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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
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BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604817A Combat Identification
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COST (<i>In Thousands</i>)	FY1998 Actual	FY 1999 Estimate	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	19227	13379	8658	2395	0	0	0	0	0	137636
D482 Ground Combat Identification (CID)	12603	7851	7178	2395	0	0	0	0	0	120945
D901 All Services Combat ID Evaluation Team	1561	0	0	0	0	0	0	0	0	4322
D902 Dismounted Soldier CID	5063	5528	1480	0	0	0	0	0	0	13071

A. Mission Description and Budget Item Justification: The dominant maneuver that allows smaller, more lethal, forces to succeed on the modern battlefield also increases the potential for friendly fire casualties. Thus, a key enabler of complex coalition warfare or dominant maneuver is the rapid, reliable identification of friends, foes and neutrals. Positive identification at the point-of-engagement is complicated by the capabilities of modern weapons that allow engagements well beyond the range where visual identification is possible, significantly increasing the potential for fratricide. This Program Element (PE) is directed toward the design and development of distinct technology devices to help minimize this battlefield deficiency. Project D482 addresses the ground-to-ground vehicle mounted mission area; Project D901 addresses improvement of tactics, techniques and procedures across all mission areas (FY 1999-03 funded under JCS PE: 0603857J); and Project D902 addresses the ground-to-ground dismounted mission area.

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (<u>FY 1999</u> PB)	19026	13471	7032	2010
Appropriated Value	19784	13471		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-758	-92		
b. SBIR/STTR	-458			
c. Omnibus or Other Above Threshold Reductions	-151			
d. Below Threshold Reprogramming	+810			
e. Rescissions				
Adjustments to Budget Years Since <u>FY 1999</u> PB			+1626	+385
Current Budget Submit (<u>FY 2000/2001</u> PB)	19227	13379	8658	2395

Change Summary Explanation: Funding - FY 00 increase represents plus up to project 902 to continue E&MD effort.
 FY 01 increase represents continuation of Combat Identification NATO I interoperability Wave Form effort.

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BUDGET ACTIVITY 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604817A Combat Identification				PROJECT D482		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D482 Ground Combat Identification (CID)	12603	7851	7178	2395	0	0	0	0	0	120945
<p>A. Mission Description and Justification: The Battlefield Combat Identification System (BCIS) is an all weather, day/night, millimeter wave, Low Probability of Intercept/Low Probability of Detection (LPI/LPD), digitally encrypted question and answer system that provides positive identification of friendly platforms out to 5.5 km (clear weather). BCIS was developed to minimize fratricide while maximizing combat effectiveness given rapidly changing and intense tactical situations. BCIS provides positive identification of friendly platforms to aid the gunner or commander to make a rapid shoot/don't shoot decision at the point of engagement. BCIS also provides short range (out to 1 km, in clear weather), LPI/LPD situational awareness messages at the platoon level. Any situational awareness data received by BCIS will be sent through the platform Applique for integration with other position sources to form the full situational awareness database. BCIS has been designated as a Horizontal Technology Integration program and coordinates A kit integration with host platforms.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 2910 Completed fabrication, assembly and contractor test of four brassboard models that incorporate design changes for production configuration. • 6480 Initiated upgrade of four brassboard models to fully functional engineering development models for platform compatibility tests, logistic demonstration and Government technical testing. • 2683 Initiated development, design, and fabrication of installation kits (A kit) for the Abrams M1A1 and Bradley M2 ODS platforms. • 530 Conducted successful US/French interoperable waveform test <p>Total 12603</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 3954 Complete upgrade, assembly and contractor test of fully functional engineering development models for platform (M1A1/M2A2 ODS) test, log demonstration and Govt. technical test. waveform and NSA certification. • 1605 Complete development, design, and fabrication of installation kits (A kit) for the Abrams/Bradley (M1A1/M2 ODS) vehicles for platform compatibility test. • 1583 Initiate A-kit design and development for host platforms (M4 C2V, HMMWV M1114/M998, M113A2 APC, M106A2 Mortar Vehicle, and M1068) in coordination with fielding to 1/22 INF Battalion , 1st Bde, 4th ID, identified as First Unit Equipped in FY01. • 508 Develop and integrate the BCIS software models into M1A1 and M2A2 ODS Close Combat Tactical Trainer (CCTT) Facility at 4th ID, Ft Hood, Texas • 201 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 7851</p>										
Project D482			Page 2 of 10 Pages				Exhibit R-2A (PE 0604817A)			

