achievability of the ANS system requirements and readiness to initiate system design. MULE-T, MULE-CM, ARV-A(L): The primary focus will be the refinement of the MULE development specifications. A SRR was held in November '04 to access the requirements maturity entering the FCS functional decomposition activity. This will result in the establishment of baseline MULE Prime Item Development Specifications (PIDS). Finally, functional requirements for all MULE platforms will be reviewed at the FCS System of Systems Functional Review (SoSFR) in August '05. The ARV comes in two variants, the ARV-A (Assault) and the ARV-RSTA (Reconnaissance Surveillance and Target Acquisition). A contract modification will be definitized with United Defense to initiate the full SDD effort for these systems. The primary technical focus will be the refinement of the ARV development specifications. This activity will be reviewed at two major points. An In-Progress Review (IPR) will be held to assess the requirements maturity entering the FCS functional decomposition activity. This will result in the establishment of baseline ARV Prime Item Development Specifications (PIDS), which will be reviewed in the ARV SRR in the September '05 timeframe.</p> <p>FY06 SUGV, ANS, MULE-T, MULE-CM, ARV-A(L), ARV-RSTA, ARV-Assault: The continued refinement of the these specifications will be reviewed at each of</p>											

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their System Functional Reviews (SFR), which will be used to verify that system level requirements are properly aligned with the SoS Specification and correctly flowed down to sub-systems.

FY07

SUGV, ANS, MULE-T, MULE-CM, ARV-A(L), ARV-RSTA, ARV-Assault: A primary focus of the FY06 effort will be the maturation of these system designs. These activities will be reviewed at their Preliminary Design Reviews (PDR). This review will be used to verify that system designs are compliant with system level requirements as outlined in their respective PIDS/CIDs. The SUGV will conduct a Critical Design Review (CDR) to initiate fabrication of prototypes.

Prototypes and Hardware Deliveries

FY07

ANS: A prototype ANS subsystem, the Inertial Navigation System/Global Positioning System (INS/GPS), will be delivered to the MGVI IPT for integration into the NLOS-C Block 0 vehicles.

<u>Accomplishments/Planned Program</u>	FY 2004	FY 2005	FY 2006	FY 2007
Armed Robotic Vehicle-Assault (ARV-A)	0	39281	14686	20304
Armed Robotic Vehicle-Reconnaissance (ARV-R)	0	30115	11216	14934
Armed Robotic Vehicle-Assault(Light) (ARV-A(L))	4068	20950	7969	11537
Small Unmanned Ground Vehicle (SUGV)	3471	7856	2985	3540
Multi-function Utility/Logistics Equipment-Transport (MULE-T)	4914	13094	4798	6453
Autonomous Navigation Systems-Software	10396	0	37594	39893
Multi-function Utility/Logistics Equipment-Countermines (MULE CM)	7372	19639	7197	9680
Totals	30221	130935	86445	106341

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B. Other Program Funding Summary	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Compl	Total Cost
0604645 F52 Unmanned Aerial Vehicles (UAV)	0	147267	105333	114117	88023	75796	50382	33637	Continuing	Continuing
6004645 F53 Unmanned Ground Vehicles (UGV)	0	130935	86445	106341	116608	118798	117904	81003	Continuing	Continuing
0604645 F54 (UGS)	0	28173	2504	5304	6557	6353	5315	2906	Continuing	Continuing
0604645 F55 Sustainment	0	51191	61581	80020	194036	266860	267032	268028	Continuing	Continuing
6064645 F57 (MGV)	0	409714	549150	778022	818073	793008	840463	576124	Continuing	Continuing
6064645 F61 SoS Engineering & Program Management	0	1500956	2260616	2066332	1905563	1797485	1669855	1638582	Continuing	Continuing
0604646 F72 Non-Line of Sight Launch System (NLOS-LS)	0	55794	231554	329412	280225	261362	90950	18100	Continuing	Continuing
0604647 F58 Non-Line of Sight Cannon (NLOS-C)	0	476736	107587	262492	273226	140428	139569	72325	Continuing	Continuing
WTCV	0	0	0	0	167402	328778	1520447	3621968	Continuing	Continuing
0604645 F59 Common Components	27500	0	0	0	0	0	0	0	0	27500
0604645 F60 Family of Systems, Anal & Int	165302	0	0	0	0	0	0	0	0	165302
0604645 F62 Mission Equipment Platforms	132537	0	0	0	0	0	0	0	0	132537
0604645 F63 Network Software	111745	0	0	0	0	0	0	0	0	111745
0604645 F64 Other Contracts Costs	313536	0	0	0	0	0	0	0	0	313536
0604645 F65 S of S Engr & Prog Mgt	190331	0	0	0	0	0	0	0	0	190331
0604645 F66 S of S Test and Evaluation	56347	0	0	0	0	0	0	0	0	56347
0604645 F67 Supportability	5252	0	0	0	0	0	0	0	0	5252
0604645 F69 Training	7756	0	0	0	0	0	0	0	0	7756
0604645 F70 NLOS Launch System	49502	0	0	0	0	0	0	0	0	49502

C. Acquisition Strategy: During the FY06-11 POM process, the Army restructured the PM UA Acquisition Program.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)**February 2005****BUDGET ACTIVITY****5 - System Development and Demonstration****PE NUMBER AND TITLE****0604645A - Armored Systems Modernization
(ASM)-Eng. Dev.****PROJECT****F53**

The Army announced this restructured plan which strengthen the FCS Program and simultaneously improve the Current Force through early delivery of selected FCS capabilities. The adjustments maintain the Army focus on FCS-equipped UA development and substantially reduce program risk. The adjustments to the FCS Program acquisition strategy fall into four primary categories:

- o The development priority in descending order will be the 1) Network, 2) Unattended Munitions, 3) Unmanned systems, and finally 4) Manned Ground Vehicles (MGV). Consequently the MGV development duration will be extended. However, Non Line of-Sight-Cannon (NLOS-C) will lead MGV development and deliver prototype NLOS-C systems in 2008 and deliver Block 0 NLOS-C prototypes in 2010.
- o The five previously deferred FCS core systems: 1) UAV Class II, 2) UAV III, 3) Armed Robotic Vehicle (ARV) –Assault, 4) ARV-Reconnaissance and 5) FCS Maintenance and Recovery Vehicle will be funded and fielded with the first FCS-equipped UA, allowing UA fielding of the complete 18 + 1 FCS core systems to begin delivery to the Army in 2014.
- o More robust experimentation and evaluation are included in the program to prove revolutionary concepts, mature the architecture and components, and assist in spiral development.
- o A series of Spiral Out packages will begin in 2008 and continue every two years through 2014 to insert FCS capability into Current Force Modular Brigade Combat Teams (M-BCTs) to include Stryker, Heavy, and Infantry.

The current OTA was modified on 6 Aug 2004 to cover the new Scope of Work (SOW) of the approved POM program. The definitization of the modification is scheduled for February 2005. The PM will be submitting reprogramming request for the FY05 to reflect the above definitization of the modification to the OTA. While the FY06 and beyond reflect the adjusted Army Cost Position (FY06-11 POM approved program), the funding profile for these years may be adjusted upon completion of contract definitization and development of contract/program budget baseline that supports the above program restructure.

ARMY RDT&E COST ANALYSIS(R3)									February 2005			
BUDGET ACTIVITY 5 - System Development and Demonstration					PE NUMBER AND TITLE 0604645A - Armored Systems Modernization (ASM)- Eng. Dev.					PROJECT F53		
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	Target Value of Contract
a . Armed Robotic Vehicle Assault (ARV- A)	OTA	The Boeing Coimpany Seattle Washington see remark 2	4068	39281	1-3Q	14686	1-3Q	20304	1-3Q	Continue	78339	0
b . Armed Robotic Vehicle Reconnaissance (ARV- R)	OTA	The Boeing Coimpany Seattle Washington see remark 2	0	30115	1-3Q	11216	1-3Q	14934	1-3Q	Continue	56265	0
c . Armed Robotic Vehicle Light (ARV- A(L))	OTA	The Boeing Coimpany Seattle Washington see remark 3	0	20950	1-3Q	7969	1-3Q	11537	1-3Q	Continue	40456	0
d . Small Unmanned Ground Vehicle (SUGV)	OTA	The Boeing Coimpany Seattle Washington see remark 1	3471	7856	1-3Q	2985	1-3Q	3540	1-3Q	Continue	17852	0
e . MULE T	OTA	The Boeing Coimpany Seattle Washington see remark 3	12286	13094	1-3Q	4798	1-3Q	6453	1-3Q	Continue	36631	0
f . Autonomous Navigation System - Software	OTA	The Boeing Coimpany Seattle Washington see remark 4	10396	0		37594	1-3Q	39893	1-3Q	Continue	87883	0
g . MULE CM	OTA	The Boeing Coimpany Seattle Washington see remark 3	0	19639	1-3Q	7197	1-3Q	9680	1-3Q	Continue	36516	0

ARMY RDT&E COST ANALYSIS(R3)									February 2005			
BUDGET ACTIVITY 5 - System Development and Demonstration					PE NUMBER AND TITLE 0604645A - Armored Systems Modernization (ASM)- Eng. Dev.					PROJECT F53		
I. Product Development (continued)	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	Target Value of Contract
Subtotal:			30221	130935		86445		106341		Continue	353942	0
Remarks: Remark 1: Subcontractor: iRobot Corp. - Burlington, MA Remark 2: Subcontractor: United Defense Limited Partnership - Santa Clara, CA Remark 3: Subcontractor: Lockheed Martin Missile and Fire Control - Praire, TX Remark 4: Subcontractor: General Dynamics Robotic Systems - Westminster, MD												
II. Support Cost	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	Target Value of Contract
Subtotal:			0	0		0		0		0	0	0
Remarks: All support costs for this project are included in F61 SoS Engineering and Program Management project.												
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	Target Value of Contract
Subtotal:			0	0		0		0		0	0	0
Remarks: All Test and Evaluation costs for this project are included in F61 SoS Engineering and Program Management project.												

