

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

June 2001

BUDGET ACTIVITY 5 - ENG MANUFACTURING DEV			PE NUMBER AND TITLE 0604820A - RADAR DEVELOPMENT						PROJECT E10	
COST (In Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
E10 SENTINEL	4952	13306	5162	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification:

PLEASE NOTE: This administration has not addressed FY2003-2007 requirements. All FY 2003-2007 budget estimates included in this book are notional only and subject to change.

The Sentinel, AN/MPQ-64, consists of a High Mobility Multipurpose Wheeled Vehicle (HMMWV) towed radar-based sensor with its prime mover/power, identification friend or foe (IFF), and Forward Area Air Defense (FAAD) Command, Control, and Intelligence (C2I) interfaces. The sensor is an advanced three-dimensional battlefield X-Band air defense phased-array radar with an instrumented range of 40 km. The Sentinel is capable of operating day or night, in adverse weather conditions, in the battlefield environments of dust, smoke aerosols, and enemy countermeasures. It provides 360-degree azimuth coverage for acquisition and tracking. The Sentinel contributes to the digital battlefield by automatically detecting, classifying, identifying, and reporting targets (cruise missiles, unmanned aerial vehicles, rotary wing and fixed wing aircraft). This Modernization Program will improve Sentinel's capability against evolving threats. The Modernization Program will provide increased capabilities for the Sentinel to keep abreast of the evolving technological threat of small radar cross-section targets such as cruise missiles and unmanned aerial vehicles. In order to engage at ranges beyond visual, the Short Range Air Defense (SHORAD) system must detect and track the target at sufficient range to alert, and cue the gunner to the target. The Sentinel Modernization efforts extend the range of Sentinel against reduced radar cross section targets so the gunner will receive a cue with sufficient time to engage at ranges beyond visual. However, cueing alone is not sufficient to support an engagement. The target either must be identified as a foe or must be classified as an engageable target (unmanned) that is a threat to defended assets. The Modernization program positions Sentinel to determine aircraft type or to support manned versus unmanned determinations to fully support engagements beyond visual range. The Sentinel system will be modernized so the emerging threat is both classified and detected with a high level of confidence. This system supports the Legacy transition path of the Transformation Campaign Plan (TCP) by ensuring that the Sentinel systems in the field support the acquisition, tracking and classification of targets to enable the SHORAD weapons to engage these targets at maximum effective range.

FY 2000 Accomplishments

- 3700 Conducted Transmitter Prototype Design and Development
- 1252 Conducted Enhanced Target Range Acquisition and Classification (ETRAC) Prototype Design and Development - Requirements Definition. ETRAC encompasses the Waveform and Target Classification Upgrade efforts. The waveforms are required to accomplish the target range increase and classify targets. When integrated into the Sentinel radar system, ETRAC will support the acquisition, tracking and classification of advanced targets to enable the SHORAD weapons to engage these targets at maximum effective range.

Total 4952

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FY 2001 Planned Program

- 3119 Complete Transmitter Protoype Design and Development
- 3208 Conduct ETRAC Prototype Design and Development (Key Performance Parameter (KPP) Demonstration Contract Phase)
- 4837 Buy 2 ETRAC Prototypes to support KPP Demonstration
- 1003 ETRAC Receiver/Exciter Risk Mitigation Efforts
- 497 Initiate Integration and Test of ETRAC
- 247 Conduct ETRAC Target Classification Prototype Design and Development
- 395 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)

Total 13306

FY 2002 Planned Program

- 2047 Complete ETRAC Prototype Design and Development
- 444 Complete ETRAC Target Classification Prototype Design and Development
- 2671 Complete Integration and Test of ETRAC

Total 5162

<u>B. Program Change Summary</u>	FY 2000	FY 2001	FY 2002	FY 2003
Previous President's Budget (FY2001 PB)	5128	8429	3639	0
Appropriated Value	5128	13429	0	0
Adjustments to Appropriated Value	0	0	0	0
a. Congressional General Reductions	-21	0	0	0
b. SBIR / STTR	-137	0	0	0
c. Omnibus or Other Above Threshold Reduction	0	0	0	0
d. Below Threshold Reprogramming	0	0	0	0
e. Rescissions	-18	-123	0	0
Adjustments to Budget Years Since FY2001 PB	0	0	1523	0
Current Budget Submit (FY 2002/2003 PB)	4952	13306	5162	0

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FY 2001 - Received Congressional plus-up of \$5M to support Sentinel Development efforts. (\$1.7M for Improved Transmitter Risk Mitigation efforts, \$3.3M for the Receiver Exciter Upgrade/Acceleration and Risk Mitigation (ETRAC) efforts).
 FY 2002 - Funding was increased to support completion of integration and test efforts for the ETRAC Modifications necessary to address emerging threat and Army extension of the engagement envelope by providing extended range and enhanced target classification.