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FY 2000 Planned Program:

- 4443 Continue host platform A kit design and development for additional vehicles in 1st Bde, 4th ID for fielding in FY02 (M9 ACE, M88 ARV, M109A6, M992, Avenger, M6 Linebacker, etc.).
 - 350 Conduct logistics verification demonstration (MANPRINT, maintenance, manuals, etc.).
 - 500 Conduct host platform compatibility test/demo for M1A1 and M2A2 ODS.
 - 1025 Conduct Government technical testing (electromagnetic interference, azimuth resolution, probability of ID, range min/max, reliability/availability and maintainability, etc.).
 - 410 Develop and integrate BCIS software models into M1A1 and M2A2 ODS Conduct of Fire Trainer (COFT) at 4th ID, T Hood, Texas
 - 450 Combat Identification (CI) Interoperability Demonstration: Continue development of a NATO STANAG for CI based upon the Battlefield Combat Identification System (BCIS) and the completed interoperability trials of prototype systems in Munster, GE. (Partners: France, Germany, United Kingdom)
- Total 7178

FY 2001 Planned Program:

- 1850 Complete host platform A kit design and development effort for the remaining vehicle types (M93A1, HMETT, MLRS, Wolverine) in 4th ID for fielding in FY03.
 - 65 Provide technical support for Initial Operational Test (IOT). Programming/budgeting of funds for actual test being coordinated with OPTEC.
 - 480 Combat Identification (CI) Interoperability Demonstration: Develop a NATO STANAG for CI based upon the Battlefield Combat Identification System (BCIS) and the completed interoperability trials of prototype systems in Munster, GE. (Partners: France, Germany, United Kingdom)
- Total 2395

B. <u>Other Program Funding Summary:</u>	<u>FY 1998</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>
RDTE, A BA 5, PE 0203735, Proj 330, Abrams Tank Improve Prog			4933							4933
RDTE, A BA 5, PE 0203735, Proj 371, Bradley Base Sustainment			986							986
OPA2, SSN BA0510 Combat Identification Prog	0	4876	7568	10954	10574	8157			Cont	Cont
MSLS, SSN CE8710 Avenger Mods				99	80	123				302
MSLS, SSN C67500 MLRS Mods			16	53	28	71				168
OPA1, SSN DV0210, HMMWV			414	1325	1204	746				3689
SPARES, SSN MA4501, M9 Mod Kits			123	165	79	117				484
WTCV, SSN GA0400, Howitzer Mod			47	80	255	294				676
WTCV, SSN GZ3000, AVLB Mod			153	106	353	295				907

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B. <u>Other Program Funding Summary:</u>	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
WTCV, SSN GZ2300, FIST Vehicle Mod			177	185	165	88				615
WTCV, SSN GA0700, M1 Abrams Tank Mod			1998	3822	9350	2014				17185
WTCV, SSN GZ3200, Breacher System Mod				927	734	182				1847
WTCV, SSN GA0570, M88 Mod			192	165	318	330				1005
WTCV, SSN GA8010, FAASV PIP			115	79	154	265				613
WTCV, SSN G80717, Bradley Base Sustain			2651	8691	4566	612				16520

BCIS is an Army Horizontal Technology Integration (HTI) program. In compliance with Army HTI policy, funding for production of both the mounted system (BCIS) and the host platform installation kit are budgeted within the host system line as applicable.

C. Acquisition Strategy: A competitive, cost plus award fee contract for 46 EMD units and option quantities, was awarded Aug 93. An additional 65 units were procured for participation in TF XXI AWE and the Combat ID International Demonstration. This contract has been modified to include follow-on design/producibility engineering and test efforts and delivery of four engineering models.