ARMY RDT&E COST ANALYSIS(R3)										February 2005		
BUDGET ACTIVITY 5 - System Development and Demonstration					PE NUMBER AND TITLE 0604645A - Armored Systems Modernization (ASM)- Eng. Dev.					PROJECT F53		
IV. Management Services	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	Target Value of Contract
			0	0		0		0		0	0	0
Subtotal:												
Project Total Cost:						30221	130935		86445		106341	Continue 353942 0

Schedule Profile (R4 Exhibit)

February 2005

BUDGET ACTIVITY

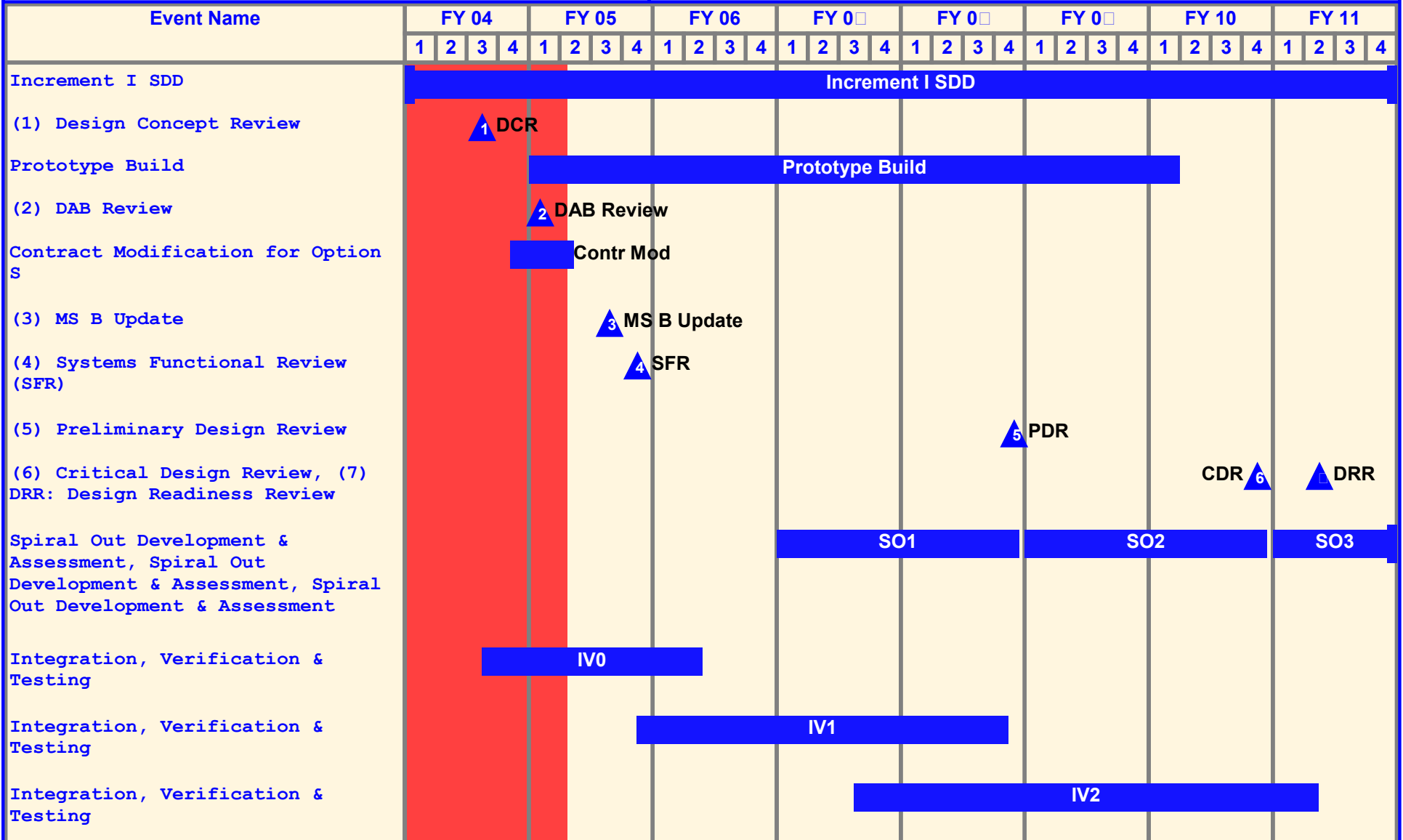
5 - System Development and Demonstration

PE NUMBER AND TITLE

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

PROJECT

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Schedule Detail (R4a Exhibit)

February 2005

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<u>Schedule Detail</u>	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
ADM Required MS B Update		3Q						
Definitization of Contract Modification for POM-adjusted Program		2Q						
SoS Functional Review (FR)		4Q						
SoS Preliminary Design Review (PDR)					4Q			
Phase 1 Integration at Test Completion		4Q						
Phase 2 Integration at Test Completion				3Q				
SoS Critical Design Review (CDR)							4Q	
Phase 3 Integration at Test Completion					2Q			
Design Ready Review								2Q

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

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(ASM)-Eng. Dev.**

PROJECT

F54

COST (In Thousands)	FY 2004 Actual	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
F54 UNATTENDED SENSORS	6000	28173	2504	5304	6557	6353	5315	2906	Continuing	Continuing

A. Mission Description and Budget Item Justification: This Project includes the Unattended Ground Sensors (UGS) development, engineering, prototype procurement and integration assembly.

The UGS program is an end-to-end, turnkey system of integrated acoustic and seismic sensors, multi-layer and multi-sensor fusion algorithms, networks and fielded hardware to provide warfighters with high confidence detection, classification and tracking of non-line of sight, mobile time critical targets in denied enemy areas. High confidence levels and precision will allow for indirect fire weapon targeting, remote scouting and augmentation/cueing of other C4ISR systems.

There are two configurations of UGS; Tactical and Urban. Tactical UGS (T-UGS) are designed for remote tactical operations in open spaces, at road choke points, avenues of approach, etc, and are designed to be emplaced by hand or by remote deployment methods.

The Urban Unattended Ground Sensor (U-UGS) system is designed for use in confined spaces such as rooms, halls, attics, basements, sewers, caves, and alleyways, for example, when a platoon or squad clears a building U-UGS are left behind to perform surveillance that would otherwise require dedicating soldiers. The U-UGS system does this by providing a self-organizing wireless network that consists of three configuration items; personnel detect sensors, imaging sensors, and gateways.

MAJOR PROGRM MILESTONES

The UGS systems for the 2005 to 2007 timeframe are based on low risk, mature, and proven technologies that will deliver critical capabilities to the Unit of Action (UA) during first FCS Integration Phase. The modular design of these systems will allow for simplified integration of new capabilities within subsequent FCS spirals.

The System Functional Review (SFR) will demonstrate the convergence and achievability of the UGS system requirements as well as the readiness to initiate the system design activities. This review reflects the definition of the requirements and completion of the UGS concept analysis and trade studies. At this point, the detailed design phase of the program will be initiated. The UGS CDR is scheduled for July 2006 and marks the majority of the design being completed and the initiation of the UGS fabrication and build phase.

PROTOTYPES and COMPONENT DELIVERIES

The UGS program is scheduled to deliver final configuration, pre-qualification hardware to Boeing's C4ISR System Integration Lab (SIL) in December

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)**February 2005****BUDGET ACTIVITY****5 - System Development and Demonstration****PE NUMBER AND TITLE****0604645A - Armored Systems Modernization
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2006 for integration testing with the C4ISR network elements. This hardware delivery will augment, and be used in conjunction with, other planned UGS Modeling & Simulation (M&S) efforts to conduct the Integration & Verification (IV) phase activities, as described below. The UGS program is on track to deliver fully qualified UGS systems to the FCS System of Systems (SoS) SIL in June 2007.

SIMULATION and EMULATION DELIVERABLES

The UGS program will utilize Modeling and Simulation (M&S) to support concept definition, UGS design analysis and trades, and integration into the FCS System of Systems (SoS) network-centric environment. A series of Integration & Verification (IV) phases activities are planned. Within the 2006-2007 time frame, an IV phase 0 (IV0) is being performed to stand up the M&S infrastructure and to develop the initial UGS models. These efforts will be continued through IV phase 1 (IV1) to develop and exercise models consistent with the spiral 1 UGS configuration and FCS environment

Accomplishments/Planned Program

Unattended Ground Sensors (UGS)

Totals

FY 2004**FY 2005****FY 2006****FY 2007**

6000

28173

2504

5304

6000

28173

2504

5304

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B. Other Program Funding Summary	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Compl	Total Cost
0604645 F52 UAV Recon Platform and Sensors	0	147267	105333	114117	88023	75796	50382	33637	Continuing	Continuing
0604645 F53 (UGV)	0	130935	86445	106341	116608	118798	117904	81003	Continuing	Continuing
0604645 F54 (UGS)	0	28173	2504	5304	6557	6353	5315	2906	Continuing	Continuing
0604645 F55 Sustainment	0	51191	61581	80020	194036	266860	267032	268028	Continuing	Continuing
0604645 F57 Manned Ground Vehicles (MGV)	0	409714	549150	778022	818073	793008	840463	576124	Continuing	Continuing
0604645 F61 SoS Engineering & Program Management	0	1500956	2260616	2066332	1905563	1797485	1669855	1638582	Continuing	Continuing
0604646 F72 Non-Line of Sight Launch System (NLOS-LS)	0	55794	231554	329412	280225	261362	90950	18100	Continuing	Continuing
0604647 F58 Non-Line of Sight - Cannon (NLOS-C)	0	476736	107587	262492	273226	140428	139569	72325	Continuing	Continuing
WTCV	0	0	0	0	167402	328778	1520447	3621968	Continuing	Continuing
0604645 F59 Common Components	27500	0	0	0	0	0	0	0	0	27500
0604645 F60 Family of Systems, Anal & Int	165302	0	0	0	0	0	0	0	0	165302
0604645 F62 Mission Equipment Platforms	132537	0	0	0	0	0	0	0	0	132537
0604645 F63 Network Software	111745	0	0	0	0	0	0	0	0	111745
0604645 F64 Other Contract Costs	313536	0	0	0	0	0	0	0	0	313536
0604645 F65 S OF S Engr & Prog Mgt	190331	0	0	0	0	0	0	0	0	190331
0604645 F66 S OF S Test and Evaluation	56347	0	0	0	0	0	0	0	0	56347
0604645 F67 Supportability	5252	0	0	0	0	0	0	0	0	5252
0604645 F69 Training	7756	0	0	0	0	0	0	0	0	7756
0604645 F70 NLOS Launch Systems	49502	0	0	0	0	0	0	0	0	49502

