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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
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BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604780A Combined Arms Tactical Trainer (CATT)
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COST (In Thousands)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	21644	19775	18498	8881	5061	5049	5039	Continuing	Continuing
D571 Close Combat Tactical Trainer	9244	13138	7738	4986	5061	5049	5039	Continuing	Continuing
D582 Synthetic Environment Core	0	6637	10760	3895	0	0	0	0	21292
D585 Aviation Combined Arms Tactical Trainer (AVCATT-A) - WRAP	12400	0	0	0	0	0	0	0	12400

A. Mission Description and Justification: The Combined Arms Tactical Trainer (CATT) is a family of combined arms simulation systems designed to support the Army's simulation-based Combined Arms Training Strategy. The initial CATT system is the Close Combat Tactical Trainer (CCTT) which provides the underlying baseline (architecture, terrain data bases, after action review [AAR], semi-automated forces [SAF], and models/algorithms) for future CATT expansions, pre-planned product improvements and system enhancements. Synthetic Environment Core provides for the expansion of the Synthetic Environment baseline to include enhanced Aviation, Engineer, Fire Support, and Air Defense capabilities needed to support integration of hardware/simulators funded by System Program Managers. CATT enables units, from crew to the battalion task force level, to conduct a wide variety of combat tasks on a realistic, interactive synthetic battlefield. CATT's combination of manned simulators and staff officer workstations enables units to train as a combined arms team in a cost effective manner. CATT reinforces the successes and corrects the shortcomings of the Simulator Network (SIMNET) and Aviation Network (AIRNET) demonstration programs executed by the Defense Advanced Research Projects Agency (DARPA). By practicing skills in CATT, units are able to make more effective use of scarce resources and costly live fire and maneuver exercises as well as train tasks deemed too hazardous to conduct in the field. Fielded in both fixed site and mobile/transportable versions, CATT enables both Active and Reserve component units to prepare for real world contingency missions. By being able to process a wide array of terrain data bases and modify the behavior of the computer generated opposing forces, CATT offers a virtually unlimited array of training options to support the Army's many regional contingency missions. The combination of tough field and live fire training and realistic simulation training in CATT is the catalyst to prepare soldiers and their leaders for the uncertainties they will face in an unpredictable world.

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<u>B. Program Change Summary</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (<u>FY 2000/2001</u> PB)	7472	19925	18627
Appropriated Value	7533	19925	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-61		
b. SBIR / STTR	-198		
c. Omnibus or Other Above Threshold Reprogramming	+14400	-81	
d. Below Threshold Reprogramming			
e. Rescissions	-30	-69	
Adjustments to Budget Years Since <u>FY 2000/2001</u> PB			-129
Current Budget Submit (<u>FY 2001</u> PB)	21644	19775	18498

Change Summary Explanation: Funding – FY 1999: An increase of 12400 is a Congressionally approved reprogramming from 0203761A/project 394 (Force XXI WRAP) for the development of the Aviation Combined Arms Tactical Trainer (AVCATT-A). Additional increase (+2000) was a transfer from the Operational Rapid Response Transfer Fund (ORRTF) for a Kosovo database development.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)							DATE February 2000					
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604780A Combined Arms Tactical Trainer (CATT)				PROJECT D571				
COST (In Thousands)				FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D571 Close Combat Tactical Trainer				9244	13138	7738	4986	5061	5049	5039	Continuing	Continuing
<p>A. <u>Mission Description and Justification:</u> This program provides for engineering and manufacturing development (EMD) and pre-planned product improvements (P3I) for the Close Combat Tactical Trainer (CCTT) which will enhance readiness of both active and reserve component forces. The program develops a networked system of interactive computer driven simulators, emulators and semi-automated forces that replicate combat vehicles and weapon systems, combat support systems, combat service support systems, and command and control systems to create a fully integrated real-time collective task training environment. This trainer will allow soldiers to practice, repetitively, techniques that, if performed on real equipment, would be too hazardous, time-consuming and expensive. These trainers enhance realism and allow soldiers and units to learn tactical combat lessons on maneuver, command and control, and improved teamwork for increased survivability. The pre-planned product improvements provide CCTT an opportunity to enhance its capabilities as a tactical trainer as well as maintain concurrency with the structural changes that today's battleforce is experiencing.</p> <p>FY 1999 Accomplishments:</p> <ul style="list-style-type: none"> • 6861 Completed EMD contract, provided structured training (STRUCTT) exercises and interface between Commander's Independent Training Tool (CITT) and Maintenance Control Console (MCC), initiated High Level Architecture (HLA) compliance efforts and other Pre-Planned Product Improvements. • 83 Maintained support services to the program office. • 300 Provided government program management, engineering, technical, contract and continuous operational evaluation support. • 2000 Kosovo terrain database development. <p>Total 9244</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 10144 Develop Training Support Packages (TSPs) to support structured approach to preparation for training exercises, complete High Level Architecture (HLA) compliance efforts, and begin Pre-Planned Product Improvements (P3I) for After Action Reports (AAR) and Dismounted Infantry (DI) components of CCTT and other user prioritized P3I. • 2000 Develop Korean terrain database. • 80 Maintain support services to the program office. • 560 Provide government program management, engineering, technical, contract and continuous operational evaluation support. • 354 Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR) <p>Total 13138</p>												
Project D571				Page 3 of 10 Pages				Exhibit R-2A (PE 0604780A)				