C. Other Program Funding Summary	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Compl	Total Cost
Other Procurement, Army 2 (SSN WK 5053)	48298	25944	1887	0	0	0	0	0	0	0
Other Procurement, Army 2 (SSN WK 5057)	0	0	30885	0	0	0	0	0	0	0
Spares (SSN BS 9732)	3841	1904	2061	0	0	0	0	0	0	0

D. Acquisition Strategy: The Modernization Program awarded a sole source Cost Plus Award Fee (CPAF) contract to the production manufacturer for the transmitter effort. The Modernization Program also awarded an additional sole source Cost Plus Fixed Fee (CPFF) contract to the production manufacturer for the ETRAC efforts during FY00. The ETRAC contract will be executed in three phases. The first phase finalizes the requirement definition. The second phase continues through successful demonstration of prototypes with Key Performance Parameter (KPP) capabilities, and the third phase continues to successful integration and test of target classification capabilities. Continuation of each phase is dependent on the successful completion of the previous phase limiting the risk to the Government. Additionally, a portion of the ETRAC risk mitigation efforts include dual development of an exciter to support the ETRAC modernization efforts. The better solution will be used in the ETRAC production follow on. Both the ETRAC and the Transmitter efforts will aggressively implement the tenets of Cost As an Independent Variable (CAIV) to assure Total Ownership Costs of the Sentinel are reduced. The program will take advantage of already developed items and certain off-the-shelf technologies to minimize risk while ensuring cost, schedule and performance goals are achieved.

E. Schedule Profile	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
Transmitter Critical Design Review	1Q			0	0	0	0	0

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<u>E. Schedule Profile (continued)</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
ETRAC Contract Signed (Contract Kick-Off)	4Q			0	0	0	0	0
ETRAC Waveform/Signal Data Processor Design		1-2Q		0	0	0	0	0
Range Extension SW Design		1-2Q		0	0	0	0	0
Transmitter Integration and Test		4Q		0	0	0	0	0
Target Classification Design Validation		3Q		0	0	0	0	0
ETRAC Key Performance Parameters (KPP) Demonstration			3Q	0	0	0	0	0

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I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . System Development	C/FFP	Hughes Aircraft Co., Fullerton, CA	56836	0		0		0	0	0	0	0
b . Technical requirement definition, corrective action & simulation	MIPR	Various AMCOM contractors/locations	18704	0		0		0	0	0	0	0
c . Misc requirements definition, ECM and survivability efforts.	MIPR	Various other agency contractors/locations	5270	0		0		0	0	0	0	0
d . Improved Transmitter Modernization Development	SS/CPAF	Raytheon Systems Company , El Segundo, CA	5796	3006	1-3Q	0		0	0	0	0	0
e . ETRAC Modernization Requirements Definition, KPP Demo and Target Classification Validation	SS/CPFF	Raytheon Systems Company , El Segundo, CA	2948	7948	3Q	2106	2Q	0	0	0	0	0
Subtotal:			89554	10954		2106		0		0	0	0

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II. Support Cost	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Program Support Services	MIPR/1095	AMCOM, Redstone Arsenal, AL	11802	1369	2Q	889	2Q	0	0	0	0	0
b . Other Agency Support Services	MIPR	Various	2118	675		0		0	0	0	0	0
Subtotal:			13920	2044		889		0		0	0	0

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . IOT&E	MIPR/1095	OPTEC, Alexandria, VA	24180	0		0		0	0	0	0	0
b . Other/Misc Test and Evaluation Activity	MIPR/1095	Various	7703	82	2Q	0		0	0	0	0	0
c . Technical Test	MIPR/1095	Redstone Technical Test Center, Redstone Arsenal, AL	1213	0		0		0	0	0	0	0
d . ETRAC KPP Demonstration	1095	Various	0	0		1518	1Q	0	0	0	0	0

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III. Test and Evaluation (continued)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			33096	82		1518		0		0	0	0

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Product Manager support	MIPR/1095	PM Sentinel/AMCOM	10643	226	1Q	501	1Q	0	0	0	0	0
b . Contractor Support to Product Manager	FP/CPFF	Vista Tech, Huntsville, AL	185	0		0		0	0	0	0	0
c . Contractor Support to Product Manager	CP FF	O2K Contractor Huntsville, AL	0	0		148	2Q	0	0	0	0	0
Subtotal:			10828	226		649		0		0	0	0

Project Total Cost:			147398	13306		5162		0		0	0	0
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