C. Acquisition Strategy: During the FY06-11 POM process, the Army restructured the PM UA Acquisition Program. The Army announced this restructured plan which strengthen the FCS Program and simultaneously improve the Current Force through early delivery of selected FCS

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)**February 2005****BUDGET ACTIVITY****5 - System Development and Demonstration****PE NUMBER AND TITLE****0604645A - Armored Systems Modernization
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capabilities. The adjustments maintain the Army focus on FCS-equipped UA development and substantially reduce program risk. The adjustments to the FCS Program acquisition strategy fall into four primary categories:

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- o The five previously deferred FCS core systems: 1) UAV Class II, 2) UAV III, 3) Armed Robotic Vehicle (ARV) –Assault, 4) ARV-Reconnaissance and 5) FCS Maintenance and Recovery Vehicle will be funded and fielded with the first FCS-equipped UA, allowing UA fielding of the complete 18 + 1 FCS core systems to begin delivery to the Army in 2014.
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ARMY RDT&E COST ANALYSIS(R3)									February 2005			
BUDGET ACTIVITY 5 - System Development and Demonstration					PE NUMBER AND TITLE 0604645A - Armored Systems Modernization (ASM)- Eng. Dev.					PROJECT F54		
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	Target Value of Contract
a . Tactical Sensors - UGS	OTA	The Boeing Company - Seattle, Wash., See Remark 1	6000	28173	1-3Q	2504	1-3Q	5304	1-3Q	Continue	41981	0
Subtotal:			6000	28173		2504		5304		Continue	41981	0
Remarks: Remark 1: Subcontractor: Textron Systems, Intelligent Battlefield System Division - Willington, MA												
II. Support Cost	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	Target Value of Contract
Subtotal:			0	0		0		0		0	0	0
Remarks: All support costs for this project are included in F61 SoS Engineering and Program Management project.												

ARMY RDT&E COST ANALYSIS(R3)									February 2005			
BUDGET ACTIVITY 5 - System Development and Demonstration					PE NUMBER AND TITLE 0604645A - Armored Systems Modernization (ASM)- Eng. Dev.					PROJECT F54		
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	Target Value of Contract
			0	0		0		0		0	0	0
Subtotal:												
Remarks: All Test and Evaluation costs for this project are included in F61 SoS Engineering and Program Management project.												
IV. Management Services	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	Target Value of Contract
			0	0		0		0		0	0	0
Subtotal:												
Project Total Cost:				6000	28173		2504		5304	Continue	41981	0

Schedule Profile (R4 Exhibit)

February 2005

BUDGET ACTIVITY

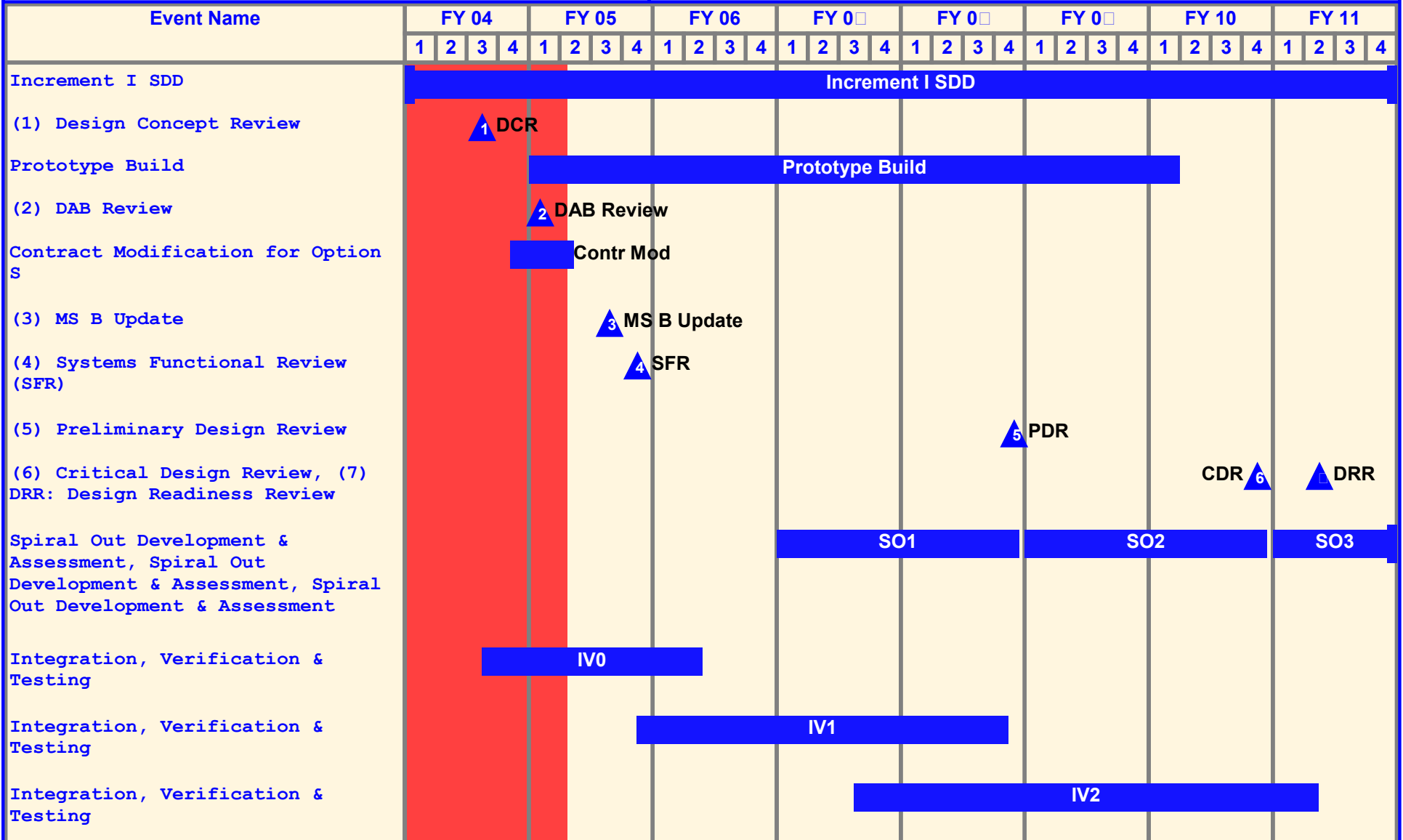
5 - System Development and Demonstration

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Schedule Detail (R4a Exhibit)							February 2005	
BUDGET ACTIVITY 5 - System Development and Demonstration				PE NUMBER AND TITLE 0604645A - Armored Systems Modernization (ASM)- Eng. Dev.				PROJECT F54
<u>Schedule Detail</u>	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
ADM Required MS B Update		3Q						
Definitization of Contract Modification for POM-adjusted Program		2Q						
SoS Functional Review (FR)		4Q						
SoS Preliminary Design Review (PDR)					4Q			
Phase 1 Integration at Test Completion		4Q						
Phase 2 Integration at Test Completion				3Q				
SoS Critical Design Review (CDR)							4Q	
Phase 3 Integration at Test Completion					2Q			
Design Ready Review								2Q

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)							February 2005			
BUDGET ACTIVITY 5 - System Development and Demonstration				PE NUMBER AND TITLE 0604645A - Armored Systems Modernization (ASM)-Eng. Dev.				PROJECT F55		
COST (In Thousands)	FY 2004 Actual	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
F55 SUSTAINMENT	96339	51191	61581	80020	194036	266860	267032	268028	Continuing	Continuing
<p>A. Mission Description and Budget Item Justification: This Project is for System Development and Demonstration (SDD) Future Combat System (FCS) contractor logistics and training support which includes the development of the management, products, and services required to design, develop, assemble, integrate, and test the supportability processes and the design and development engineering, integration, embedded training, and testing of unique training devices, training systems engineering, training products, training support packages, and training integration for the Unit of Action(UA).</p> <p>MAJOR PROGRAM MILESTONES FY05 Develop the Performance Based Logistics (PBL) Implementation Plan Develop the Material Fielding Plan, which describes the overall fielding process for the FCS equipped UA. Development of data sets and model software to insert logistics impacts as Operational Availability (Ao), Log Footprint and Life Cycle Costs into war fighter models (JANUS Simulation) and supportability assessments and trades. Complete the system specifications for the following Logistics Products: a. Logistics Decision Support System (LDSS): a network-centric logistics planning system synergistically integrated with Battle Command on the FCS overall Network. b. Platform Soldier Mission Readiness System (PSMRS): a network-centric prognostics / diagnostics system synergistically integrated with System of System Common Operating Environment (SOSCOE) on the FCS overall Network. c. Integrated Electronic Technical Manuals (IETM): Technical manuals that support diagnosis and repair of FCS systems to support their readiness. Develop FCS Supportability Strategy that provides requirements for support of the UA, to ensure that the Army Doctrine, Organization, Training, Material, Leadership, Personnel and Facilities (DOTMLPF) is accomplished. Training Support Plans (TSPs) Development: The first increment of the Single Integrated Task List (SITL) (the collective tasks that need to be performed by UA units) is delivered and base-lined for use in the development of FCS related training packages. Single Operational Roles List (SORL): The first increment of the SORL is delivered and base-lined as part of the total FCS operational architecture description. The SORL merges the architecture defined Battle Command roles with the roles lists from training, sustaining and other operational stakeholders. The current SORL contains approximately 160 different roles. Training Common Components (TCC) Development, which consists of: - The One Semi-automated Force (ONESAF) Objective System (OOS), a computer generated forces system for use in simulations. - Computer Generated Forces, After Action Review capability, and Exercise Management - The Army Training Integrated Architecture (Training Tasks repository and archive)</p>										

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)**February 2005****BUDGET ACTIVITY****5 - System Development and Demonstration****PE NUMBER AND TITLE****0604645A - Armored Systems Modernization
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- The Common Training Instrumentation Architecture (linkage to Live training resources),
- One Tactical Engagement Simulation System (ONETESS). Build 0 of OOS, which will be integrated with version 1.0 of SOSCOE.
FCS Training Systems Integration Laboratory (Training SIL) will be established in Orlando to integrate and test embedded training applications prior to being implemented on FCS platforms and systems.