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
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BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604780A Combined Arms Tactical Trainer (CATT)	PROJECT D571
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FY 2001 Planned Program:

- 7018 Develop additional Training Support Packages (TSPs), Complete Pre-Planned Product Improvements for After Action Reports (AAR) and Dismounted Infantry (DI) components of CCTT and other user prioritized items.
 - 80 Maintain support services to the program office.
 - 640 Provide government program management, engineering, technical, contract and continuous operational evaluation support.
- Total 7738

B. Other Program Funding Summary	<u>FY 1999</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>	To <u>Compl</u>	Total <u>Cost</u>
OPA3, Appropriation NA0170 SIMNET/CCTT	87946	64713	81160	35040	7669			0	466328
RDTE, Appropriation 0605712A Support of Operational Testing (CCTT Portion)									6528
Military Construction, A Appropriation 2050 (CCTT Portion)	7600	0	0					0	52100
Operation and Maintenance, A Appropriation 115013 under WCLS MDEP (CCTT Portion)	14900	17896	23048	26327	32919	39503	40304	Cont'd	Cont'd

C. Acquisition Strategy: Competitive cost plus award fee contract for EMD phase. Competitive procurement against performance specifications as part of basic contract.

D. Schedule Profile	<u>FY 1999</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>
MS III Decision	1Q*						
Full Rate Production Contract Award	2Q*						
P3I Software/Hardware Insertions	4Q*	4Q	4Q	4Q	4Q	4Q	4Q
Kosovo Database Development Contract Award	4Q*						
Korean Database Development Contract Award		2Q					

* Completed Milestones

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 2000		
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604780A Combined Arms Tactical Trainer (CATT)						PROJECT D571		
I. Product Development												
Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract	
a. CCTT EMD	C/CPAF & T&M/FFP	203991	2900	Dec 98						206891	206891	
b. Pre-Planned Product Improvements (P3I)	C/CP	0	3961	Dec 98	10144	Oct 99	7018	Oct 00	Cont	21123	Cont	
c. Database Development	SAIC, Orlando, FL		2000	Sep 99	2000	Mar 00				4000	4000	
Subtotal Product Development:		203991	8861		12144		7018			232014		
II. Support Costs												
Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract	
a. Engineering and Technical Support	MIPR	30155	83	Nov 98	80	Nov 99	80	Nov 00	Cont	30398		
Subtotal Support Costs:		30155	83		80		80			30398		
III. Test and Evaluation: Not Applicable												
IV. Management Services												
Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract	
a. Project Office Support	MIPR	11194	300	Nov 98	560	Nov 99	640	Nov 00	Cont	12694		
b. SBIR/STTR					354					354		
Subtotal Management Services:		11194	300		914		640			13048		
Project Total Cost:		245340	9244		13138		7738			275460		

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
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BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604780A Combined Arms Tactical Trainer (CATT)	PROJECT D582
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COST (In Thousands)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D582 Synthetic Environment Core	0	6637	10760	3895	0	0	0	0	21292

A. Mission Description and Justification Synthetic Environment Core (SE Core) provides for the engineering, manufacturing, and development (EMD) enhancements to the Synthetic Environment baseline for use in future CATT expansions. This first initiative will support the development and refinement of the SE Core architecture to include functionality for the Aviation Combined Arms Tactical Trainer – Aviation Reconfigurable Manned Simulators (AVCATT-A), which will enhance readiness of the Army (Active and Reserve component forces). The program will provide terrain databases, aviation behaviors, Air Defense capabilities, natural effects (e.g., wind) that enable the Army, specifically the aviation community, to conduct collective training and aviation combined arms training in the virtual environment. SE Core will provide the semi-automated forces (SAF) behaviors to represent the evolving structure, tactics, and procedures of the Army's digitized battlefield. SE Core will provide the additional aviation models to support aviation collective training, and will provide for extended ranges to simulate the aviation weapon systems and communication particular to the aviation community. The program will provide for scenario development to support aviation combined arms and collective training and After Action Review of an exercise.

