

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

**February 2007**

<b>BUDGET ACTIVITY</b>		<b>PE NUMBER AND TITLE</b>							<b>PROJECT</b>	
<b>5 - System Development and Demonstration</b>		<b>0604820A - RADAR DEVELOPMENT</b>							<b>E10</b>	
COST (In Thousands)	FY 2006 Actual	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total Cost
E10 SENTINEL	4775	2499	7067							14341

**A. Mission Description and Budget Item Justification:** The Sentinel Modernization Program is part of the Missiles and Space System of Systems (SoS). This enables the Cruise Missile Defense Systems (CMDS) weapons to engage these targets at maximum effective range. Sentinel supports Missiles and Space (MS) SoS through efforts which are initiated in FY05. These are Surface Launched Advance Medium Range Air-to-Air Missile (SLAMRAAM) Integration (SI), Mode 5 (M5), Joint Identification (JID) and Composite Sensor Net (CSN).

SLAMRAAM Integration modifies Sentinel to interface with the SLAMRAAM Air and Missile Defense (AMD) Army Common Software communications network and adds specific SLAMRAAM engagement support capabilities.

Mode 5 is a replacement for Mode 4. Mode 5 provides improvements over Mode 4 in crypto sensitivity, range performance, probability of identification, Friend from Foe identification (IFF), lethal interrogation capability and reduced interference with Civil Air Traffic Control Systems.

Joint Identification leverages off of fielded Air Force and Navy Electronic Support Measures (ESM) Technology, to optimize the affordability and effectiveness to address Cruise and Unmanned Aerial Vehicles (UAV) threats. Cutting edge specific emitter identification technology and cruise missile emitter detection will be integrated with Sentinel to provide passive and semi-active target acquisition along with jointly accepted identification capability. Signal processing will be tailored to reduce ESM processing by multiplexing processing across emitter bands. This capability improves survivability, effectiveness against air breathing Weapons of Mass Destruction (WMD) delivery systems, and fully supports multi-service SoS sensor and Joint Identification capability.

Composite Sensor Netting is a software and communications link that allows target data to be shared among sensors and the Command, Control, Communications, Computers and Intelligence (C4I) structure to support both hostile identification and sensor resource management. This software and communication link allows a Sentinel radar communication net to effectively exchange target acquisition, tracking and classification information with other Sentinel radars on the battlefield. It improves the ability to cue weapon systems to destroy fixed wing, rotary wing, unmanned aerial vehicles and cruise missiles. When integrated with SLAMRAAM system it improves the accuracy of the missile by providing 3 times the update rate of commands to the missile versus the current system.

<b><u>Accomplishments/Planned Program:</u></b>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
Product Development	4388	1466	4924	
Support Costs	176			
Test and Evaluation	29	962	1743	
Project Management	182		400	
Small Business Innovative Research (SBIR) ( \$63 million)/Small Business Technology Transfer (STTR)(\$8 million)		71		

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<u><b>B. Program Change Summary</b></u>	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY 2007)	5008	2527	2622	
Current BES/President's Budget (FY 2008/2009)	4775	2499	7067	
Total Adjustments	-233	-28	4445	
Congressional Program Reductions		-28		
Congressional Rescissions				
Congressional Increases				
Reprogrammings	-233			
SBIR/STTR Transfer				
Adjustments to Budget Years			4445	

The FY07 President's Budget listed above does not reflect the SBIR/STTR reductions. Those reductions are listed in the FY07 accomplishments/Planned Program section.

<u><b>C. Other Program Funding Summary</b></u>	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Compl	Total Cost
PE 0604869A, Proj M06, Patriot/MEADS Combined Aggregate Program (CAP)	274339	325945	372146	408182	589779	427981	436415	77399	Continuing	Continuing
SSN C50001, PATRIOT/MEADS CAP					403735	674386	1042010	1317190	Continuing	Continuing
PE 0102419A, Proj E55, JLENS	99851	242781	481251	353983	337464	320787	182528		Continuing	Continuing
SSN BZ0525, JLENS Production						445850	223550	395200	Continuing	Continuing
PE 0604802A, Proj S23, SLAMRAAM	34034	26663	34762	11979					Continuing	Continuing
SSN C81001, SLAMRAAM Production	18825			65506	118124	76747	61850	61850	Continuing	Continuing
PE 0603327A, Proj E88, Integrated Fire Control AMD	23662	41249							Continuing	Continuing
PE 0603327A, Proj S34, AMD System of System Engineering and Integration	2684		138399	114587	81636	37876	5238		Continuing	Continuing

Comment: This PE is an integral part of the PEO, Missiles and Space Integrated Air and Missile Defense (IAMD) Program including Integrated Fire Control, JLENS, Patriot/MEADS Combined Aggregate Program (CAP), SLAMRAAM, SENTINEL, and on-going initiatives to achieve Single Integrated Air Picture (SIAP).