FY06

The initial Business Case Analysis as described in FCS Performance Based logistics(PBL) implementation plan will be conducted. In addition, a Supportability Design Assessment that looks across entire UA to determine how it will be supported during wartime and peacetime will be conducted.
The Material Fielding Plan, the PBL Implementation Plan and the Supportability Strategy, Modeling and Simulating (M&S) activities will be updated to reflect refinement of the supportability and training requirements and design concepts.
TSPs Development: The second increment of the Single Integrated Task List(SITL) is delivered for use in the development of training packages specifically for FCS/UA training capabilities to be developed in Engineering Iteration #1. This adds the first third (approx 500 of an expected 1500) Leader/Battle Staff tasks to the SITL.
SORL: The second increment of the SORL is delivered as part of the total FCS operational architecture description which merges the defined Leader / Battle Command roles with the roles lists from training, sustaining and other operational stakeholders.
TCC Development. TCC Build 1 integrated with OOS and additional common components into SOSCOE 1.5 and tested in the FCS Training Systems Integration Laboratory (Training SIL).

FY07

The Material Fielding Plan, the Performance Based Logistics(PBL) implementation plan and the Supportability Strategy, along with M&S models will be updated to reflect refinement of the supportability and training requirements and design concepts.
Training Development: The third increment of the Single Integrated Task List(SITL), Single Operational Roles List(SORL) and Training Common Components (TCC) will be delivered

<u>Accomplishments/Planned Program</u>	FY 2004	FY 2005	FY 2006	FY 2007
Training	31607	37881	2651	39813
Supportability	64732	13310	58930	40207
Totals	96339	51191	61581	80020

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

February 2005

BUDGET ACTIVITY

5 - System Development and Demonstration

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B. Other Program Funding Summary	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Compl	Total Cost
0604645 F52 UAV Recon Platforms and Sensors	0	147267	105333	114117	88023	75796	50382	33637	Continuing	Continuing
0604645 F53 (UGV)	0	130935	86445	106341	116608	118798	117904	81003	Continuing	Continuing
0604645 F54 (UGS)	0	28173	2504	5304	6557	6353	5315	2906	Continuing	Continuing
0604645 F55 Sustainment	0	51191	61581	80020	194036	266860	267032	268028	Continuing	Continuing
0604645 F57 (MGV)	0	409714	549150	778022	818073	793008	840463	576124	Continuing	Continuing
0604645 F61 SoS Engineering & Program Management	0	1500956	2260616	2066332	1905563	1797485	1669855	1638582	Continuing	Continuing
0604646 F72 Non-Line of Sight Launch System (NLOS-LS)	0	55794	231554	329412	280225	261362	90950	18100	Continuing	Continuing
0604647 F58 Non-Line of Sight Cannon (NLOS- QVTCV)	0	476736	107587	262492	273226	140428	139569	72325	Continuing	Continuing
0604645 F59 Common Components	27500	0	0	0	0	0	0	0	0	27500
0604645 F60 Family of Systems Anal & Int	165302	0	0	0	0	0	0	0	0	165302
0604645 F62 Mission Equipment Platforms	132537	0	0	0	0	0	0	0	0	132537
0604645 F63 Network Software	111745	0	0	0	0	0	0	0	0	111745
0604645 F64 Other Contract Costs	313536	0	0	0	0	0	0	0	0	313536
0604645 F65 S of S Engr & Prog Mgt	190331	0	0	0	0	0	0	0	0	190331
0604645 F66 S of S Test and Evaluation	56347	0	0	0	0	0	0	0	0	56347
0604645 F67 Supportability	5252	0	0	0	0	0	0	0	0	5252
0604645 F69 Training	7756	0	0	0	0	0	0	0	0	7756
0604645 F70 NLOS Launch System	49502	0	0	0	0	0	0	0	0	49502

C. Acquisition Strategy: During the FY06-11 POM process, the Army restructured the PM UA Acquisition Program.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)		February 2005
BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604645A - Armored Systems Modernization (ASM)-Eng. Dev.	PROJECT F55
<p>The Army announced this restructured plan which strengthen the FCS Program and simultaneously improve the Current Force through early delivery of selected FCS capabilities. The adjustments maintain the Army focus on FCS-equipped UA development and substantially reduce program risk. The adjustments to the FCS Program acquisition strategy fall into four primary categories:</p> <ul style="list-style-type: none"> o The development priority in descending order will be the 1) Network, 2) Unattended Munitions, 3) Unmanned systems, and finally 4) Manned Ground Vehicles (MGV). Consequently the MGV development duration will be extended. However, Non Line of-Sight-Cannon (NLOS-C) will lead MGV development and deliver prototype NLOS-C systems in 2008 and deliver Block 0 NLOS-C prototypes in 2010. o The five previously deferred FCS core systems: 1) UAV Class II, 2) UAV III, 3) Armed Robotic Vehicle (ARV) –Assault, 4) ARV-Reconnaissance and 5) FCS Maintenance and Recovery Vehicle will be funded and fielded with the first FCS-equipped UA, allowing UA fielding of the complete 18 + 1 FCS core systems to begin delivery to the Army in 2014. o More robust experimentation and evaluation are included in the program to prove revolutionary concepts, mature the architecture and components, and assist in spiral development. o A series of Spiral Out packages will begin in 2008 and continue every two years through 2014 to insert FCS capability into Current Force Modular Brigade Combat Teams (M-BCTs) to include Stryker, Heavy, and Infantry. <p>The current OTA was modified on 6 Aug 2004 to cover the new Scope of Work (SOW) of the approved POM program. The definitization of the modification is scheduled for February 2005. The PM will be submitting reprogramming request for the FY05 to reflect the above definitization of the modification to the OTA. While the FY06 and beyond reflect the adjusted Army Cost Position (FY06-11 POM approved program), the funding profile for these years may be adjusted upon completion of contract definitization and development of contract/program budget baseline that supports the above program restructure.</p>		

ARMY RDT&E COST ANALYSIS(R3)										February 2005		
BUDGET ACTIVITY 5 - System Development and Demonstration					PE NUMBER AND TITLE 0604645A - Armored Systems Modernization (ASM)- Eng. Dev.					PROJECT F55		
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	Target Value of Contract
a . Supportability - Log Management	OTA	The Boeing Company - Seattle Washington	31607	13310	1-3Q	58930	1-3Q	40207	1-3Q	Continue	144054	0
b . Training - Planning	OTA	The Boeing Company - Seattle Washington, see remarks	64732	37881	1-3Q	2651	1-3Q	39813	1-3Q	Continue	145077	0
Subtotal:			96339	51191		61581		80020		Continue	289131	0
Remarks: Subcontractors: Computer Science Corp. Federal Sector Defense Group - Hampton, VA; Dynamics Research Corp. Systems Division - Andover, MD; Northrop Grumman, Information Tech, Defense Enterprise Solutions Div, - Mclean, VA												
II. Support Cost	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	Target Value of Contract
Subtotal:			0	0		0		0		0	0	0
Remarks: All support costs for this project are included in F61 SoS Engineering and Program Management project.												

ARMY RDT&E COST ANALYSIS(R3)									February 2005			
BUDGET ACTIVITY 5 - System Development and Demonstration					PE NUMBER AND TITLE 0604645A - Armored Systems Modernization (ASM)- Eng. Dev.					PROJECT F55		
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	Target Value of Contract
			0	0		0		0		0	0	0
Subtotal:												
Remarks: All Test and Evaluation costs for this project are included in F61 SoS Engineering and Program Management project.												
IV. Management Services	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	Target Value of Contract
			0	0		0		0		0	0	0
Subtotal:												
Project Total Cost:			96339	51191		61581		80020		Continue	289131	0

Schedule Profile (R4 Exhibit)