FY 1999 Accomplishments: Project not funded in FY 1999

FY 2000 Planned Program:

- 4890 Develop aviation semi-automated forces behaviors, an aviation terrain database, interoperability between aviation and ground simulations, and mission planning and controls for the AVCATT-A system. Development and refinement of SE Core architecture.
- 1009 Develop an After Action Review capability, training scenarios, and provide for system High Level Architecture (HLA) compliance. Acquire development hardware to support software development
- 200 Maintain support services to program office.
- 359 Provide government program management, engineering, technical and contract support for the aviation effort and the refinement of the SE Core baseline.
- 179 Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
- Total 6637

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
--	------------------------------

BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604780A Combined Arms Tactical Trainer (CATT)	PROJECT D582
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FY 2001 Planned Program:

- 7224 Continue development of aviation semi-automated forces behaviors, an aviation terrain database, interoperability between aviation and ground simulations, and mission planning and controls for the AVCATT-A system. Development and refinement of SE Core architecture.
- 2900 Continue development of the After Action Review capability, training scenarios, and provide for system High Level Architecture (HLA) compliance.
- 200 Maintain support services to program office.
- 436 Provide Government Program management, engineering, technical, and contract support for the aviation effort and the refinement of the SE Core baseline.

Total 10760

B. Other Program Funding Summary: Not Applicable

C. Acquisition Strategy: Engineering Manufacturing & Development (EMD) competitive contract against performance specification.

D. <u>Schedule Profile</u>	<u>FY 1999</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>
MS II Decision	2Q*						
Contract Award		1Q*					

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 2000		
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604780A Combined Arms Tactical Trainer (CATT)					PROJECT D582		
I. Product Development												
Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract	
a. SE Core	C/CPAF	Raytheon Systems Co. Arlington, TX			5899	Oct 99	10124	Oct 00	3510	19533		
Subtotal Product Development					5899		10124		3510	19533		
II. Support Costs												
Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract	
a. Engineering Services & Technical Support	C/FFP/T&M	Madison Research. Orlando, FL			200	Nov 99	200	Nov 00		400		
Subtotal Support Costs:					200		200			400		
Remark: Each award is a Delivery Order against CFFP.												
III. Test and Evaluation: Not Applicable.												
IV. Management Services												
Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract	
a. Project Office Support	MIPR	STRICOM/NAWC-TSD, Orlando, FL			359	Nov 99	436	Nov 00	385	1180		
b. SBIR/STTR					179					179		
Subtotal Management Services:					538		436		385	1359		
Project Total Cost:					6637		10760		3895	21292		

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
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BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604780A Combined Arms Tactical Trainer (CATT)	PROJECT D585
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COST (In Thousands)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D585 Aviation Combined Arms Tactical Trainer (AVCATT-A) - WRAP	12400	0	0	0	0	0	0	0	12400

A. Mission Description and Justification: Aviation Combined Arms Tactical Trainer—Aviation Reconfigurable Manned Simulator (AVCATT-A) is an Army aviation training system for both the active and reserve components. This engineering, manufacturing, and development (EMD) effort will provide the first prototype suite of AVCATT-A equipment which consists of six (6) reconfigurable networked simulators supporting the AH-64A/D, UH-60A/L, CH-47D, OH-58D, UH-1H and AH-1F platforms. Supporting role-player, semi-automated blue and opposing forces (SAF), and after action review (AAR) workstations are also provided as part of the suite. AVCATT-A will be a fully mobile system, capable of utilizing shore and generator power and is deployable worldwide.

AVCATT-A will permit various aviation units to conduct collective task training on a real-time, computerized battlefield in a combined arms scenario. Other required elements that are present on the modern, high intensity battlefield, such as the combat support and combat service support elements are an integral part of the simulation database. The terrain databases, aviation behaviors, Air Defense capabilities, and natural effects (e.g., wind) will be provided through the Synthetic Environment Baseline developed through the Synthetic Environment Core Program.

AVCATT-A is a key component to the Aviation Combined Arms Training Strategy and is designed to provide realistic, high intensity collective and combined arms training to aviation units. AVCATT-A provides Army aviation units (active, reserve and National Guard) the capability to train as they fight prior to deployment to the field, to prepare for deployment to real world contingencies and to support mission rehearsals in deployment areas.

FY 1999 Accomplishments:

- 11140 Developed a prototype Aviation Combined Arms Tactical Trainer - Aviation Reconfigurable Manned Simulation (AVCATT-A) and integrate with the Synthetic Environment Baseline.
- 1260 Provided government program management, engineering, technical and contract support for the development and integration effort.

Total 12400

FY 2000 Planned Program: Project not funded in FY 2000.

FY 2001 Planned Program: Project not funded in FY 2001.

UNCLASSIFIED

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BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604780A Combined Arms Tactical Trainer (CATT)	PROJECT D585
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B. <u>Other Program Funding Summary</u>	<u>FY 1999</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>	To <u>Compl</u>	Total <u>Cost</u>
OPA3, Appropriation NA0173 Aviation Combined Arms Tactical Trainer	0	0	14744	38723	39336	40163	41001	Cont	Cont

C. Acquisition Strategy: Engineering Manufacturing & Development (EMD) competitive contract against performance specification.

D. <u>Schedule Profile</u>	<u>FY 1999</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>
AVCATT-A MS II Approval	2Q*						
AVCATT-A Contract Award		1Q*					

* Completed Milestones