D. <u>Schedule Profile</u>	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
LRIP Award		3Qtr						
Govt Technical Test			1 Qtr					
Conduct Initial Operational Test (IOT)				2 Qtr				
Milestone III				4 Qtr				

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ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
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BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604817A Combat Identification	PROJECT D482
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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. B Kit Development	C/CPAF	TRW, CA	64398	3368	1Qtr	450	1 Qtr	480			68696	68696
b. A Kit Devel(Abrams)	CPFF	GDLS, MI	9225	1296	2Qtr						10521	10521
c. A Kit Devel(Bradley)	CPFF	United Defense, CA	2366	259	2Qtr						2625	2625
d. A Kit Devel (various)	MISC	E&S, TRW, UDLP, AM General, Boeing	1593	1517	2Qtr	4378	1 Qtr	1850	1 Qtr		9338	9338
e. Close Combat Tactical Trainer/Conduct of Fire Trainer Development	MIPR	Lockheed Martin		508	3Qtr	410					918	918
f. SBIR/STTR				201							201	201
Subtotal Product Development:			77582	7149		5238		2330			92299	92299

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. Sys Eng/Tech Assistance	MIPR	CECOM	7765	163	1 Qtr						7928	7928
b. Sys Eng/Tech Assistance	T&M/MIPR	SYTEX, MTC, etc.	7057								7057	7057
Subtotal Support Costs:			14822	163							14985	14985

III. Test and Evaluation	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. Technical Test, Log Demo, etc.	MIPR	TECOM, YPG, AZ	1850			1755	1 Qtr				3605	3605
b. Test Planning	MIPR	NVES, CECOM	0	115	1 Qtr	120	1 Qtr	65	1 Qtr		300	300
c. Limited User Test	MIPR	TEXCOM	673								673	673
d. ASCIET	MIPR	Misc	3973								3973	3973
Subtotal Test and Evaluation:			6496	115		1875		65			8551	8551

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BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604817A Combat Identification	PROJECT D482
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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. Program Management		PM, Combat ID	4621	424	1 Qtr	65	1 Qtr				5110	5110
Subtotal Management Services:			4621	424		65					5110	5110

Project Total Cost:			103521	7851		7178		2395			120945	120945
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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
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BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604817A Combat Identification	PROJECT D901
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COST (<i>In Thousands</i>)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D901 All Services Combat ID Evaluation Team	1561	0	0	0	0	0	0	0	0	4322

A. Mission Description and Justification: All Service Combat Identification Evaluation Team (ASCIET) Support. ASCIET is an expanding effort aimed at fostering improved tactics, techniques, and procedures (TTP) across all combat identification mission areas. ASCIET is chartered to employ the equipment and personnel of all Services to evaluate, investigate and assess various concepts of combat identification on the battlefield. ASCIET will also offer Federally Funded Research and Development Centers (FFRDCs), Service Battle Laboratories, and industry the opportunity to review and evaluate emerging technologies in multi-Service environment on a noninterference basis as a risk reduction and verification opportunity during ASCIET evaluations.

FY 1998 Accomplishments:

- 412 Assessed Situational Awareness (SA) impact on surface-to-surface operations.
 - 501 Assessed surface-to-air results from ASCIET 97 with particular attention given to Air defense interoperability.
 - 648 Conducted site surveys to research and investigate surface-to-surface instrumentation options to meet ASCIET 99 requirements.
- Total 1561

FY 1999 Planned Program: Project not funded in FY 1999

FY 2000 Planned Program: Project not funded in FY 2000

FY 2001 Planned Program: Project not funded in FY 2001

B. Other Program Funding Summary: None

C. Acquisition Strategy: Not applicable

D. <u>Schedule Profile</u>	<u>FY 1998</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>
Assessed SA impact on surface-to-surface opera	1-2 Qtr							
Assessed surface-to-air results from ASCIET 97	1-2 Qtr							
Conducted site surveys for surface-to-surface inst	3-4 Qtr							