February 2005

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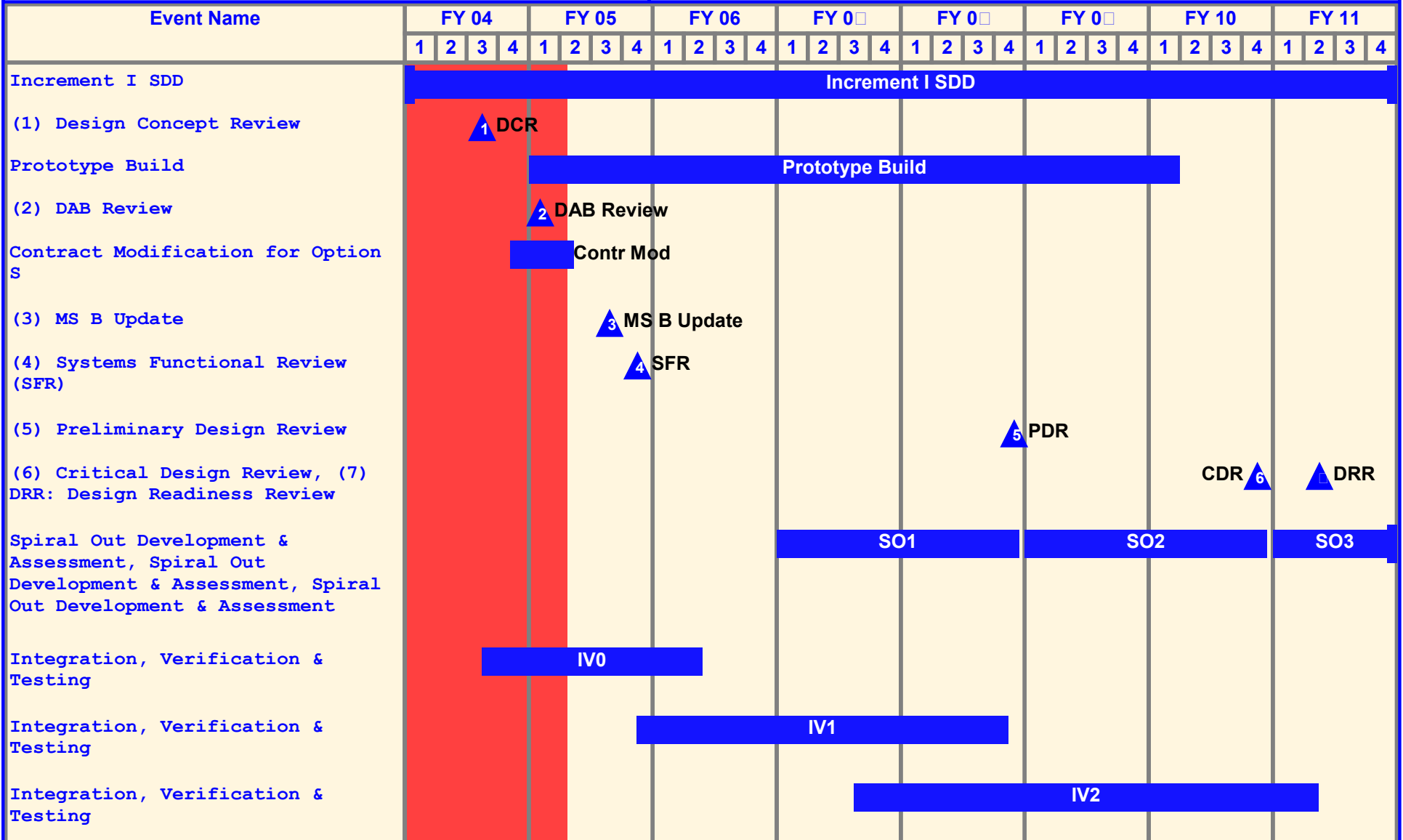
5 - System Development and Demonstration

PE NUMBER AND TITLE

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Schedule Detail (R4a Exhibit)

February 2005

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<u>Schedule Detail</u>	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
ADM Required MS B Update		3Q						
Definitization of Contract Modification for POM-adjusted Program		2Q						
SoS Functional Review (FR)		4Q						
SoS Preliminary Design Review (PDR)					4Q			
Phase 1 Integration at Test Completion		4Q						
Phase 2 Integration at Test Completion				3Q				
SoS Critical Design Review (CDR)							4Q	
Phase 3 Integration at Test Completion					2Q			
Design Ready Review								2Q

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COST (In Thousands)	FY 2004 Actual	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
F57 MANNED GROUND VEHICLES	184611	409714	549150	778022	818073	793008	840463	576124	Continuing	Continuing

A. Mission Description and Budget Item Justification: This Project includes the SDD contractor effort for development, engineering, prototype procurement, integration and assembly of all variants including development of unique mission equipment (such as main armament and fire control) for the MGVS (ICV, RSV, C2V, MCS, NLOS-M, MV, FRMV). This project also includes development of common components for all MGVS variants (Mobility Systems), communication systems, command control, vehicle utility, survivability, sensors, structure, vetronics etc.

Major Program Milestones:

MCS Major Activities: FY05-Complete Combinatorial Trade process to support Best Technical Approach derivation. Complete System Best Technical Approach (BTA). Support MGVS Requirements Refinement (Path to MGVS SFR Activities). FY06-Complete Sub-System Best Technical Approach (BTA). MGVS Systems Functional Review (MGVS SFR). FY07-MGVS Preliminary Design Review (MGVS PDR).

NLOS Mortar Major Activities: FY05-NLOS-M Requirements Refinement (Path to MGVS SFR Activities). Perform Best Technical Approach (BTA) Activities/Concepting Component Maturation (Round Retention and Ammunition Handling). FY06-MGVS Systems Functional Review (MGVS SFR). NLOS-M Vehicle Unique Integration and Design Activities Start Shoot-off (Main Weapon Supplier Selection) Component Maturation (Round Retention and Ammunition Handling). FY07-MGVS Preliminary Design Review (MGVS PDR). Detailed Design Efforts; Begin Main Weapon Supplier Selection. Component Maturation (Round Retention and Ammunition Handling).

C2V/RSV Major Activities: FY05-Continue work on refining and understanding requirements Update PIDS. Develop initial Subsystem Critical Item Dev. Specs. CIDS). Conduct another Best Technical Approach (BTA 3). Update Architecture Products (System, Physical, Logical etc.). Conduct Technical Interchange meetings (TIMs). FY06-Update Subsystem CIDS; Conduct Subsystem BTA; Update Subsystem Interface Control Documents (ICDs); Conduct System Functional Review (SFR). FY07-Conduct Preliminary Design Review (PDR); Update Architecture products; Update ICDs.

ICV/MV/FRMV Major Activities: FY06-MGVS Systems Functional Review (MGVS SFR). FY07-MGVS Preliminary Design Review (MGVS PDR).

MGVS Joint Software Major Activities: FY05-Simulation Software only delivered to SoS Integration Lab (SW BLD 0); Supports NLOS-C(0)/Firing Platform (SW BLD 1). FY06-Supports NLOS-C(0)/Firing Platform (SW BLD 1); Simulation Software to SoSIL (SW BLD 1). FY07-Supports NLOS-C(0)/Firing Platform (SW BLD 1); Functional Qualification Test (SW BLD 1); Support, Integrated Qualification Test, Integrate BC (SW BLD 2).

Common- Propulsion Major Activities: FY05-Engine Award and Development; TDS Award and Development; Generator Award and Development; Several Comp. Maturation Projects – ESS, Power Converter, TDS; Procurement and Integration of ATR.

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FY06-Systems into Labs for Integration/Testing; Engine Development TDS Development; Generator Development; Several Comp. Maturation Projects – ESS, Power Converter, TDS; S/W Requirements, Code and Test; Integration of ATR. FY07-Systems into Labs for Integration/Testing; Integration of ATR S/W Requirements, Code and Test.

Common – Suspension Major Activities: FY05-Develop a 24 ton design to concept; Band Track Component Maturation. FY06-Band Track Component Maturation; Systems into Labs for Integration/Testing; Procurement and Integration of ATR. FY07-S/W Requirements, Code and Test; Systems into Labs for Integration/Testing; Integration of ATR; Band Track Component Maturation.

Common- Vetronics Major Activities: FY05-Develop a BTA architecture design to concept; Develop flex bus & connector concepts. FY06-Develop flex bus & connector concepts; S/W Requirements, Code and Test; Procurement & Integration of ATR; Systems into Labs for Integration/Testing. FY07-Integration of ATR Systems into Labs for Integration/Testing.

Common – NBC/ECS Major Activities: FY05-Develop a moderate risk H/X and Cooling Fan Approach; Develop & baseline a Thermal Architecture. FY06-Develop & baseline a Thermal Architecture S/W Requirements, Code and Test Systems into Labs for Integration/Testing; Procurement & Integration of ATR. FY07-S/W Requirements, Code & Test; Systems into Labs for Integration/Testing; Procurement & Integration of ATR.

Common – Armor/Structure Major Activities: FY05-Develop a 24 Ton Modular-Scalable BTA IAW new ECC/FCC; Develop A&B Armor & Mine Resistant Structure CMMP. FY06-Develop a 24 Ton Modular-Scalable BTA IAW new ECC/FCC; Develop A&B Armor & Mine Resistant Structure CMMP. FY07-Develop A&B Armor & Mine Resistant Structure CMMP.

Common – Crew Station Major Activities: FY05-Develop a moderate risk Motion Sickness Approach; Develop & baseline a Crew Station Architecture. FY06-Develop & baseline a Crew Station Architecture; Systems into Labs for Integration/Testing Procurement and Integration of ATR. FY07-Systems into Labs for Integration/Testing.

