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

February 2002

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - Engineering and manufacturing development	**0604820A - RADAR DEVELOPMENT**	**E10**

COST (In Thousands)	FY 2001 Actual	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	12911	5119	0	0	0	0	0	0	30236

A. Mission Description and Budget Item Justification: 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). The Sentinel Enhanced Target Range and Classification (ETRAC) Modernization program will improve Sentinel's capability against evolving threats. ETRAC provides the capability for Sentinel to detect and classify small radar cross-section targets, such as cruise missiles and unmanned aerial vehicles. The system provides Forward Area Short Range Air Defense (SHORAD) system information dominance via a digital air picture for support of maneuver forces and critical assets. Without ETRAC, Sentinel would not be able to determine aircraft type or to support manned vs. unmanned determinations to fully support precision engagements beyond visual range. In order to engage at ranges beyond visual, the 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 precision engagements beyond visual range. ETRAC Modernization efforts support the Legacy to Objective 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 2001 Accomplishments:

- 3117 Completed Transmitter Prototype Design and Development
- 3213 Conducted ETRAC Prototype Design and Development
- 4837 Bought 2 ETRAC Prototypes to support KPP Demonstration
- 1000 ETRAC Receiver/Exciter Risk Mitigation Efforts
- 497 Initiated Integration and Test of ETRAC

FY 2001 Accomplishments: (Continued)

- 247 Conducted ETRAC Target Classification Prototype Design and Development

Total 12911

FY 2002 Planned Program

- 1914 Complete ETRAC Prototype Design and Development
- 631 Complete ETRAC Target Classification Prototype Design and Development
- 2574 Complete Integration and Test of ETRAC

Total 5119

FY 2003 Planned Program

Project not funded in FY 2003.

B. Program Change Summary	FY 2001	FY 2002	FY 2003
Previous President's Budget (FY2002 PB)	13306	5162	0
Appropriated Value	13429	5162	0
Adjustments to Appropriated Value	0	0	0
a. Congressional General Reductions	0	-43	0
b. SBIR / STTR	-395	0	0
c. Omnibus or Other Above Threshold Reduction	0	0	0
d. Below Threshold Reprogramming	0	0	0
e. Rescissions	-123	0	0
Adjustments to Budget Years Since FY2002 PB	0	0	0
Current Budget Submit (FY 2003 PB)	12911	5119	0

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C. Other Program Funding Summary	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)	23944	1872	31	0	0	0	0	0	74145
Other Procurement, Army 2 (SSN WK 5057)	0	31442	26519	18362	14202	14361	14494	0	119380
Spares (SSN BS 9732)	1595	2036	0	0	0	0	0	0	7472

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. 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 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
ETRAC Waveform/Signal Data Processor Design	1-4Q						
Range Extension SW Design	1-4Q						
Transmitter Integration and Test		1Q					
ETRAC Waveform/Signal Data Processor Integration and Checkout		1-2Q					
Range Extension Integration and Checkout		1-2Q					
Target Classification Design Validation		3-4Q					
ETRAC Key Performance Parameters (KPP) Demonstration		3Q					