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BUDGET ACTIVITY 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604817A Combat Identification				PROJECT D902		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D902 Dismounted Soldier CID	5063	5528	1480	0	0	0	0	0	0	13071
<p>A. Mission Description and Justification: The Combat Identification System for the Dismounted Soldier (CIDDS) is a lightweight, laser-based, question and answer type system, used to positively identify friendly soldiers. The system includes a compact, eyesafe, diode laser interrogator; a laser detector assembly; an electronic processor unit; and an omni-directional RF responder. The laser transmitter also includes a near infrared aiming laser pointer for aiming the soldier's weapon at night when using Night Vision Goggles and provides an embedded training capability that is interoperable with MILES/MILES 2000. The system will provide range of at least 1.1 kilometers under clear weather conditions and will exceed the soldier's target acquisition capability under degraded atmospheric conditions and it will have sufficient angular resolution to resolve individual targets. The system will also be directly interoperable with the integrated soldier-to-soldier combat ID functions to be embedded in the Land Warrior equipment suite. The system will fulfill requirements stated in the Operational Requirements Document for use by Army, Marine and Special Operations applications.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 708 Continued weapons integration kit design • 3080 Continued hardware and software design • 1000 Initiated MILES/MILES 2000 interoperability/integration effort • 275 Initiated Near IR aiming laser pointer interoperability/integration effort <p>Total 5063</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 1050 Complete hardware and software design • 278 Complete weapons integration kit design • 4060 Initiate fabrication, assembly and test of 148 EMD hardware systems for technical/operational testing. • 140 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 5528</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 1480 Partially complete fabrication, assembly and test of 148 EMD hardware systems for technical/operational testing. <ul style="list-style-type: none"> - Conduct government technical test. - Provide technical support to Initial Operational Test (IOT). Programming/budgeting of funds for actual test being coordinated with OPTEC. <p>Total 1480</p>										
Project D902			Page 8 of 10 Pages				Exhibit R-2A (PE 0604817A)			

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BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604817A Combat Identification	PROJECT D902
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B. Other Program Funding Summary	<u>FY 1998</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>
OPA2, SSN BA0515 Combat ID/Aiming Light	0	0	9486	11098	16626	13554	16216	19832	60104	146835

C. Acquisition Strategy: A competitive, cost plus incentive fee (CPIF) contract for the design, fabrication and testing of 148 units for IOT was awarded in July 1997. A follow-on sole source low rate production contract will be awarded in April 2000 to initiate fielding to 10th Mountain Division..

D. Schedule Profile	<u>FY 1998</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>
Govt. Technical Test			1 Qtr					
Initial Operational Test (IOT)			2 Qtr					
LRIP IPR			2 Qtr					
LRIP Award			3 Qtr					
Milestone III				1Qtr				
FUE				1Qtr				

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ARMY RDT&E COST ANALYSIS (R-3)											DATE February 1999	
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604817A Combat Identification					PROJECT D902		
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. Hardware	C/CPIF	Motorola, Scottsdale, AZ	5485	4594	1 Qtr						10079	10079
b. Kit Development	MIPR	Small Arms, ARL	0	115							115	115
c. SBIR/STTR				140							140	140
Subtotal Product Development:			5485	4849							10334	10334
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. Sys Eng/Tech Assis	C/T&M	Misc	120								120	120
b. CECOM	MIPR	Misc	217	95	1Qtr	30	1 Qtr				342	342
Subtotal Support Costs:			337	95		30					462	462
III. Test and Evaluation	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. Test Planning	MIPR	CECOM, TECOM, WSMR, SLAD, etc	0	204	1 Qtr						204	204
b. Development Test	MIPR	Yuma Proving Gd, AZ	0			1315	2Qtr				1315	1315
Subtotal Test and Evaluation:				204		1315					1519	1519
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. Program Management		PM Combat ID	241	380	1 Qtr	135	1 Qtr				756	756
Subtotal Management Services:			241	380		135					756	756
Project Total Cost:			6063	5528		1480					13071	13071