<u>Accomplishments/Planned Program</u>	FY 2004	FY 2005	FY 2006	FY 2007
Infantry Carrier Vehicle (ICV)	35245	8134	10706	20032
Mounted Combat Systems (MCS)	80637	54905	50253	67772
Non-Line Of Sight Mortar (NLOS-M)	17519	22437	11281	18764
Command & Control Vehicle (C2V)	20870	40169	10835	18494
Reconnaissance & Surveillance Vehicle (RSV)	23368	31916	15441	26260
FCS Recovery & Maintenance Vehicle (FRMV)	0	21044	0	0
Medical Vehicle (MV)	6972	6050	5944	11997
XM307 DEVELOPMENT / MK -44 AMMO DEV	0	0	23000	29166
COMMON- C4ISR	0	0	119866	137762

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

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Accomplishments/Planned Program (continued)

	FY 2004	FY 2005	FY 2006	FY 2007
COMMON - MOBILITY	0	0	37889	57740
COMMON - SOFTWARE	0	0	105777	110999
COMMON - OTHER	0	225059	158158	279036
Totals	184611	409714	549150	778022

B. Other Program Funding Summary

	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Compl	Total Cost
0604645 F52 UAV Recon Platforms and Sensors	0	147267	105333	114117	88023	75796	50382	33637	Continuing	Continuing
0604645 F53 (UGV)	0	130935	86445	106341	116608	118798	117904	81003	Continuing	Continuing
0604645 F54 (UGS)	0	28173	2504	5304	6557	6353	5315	2906	Continuing	Continuing
0604645 F55 Sustainment	0	51191	61581	80020	194036	266860	267032	268028	Continuing	Continuing
0604645 F57 (MGV)	0	409714	549150	778022	818073	793008	840463	576124	Continuing	Continuing
0604645 F61 SoS Engineering & Program Management	0	1500956	2260616	2066332	1905563	1797485	1669855	1638582	Continuing	Continuing
0604646 F72 Non-Line of Sight Launch System (NLOS-LS)	0	55794	231554	329412	280225	261362	90950	18100	Continuing	Continuing
0604647 F58 Non-Line of Sight Cannon (NLOS-C)	0	476736	107587	262492	273226	140428	139569	72325	Continuing	Continuing
WTCV	0	0	0	0	167402	328778	1520447	3621968	Continuing	Continuing
0604645 F59 Common Components	27500	0	0	0	0	0	0	0	0	27500
0604645 F62 Mission Equipment Platforms	132537	0	0	0	0	0	0	0	0	132537
0604645 F63 Network Software	111745	0	0	0	0	0	0	0	0	111745
0604645 F64 Other Contract Costs	313536	0	0	0	0	0	0	0	0	313536
0604645 F65 S of S Engr & Prog Mgt	190331	0	0	0	0	0	0	0	0	190331
0604645 F66 S of S Test and Evaluation	56347	0	0	0	0	0	0	0	0	56347
0604645 F67 Supportability	5252	0	0	0	0	0	0	0	0	5252
0604645 F69 Training	7756	0	0	0	0	0	0	0	0	7756
0604645 F70 NLOS Launch Systemt	49502	0	0	0	0	0	0	0	0	49502

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)**February 2005****BUDGET ACTIVITY****5 - System Development and Demonstration****PE NUMBER AND TITLE****0604645A - Armored Systems Modernization
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C. Acquisition Strategy: During the FY06-11 POM process, the Army restructured the PM UA Acquisition Program. The Army announced this restructured plan which strengthen the FCS Program and simultaneously improve the Current Force through early delivery of selected FCS capabilities. The adjustments maintain the Army focus on FCS-equipped UA development and substantially reduce program risk. The adjustments to the FCS Program acquisition strategy fall into four primary categories:

- o The development priority in descending order will be the 1) Network, 2) Unattended Munitions, 3) Unmanned systems, and finally 4) Manned Ground Vehicles (MGV). Consequently the MGV development duration will be extended. However, Non Line of-Sight-Cannon (NLOS-C) will lead MGV development and deliver prototype NLOS-C systems in 2008 and deliver Block 0 NLOS-C prototypes in 2010.
- o The five previously deferred FCS core systems: 1) UAV Class II, 2) UAV III, 3) Armed Robotic Vehicle (ARV) –Assault, 4) ARV-Reconnaissance and 5) FCS Maintenance and Recovery Vehicle will be funded and fielded with the first FCS-equipped UA, allowing UA fielding of the complete 18 + 1 FCS core systems to begin delivery to the Army in 2014.
- o More robust experimentation and evaluation are included in the program to prove revolutionary concepts, mature the architecture and components, and assist in spiral development.
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The current OTA was modified on 6 Aug 2004 to cover the new Scope of Work (SOW) of the approved POM program. The definitization of the modification is scheduled for February 2005. The PM will be submitting reprogramming request for the FY05 to reflect the above definitization of the modification to the OTA. While the FY06 and beyond reflect the adjusted Army Cost Position (FY06-11 POM approved program), the funding profile for these years may be adjusted upon completion of contract definitization and development of contract/program budget baseline that supports the above program restructure.

ARMY RDT&E COST ANALYSIS(R3)

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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	Target Value of Contract
a . INFANTRY CARRIER VEHICLE (ICV)	OTA	THE BOEING COMPANY - SEATTLE WASHINGTON, see remark 1	35245	8134	1-3Q	10706	1-3Q	20032	1-3Q	Continue	Continue	0
b . MOUNTED COMBAT SYSTEMS (MCS)	OTA	THE BOEING COMPANY - SEATTLE WASHINGTON, see remark 1	80637	54905	1-3Q	50253	1-3Q	67772	1-3Q	Continue	Continue	0
c . NON-LINE OF SIGHT MORTAR (NLOS-M)	OTA	THE BOEING COMPANY - SEATTLE WASHINGTON, see remark 1	17519	22437	1-3Q	11281	4Q	18764	1-3Q	Continue	Continue	0
d . COMMAND & CONTROL VEHICLE (C2V)	OTA	THE BOEING COMPANY - SEATTLE WASHINGTON, see remark 2	20870	40169	1-3Q	10835	1-3Q	18494	1-3Q	Continue	Continue	0
e . RECONNAISSANCE & SURVEILLANCE VEHICLE (RSV)	OTA	THE BOEING COMPANY - SEATTLE WASHINGTON, see remark 2	23368	31916	1-3Q	15441	1-3Q	26260	1-3Q	Continue	Continue	0
f . FCS RECOVERY & MAINT VEH (FRMV)	OTA	THE BOEING COMPANY - SEATTLE WASHINGTON, see remark 2	0	21044	1-3Q	0		0		Continue	Continue	0
g . MEDICAL VEHICLE (MV)	OTA	THE BOEING COMPANY - SEATTLE WASHINGTON, SEE REMARK 3	6972	6050	1-3Q	5944	1-3Q	11997	1-3Q	Continue	Continue	0

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I. Product Development (continued)	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	Target Value of Contract
h . XM307 DEVELOPMENT / MK-44 AMMO DEV	OTA	THE BOEING COMPANY - SEATTLE WASHINGTON, See Remark 5	0	0		23000	1-3Q	29166	1-3Q	Continue	Continue	0
i . COMMON - C4ISR	OTA	THE BOEING COMPANY - SEATTLE WASHINGTON, SEE REMARK 4	0	0		119866	1-3Q	137762	1-3Q	Continue	Continue	0
j . COMMON - MOBILITY	OTA	THE BOEING COMPANY - SEATTLE WASHINGTON, SEE REMARK 1, 2, 3	0	0		37889	1-3Q	57740	1-3Q	Continue	Continue	0
k . COMMON - SOFTWARE	OTA	THE BOEING COMPANY - SEATTLE WASHINGTON, SEE REMARK 1, 2, 3	0	0		105777	1-3Q	110999	1-3Q	Continue	Continue	0
l . COMMON - OTHER	OTA	THE BOEING COMPANY - SEATTLE WASHINGTON, SEE REMARK 1,2, 3	0	225059	1-3Q	158158	1-3Q	279036	1-3Q	Continue	Continue	0
Subtotal:			184611	409714		549150		778022		Continue	Continue	0

Remarks: Remark 1: Subcontractor: General Dynamics- Sterling Heights, MI
 Remark 2: Subcontractor: United Defense Limited Partnership, Santa Clara, CA
 Remark 3: Subcontractor: United Defense-Minnepolis,MN
 Remark 4: Subcontractor: Raytheon Network Centric Systems, Plano, TX
 Remark 5: Subcontractors: General Dynamics Armament & Technical Products, Charlotte, NC - ATK Aliant Techsystems, Edina, MN

ARMY RDT&E COST ANALYSIS(R3)										February 2005		
BUDGET ACTIVITY 5 - System Development and Demonstration					PE NUMBER AND TITLE 0604645A - Armored Systems Modernization (ASM)- Eng. Dev.					PROJECT F5		
II. Support Cost	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	Target Value of Contract
			0	0		0		0		0	0	0
Subtotal:												
Remarks: All support costs for this project are included in F61 SoS Engineering and Program Management project.												
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	Target Value of Contract
			0	0		0		0		0	0	0
Subtotal:												
Remarks: All Test and Evaluation costs for this project are included in F61 SoS Engineering and Program Management project.												
IV. Management Services	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	Target Value of Contract
			0	0		0		0		0	0	0
Subtotal:												
Project Total Cost:			184611	409714		549150		778022		Continue	Continue	0

Schedule Profile (R4 Exhibit)