**D. Acquisition Strategy** In FY 2005, an Engineering Services Memorandum Task Order was issued under the current Sentinel Engineering Services contract for the Sentinel

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integration into SLAMRAAM. Sentinel funded the FY05 integration effort. The additional funding for FY 06 and 07 is provided by the Integrated Air and Missile Defense (IAMD) Program under the current SLAMRAAM System Design and Development Contract. The System Design, Development and Production of Mode 5, Joint Identification and Composite Sensor Netting hardware will be funded from several contract and government sources.

Several Firm Fixed Price (FFP) procurement contracts are planned for award to Thales Raytheon Systems (TRS) in FY 07 through FY 15 to procure and install Enhanced Target Range and Classification (ETRAC) System Kits (a single modification kit that includes an upgraded Transmitter Mod Kit and an ETRAC Mod Kit) into the remaining Sentinel fleet.

# ARMY RDT&E COST ANALYSIS (R3)

February 2007

BUDGET ACTIVITY			PE NUMBER AND TITLE									PROJECT		
5 - System Development and Demonstration			0604820A - RADAR DEVELOPMENT									E10		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost To Complete	Total Cost	Target Value of Contract
ETRAC System Development	SS/CFPP	Raytheon, CA; CMDS Project Office (PO), AL	102729									Cont.	Cont.	Cont.
Initiate MS SoS Integration Development (SI, JID, M5, CSN)	SS/CPFF	Raytheon, CA; CMDS PO, AL; Multiple Support Contractors, AL	5848	4388	1-4Q	1466	1-4Q	4924	1-4Q			Cont.	Cont.	Cont.
Subtotal:			108577	4388		1466		4924				Cont.	Cont.	Cont.
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost To Complete	Total Cost	Target Value of Contract
ETRAC Product Support Services	N/A	Aviation & Missile Command (AMCOM), AL	16930									Cont.	Cont.	Cont.
Initiate MS SoS (SI, JID,M5, CSN)	N/A	CMDS PO, AL; Multiple Support Contractors, AL		176	1-4Q							Cont.	Cont.	Cont.
Subtotal:			16930	176								Cont.	Cont.	Cont.
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost To Complete	Total Cost	Target Value of Contract
ETRAC IOT&E, KPP Demonstration & other T&E Activities	N/A	Army Test & Evaluation Center (ATEC), VA; Aviation & Msl Rsch, Dev. & Engr Center (AMRDEC), AL	34599					667	1-4Q			Cont.	Cont.	Cont.
Initiate MS SoS (SI, JID,M5, CSN)	N/A	Thales Raytheon, CA;		29	1-4Q	1033	1-4Q	1076	1-4Q			Cont.	Cont.	Cont.

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		CMDS PO, AL; Multiple Support Contractors, AL															
Subtotal:			34599	29			1033			1743				Cont.	Cont.	Cont.	
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost To Complete	Total Cost	Target Value of Contract			
ETRAC Product Manager support	N/A	Thales Raytheon, CA; CMDS PO, AL ; Vista Tech, AL; Multiple support Contractors, AL	11398									Cont.	Cont.	Cont.			
Initiate MS SoS Integration Development (SI, JID, MV, CSN)	N/A	Thales Raytheon, CA; CMDS PO, AL ; Multiple support Contractors, AL		182	1-4Q			400	1-4Q			Cont.	Cont.	Cont.			
Subtotal:			11398	182				400				Cont.	Cont.	Cont.			
<b>Project Total Cost:</b>			<b>171504</b>	<b>4775</b>			<b>2499</b>			<b>7067</b>			<b>Cont.</b>	<b>Cont.</b>	<b>Cont.</b>		

# Schedule Profile (R4 Exhibit)

February 2007

BUDGET ACTIVITY  
**5 - System Development and Demonstration**

PE NUMBER AND TITLE  
**0604820A - RADAR DEVELOPMENT**

PROJECT  
**E10**

Event Name	FY 06				FY 07				FY 08				FY 09				FY 10				FY 11				FY 12				FY 13			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Sentinel SoS Integration:																																
SLAMRAAM Integration	SLAMRAAM Integration																															
Mode 5 IFF Kit Development/Production	Mode 5 IFF Kit Development/Production																															
Joint ID Kit Development/Production	Joint ID Kit Development/Production																															
Composite Sensor Netting Development	Composite Sensor Netting Development																															

**Schedule Detail (R4a Exhibit)**

**February 2007**

BUDGET ACTIVITY  
**5 - System Development and Demonstration**

PE NUMBER AND TITLE  
**0604820A - RADAR DEVELOPMENT**

PROJECT  
**E10**

<u>Schedule Detail</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>
Sentinel SoS Integration:								
SLAMRAAM Integration	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q				
Mode 5 IFF Kit Development/Production	2Q - 4Q	1Q - 4Q						
Joint ID Kit Development/Production	2Q - 4Q	1Q - 4Q						
Composite Sensor Netting Development	1Q - 4Q	1Q - 4Q	1Q - 2Q					