February 2005

BUDGET ACTIVITY

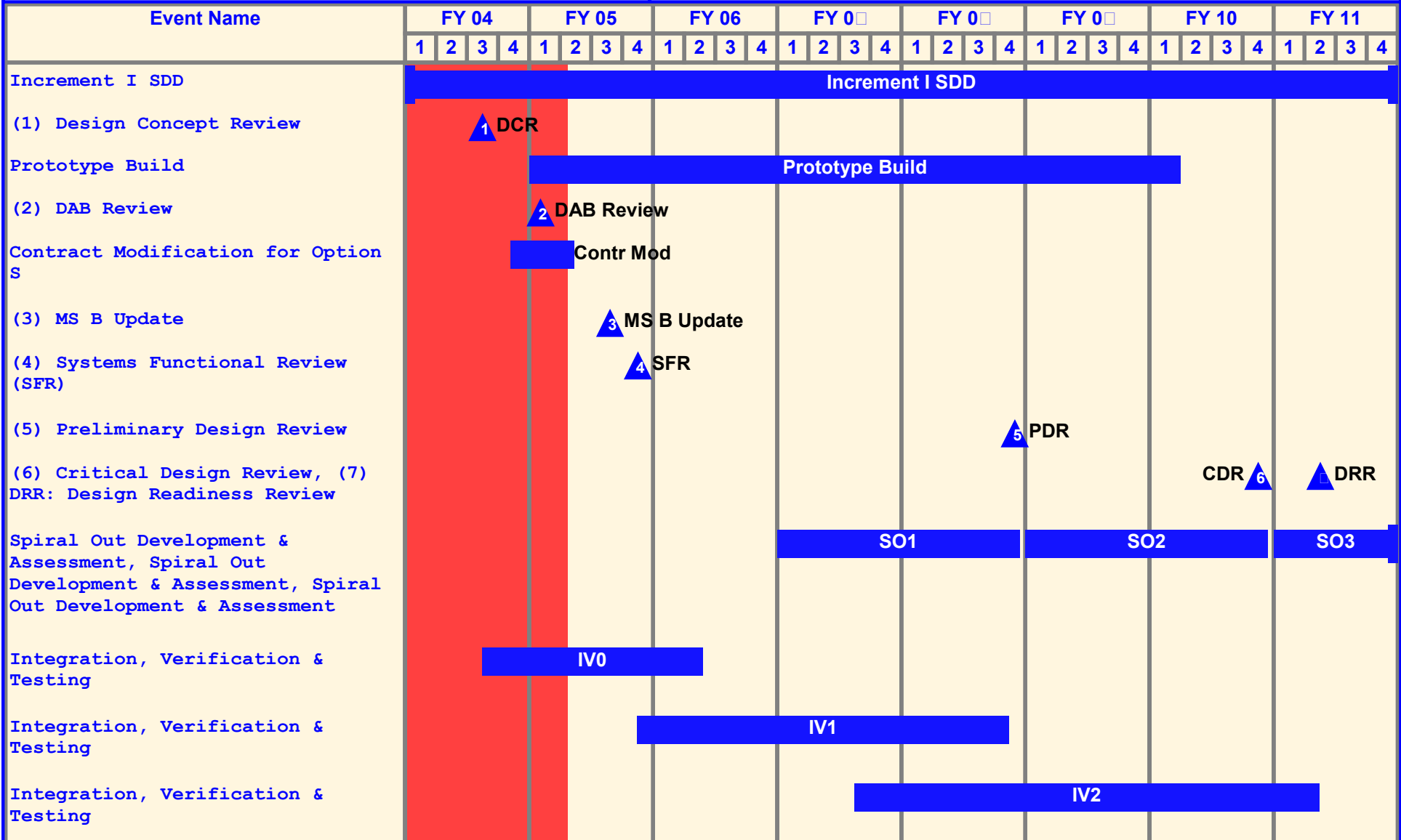
5 - System Development and Demonstration

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Schedule Detail (R4a Exhibit)							February 2005	
BUDGET ACTIVITY 5 - System Development and Demonstration				PE NUMBER AND TITLE 0604645A - Armored Systems Modernization (ASM)- Eng. Dev.				PROJECT F5 <input type="checkbox"/>
<u>Schedule Detail</u>	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
ADM Required MS B Update		3Q						
Definitization of Contract Modification for POM-adjusted Program		2Q						
SoS Functional Review (FR)		4Q						
SoS Preliminary Design Review (PDR)					4Q			
Phase 1 Integration at Test Completion		4Q						
Phase 2 Integration at Test Completion				3Q				
SoS Critical Design Review (CDR)							4Q	
Phase 3 Integration at Test Completion					2Q			
Design Ready Review								2Q

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)							February 2005				
BUDGET ACTIVITY 5 - System Development and Demonstration				PE NUMBER AND TITLE 0604645A - Armored Systems Modernization (ASM)-Eng. Dev.				PROJECT F61			
COST (In Thousands)		FY 2004 Actual	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
F61	S O S ENGINEERING AND PROGRAM MANAGEMENT	313348	1500956	2260616	2066332	1905563	1797485	1669855	1638582	Continuing	Continuing
<p>A. Mission Description and Budget Item Justification: This PE includes government and System Development and Demonstration (SDD) contractor efforts associated with System of Systems (SoS) engineering Family of Systems (FoS) analysis and integration, network software, SoS test and evaluation, and program management. This project includes support to other DOD agencies for joint programs and collaboration efforts with Unit of Action (UA).</p> <p>MAJOR PROGRAM MILESTONES Completion of UA maturity reviews which provide program-level SoS synchronization by providing status of the current engineering, integration, and verification progress. FY05 Milestone B Update: The government and Lead System Integrator (LSI) will provide all DoD required documentation to support the Milestone B update in April 2005. In-Process Review 2 (IPR 2): The IPR 2 is a technical review to assess performance progress towards completion of products necessary for the System of Systems Functional Review (SoSFR) – objective is 50% of the functional decomposition and functional analysis necessary to fully capture UA requirements. Engineering maturity review 1/SoSFR: The purpose of this review is to evaluate the results of the engineering integration (EI) 0 activity and establish the readiness to enter the next iteration, EI 1. FY06 Capability maturity review 1/Incremental SoS Preliminary Design Review (IPDR): The purpose of this review is to evaluate the results of the Integration and Verification (IV) 0 activity and establish the readiness to enter the next IB, iteration, IV 1. The IPDR provides an early design assessment of the accelerated FCS systems and focuses on the UA design impacts associated with these systems. FY07 Engineering Maturity Review 2: The engineering maturity review 2 occurs at the end of EI 1. The purpose of this review is to evaluate the results of the EI 1 activity and establish the readiness to enter next EI 2.</p> <p>Major Software Deliveries</p> <p>FY05 The completion of FCS build 0 software, SoS Common Operating Environment (SOSCOE) middleware Build 1.</p>											

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)**February 2005****BUDGET ACTIVITY****5 - System Development and Demonstration****PE NUMBER AND TITLE****0604645A - Armored Systems Modernization
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0 software and the logistics (PS-MRS, LDSS, IETM, and LDR) software build 0 will occur. FY06

Deliveries of the following Software products will occur: SOSCOE Build 1.5, System Simulation Facility (S2F) Build 1.0, Integrated Computer System (ICS) Build 1.8, and Training Build 1.0.

FY07

The completion of FCS build 1 software, SOSCOE build 1.8, Battle Command build 1.0, Network Management System Build 1.0, Unmanned Aerial Vehicle (UAV) Class 1 and Class IV build 1.0, Manned Ground Vehicle (MGV) build 1.0, logistics build 1.0, UGV (MULE, SUGV and ARV) Software, and Training Build 1.0 will occur. These deliveries will include approximately 6 Million ESLOC of the estimated 19 Million total.

Tests and Experimentation

FY05

Integration and Verification Iteration 0 (IV 0) begins execution during FY05. The IV 0 objectives are to reduce program risk.

Experiment 1.1 planning continues. The purpose of Experiment 1.1 is to provide an early opportunity to assess development progress on a limited set of the available FCS Network products (hardware and software) integrated for use in an operational environment. The derived set of objectives, Essential Elements of Analysis (EEAs), Measures of Effectiveness (MOEs) and Measures of Performance (MOPs) will be finalized in FY05 and released as part of the Experiment 1.1 Plan.

FY06

Integration and Verification Iteration 0 (IV 0) concludes with lessons learned leveraged against Experimentation 1.1, Integration and Verification Iteration 1 (IV 1) and Spiral 1 I&V activities.

Experimentation 1.1 will be executed with a series of lab-based integration efforts followed by a series of incremental integration efforts in the field, each building on and benefiting from the previous effort.

Experimentation planning for phase 2 will also commence with refinement of the objectives, EEAs, MOEs and MOPs.

IV 1 is initiated with the finalization of the Assessment Objectives to be addressed in this timeframe of the Program

The initial integration in the SoSIL for IV 1 will begin.

FY07

Integration and Verification Iteration 1 (IV 1) continues and Experiment 1.1 is completed.

Experimentation planning for phase 2 will be finalized with approved Assessment Objectives.

IV 1 simulation-based integration in the lab will continue through formal dry-runs. Integration and Verification Iteration 2 (IV 2) is initiated with the finalization of the Assessment Objectives.

Material:

- FCS Specific Targets and Threat Simulators:
- Ammunition to support test:
- Mobile Node: LSI is procuring tractor trailer, computers, displays, WAN, encryptors, etc to full this node.
- FCS Unique Instrumentation Distributed Test Tools: upgrades to DCARS, TCARS, time-ordered events listing

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

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BUDGET ACTIVITY
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Accomplishments/Planned Program

	FY 2004	FY 2005	FY 2006	FY 2007
GOVERNMENT - PM	313348	209248	251322	264892
GOVERNMENT - STE	0	80480	250196	276598
GOVERNMENT - M & S	0	4024	13197	30976
GOVERNMENT - OTHER	0	0	0	39350
CONTRACTOR - SOFTWARE	0	277657	596482	634273
CONTRACTOR - SE/PM	0	893331	806660	416902
CONTRACTOR - STE	0	36216	125760	187317
CONTRACTOR - FEE	0	0	216999	216024
Totals	313348	1500956	2260616	2066332

B. Other Program Funding Summary

	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Compl	Total Cost
0604645 F52 UAV Recon Platforms and Sensors	0	147267	105333	114117	88023	75796	50382	33637	Continuing	Continuing
0604645 F53 (UGV)	0	130935	86445	106341	116608	118798	117904	81003	Continuing	Continuing
0604645 F54 (UGS)	0	28173	2504	5304	6557	6353	5315	2906	Continuing	Continuing
0604645 F55 Sustainment	0	51191	61581	80020	194036	266860	267032	268028	Continuing	Continuing
0604645 F57 (MGV)	0	409714	549150	778022	818073	793008	840463	576124	Continuing	Continuing
0604645 F61 SoS Engineering & Program Management	0	1500956	2260616	2066332	1905563	1797485	1669855	1638582	Continuing	Continuing
0604646 F72 Non-Line of Sight Launch System (NLOS-LS)	0	55794	231554	329412	280225	261362	90950	18100	Continuing	Continuing
0604647 F58 Non-Line of Sight Cannon (NLOS-NTCV)	0	476736	107587	262492	273226	140428	139569	72325	Continuing	Continuing
0604645 F59 Common Components	27500	0	0	0	0	0	0	0	0	27500
0604645 F60 Family of System, Anal & Int	165302	0	0	0	0	0	0	0	0	165302
0604645 F62 Mission Equipment Platforms	132537	0	0	0	0	0	0	0	0	132537
0604645 F63 Network Software	111745	0	0	0	0	0	0	0	0	111745
0604645 F64 Other Contract Costs	313536	0	0	0	0	0	0	0	0	313536
0604645 F65 S of S Engr & Prog Mgt	190331	0	0	0	0	0	0	0	0	190331
0604645 F66 S of S Test and Evaluation	56347	0	0	0	0	0	0	0	0	56347
0604645 F67 Supportability	5252	0	0	0	0	0	0	0	0	5252
0604645 F69 Training	7756	0	0	0	0	0	0	0	0	7756
0604645 F70 NLOS Launch System	49502	0	0	0	0	0	0	0	0	49502

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C. Acquisition Strategy: During the FY06-11 POM process, the Army restructured the PM UA Acquisition Program. The Army announced this restructured plan which strengthen the FCS Program and simultaneously improve the Current Force through early delivery of selected FCS capabilities. The adjustments maintain the Army focus on FCS-equipped UA development and substantially reduce program risk. The adjustments to the FCS Program acquisition strategy fall into four primary categories:

- o The development priority in descending order will be the 1) Network, 2) Unattended Munitions, 3) Unmanned systems, and finally 4) Manned Ground Vehicles (MGV). Consequently the MGV development duration will be extended. However, Non Line of-Sight-Cannon (NLOS-C) will lead MGV development and deliver prototype NLOS-C systems in 2008 and deliver Block 0 NLOS-C prototypes in 2010.
- o The five previously deferred FCS core systems: 1) UAV Class II, 2) UAV III, 3) Armed Robotic Vehicle (ARV) –Assault, 4) ARV-Reconnaissance and 5) FCS Maintenance and Recovery Vehicle will be funded and fielded with the first FCS-equipped UA, allowing UA fielding of the complete 18 + 1 FCS core systems to begin delivery to the Army in 2014.
- o More robust experimentation and evaluation are included in the program to prove revolutionary concepts, mature the architecture and components, and assist in spiral development.
- o A series of Spiral Out packages will begin in 2008 and continue every two years through 2014 to insert FCS capability into Current Force Modular Brigade Combat Teams (M-BCTs) to include Stryker, Heavy, and Infantry.

The current OTA was modified on 6 Aug 2004 to cover the new Scope of Work (SOW) of the approved POM program. The definitization of the modification is scheduled for February 2005. The PM will be submitting reprogramming request for the FY05 to reflect the above definitization of the modification to the OTA. While the FY06 and beyond reflect the adjusted Army Cost Position (FY06-11 POM approved program), the funding profile for these years may be adjusted upon completion of contract definitization and development of contract/program budget baseline that supports the above program restructure.

ARMY RDT&E COST ANALYSIS(R3)									February 2005			
BUDGET ACTIVITY 5 - System Development and Demonstration					PE NUMBER AND TITLE 0604645A - Armored Systems Modernization (ASM)- Eng. Dev.					PROJECT F61		
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	Target Value of Contract
a . CONTRACTOR SYS ENG & PROG MGT	OTA	The Boeing Company - Seattle, WA	313348	833031	1Q	758063	1Q	386702	1Q	Continue	Continue	0
b . CONTRACT FEE	OTA	The Boeing Company - Seattle, WA	0	0		203926	1Q	200376	1Q	Continue	Continue	0
c . CONTRACTOR NETWORK SOFTWARE	OTA	The Boeing Company - Seattle, WA	0	258915	1Q	560547	1Q	588327	1Q	Continue	Continue	0
Subtotal:			313348	1091946		1522536		1175405		Continue	Continue	0
II. Support Cost	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	Target Value of Contract
a . GOVERNMENT PROGRAM MGT	ALLOT	PM FCS UA - ST. Louis, MO	0	296439	1Q	372372	1Q	395386	1Q	Continue	Continue	0
b . GOVERNMENT OTHER	ALLOT	PM FCS UA - ST. Louis, MO	0	0		0		36500	1Q	Continue	Continue	0
Subtotal:			0	296439		372372		431886		Continue	Continue	0

ARMY RDT&E COST ANALYSIS(R3)									February 2005			
BUDGET ACTIVITY 5 - System Development and Demonstration					PE NUMBER AND TITLE 0604645A - Armored Systems Modernization (ASM)- Eng. Dev.					PROJECT F61		
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	Target Value of Contract
a . CONTRACTOR - STE	OTA	The Boeing Company - Seattle, WA	0	33771	1Q	118184	1Q	173748	1Q	Continue	Continue	0
b . GOVERNMENT - STE	ALLOT	PM FCS-UA - ST. Louis, MO	0	75048	1Q	235123	1Q	256562	1Q	Continue	Continue	0
c . MODELING & SIMULATION	ALLOT	PM FCS-UA - ST. Louis, MO	0	3752	1Q	12401	1Q	28731	1Q	Continue	Continue	0
Subtotal:			0	112571		365708		459041		Continue	Continue	0

ARMY RDT&E COST ANALYSIS(R3)										February 2005		
BUDGET ACTIVITY					PE NUMBER AND TITLE					PROJECT		
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IV. Management Services	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	Target Value of Contract
			0	0		0		0		0	0	0
Subtotal:												
Project Total Cost:			313348	1500956		2260616		2066332		Continue	Continue	0

Schedule Profile (R4 Exhibit)

February 2005

BUDGET ACTIVITY

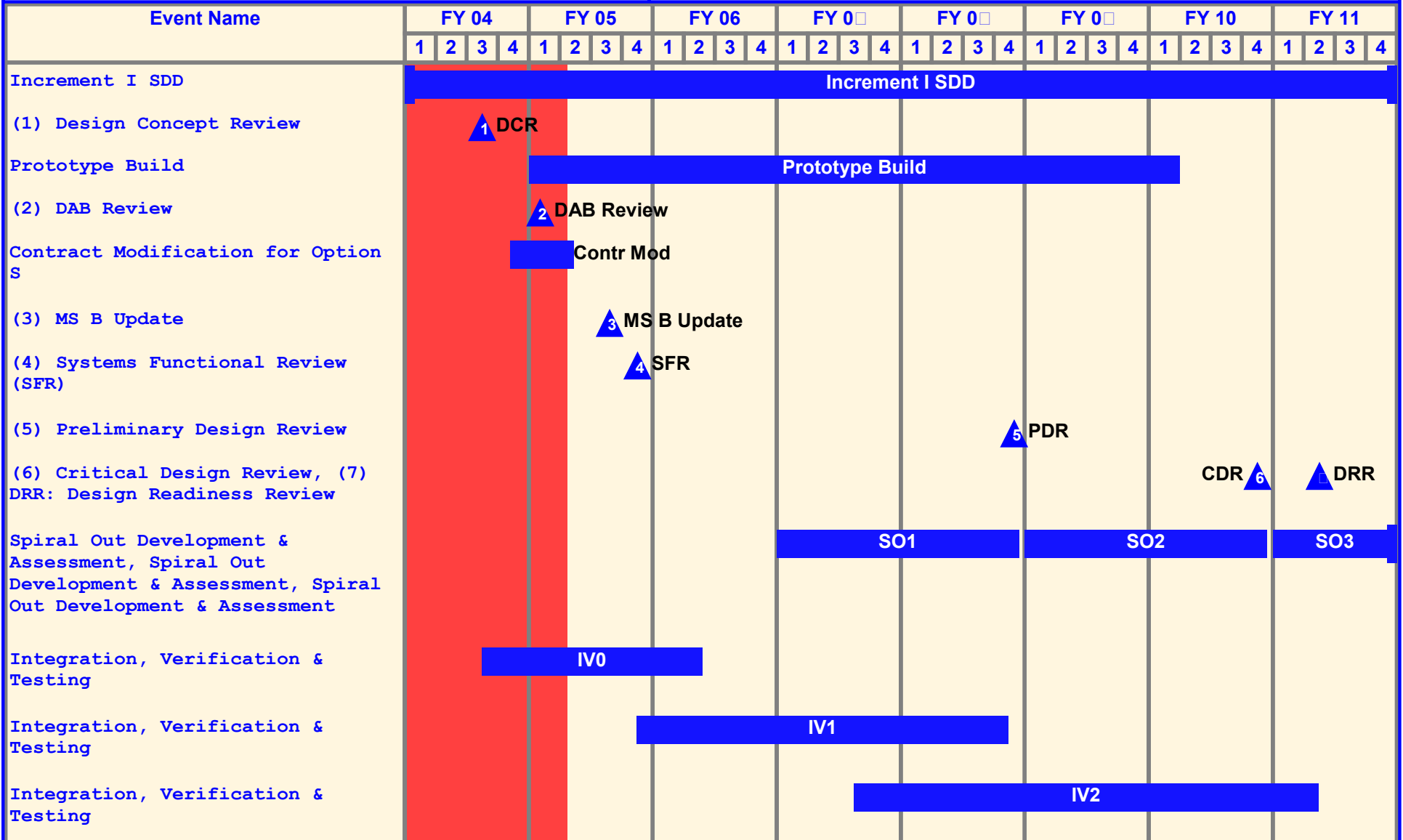
5 - System Development and Demonstration

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Schedule Detail (R4a Exhibit)

February 2005

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5 - System Development and Demonstration

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<u>Schedule Detail</u>	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
ADM Required MS B Update		3Q						
Definitization of Contract Modification for POM- Adjusted Program		2Q						
SoS Functional Review (FR)	4Q							
SoS Preliminary Design Review (PDR)					4Q			
Phase 1 Integration at Test Completion		4Q						
Phase 2 Integration at Test Completion				3Q				
SoS Critical Design Review (CDR)							4Q	
Phase 3 Integration at Test Completion					2Q			
Design Ready Review								2Q