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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)							DATE February 2000					
BUDGET ACTIVITY 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603790A NATO Research & Development				PROJECT D691				
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
D691 NATO Research and Development				3843	1858	1920	8594	8810	8973	9191	Continuing	Continuing
<p><b>A. Mission Description and Justification:</b> This program implements the provisions of Title 10 U.S. Code, Section 2350a, Cooperative Research and Development (R&amp;D) Projects: Allied Countries. The objective is to improve, through the application of emerging technologies, the conventional defense capabilities of the United States, the North Atlantic Treaty Organization (NATO), and U.S. major non-NATO allies. This program element only funds the U.S. equitable share of the cooperative R&amp;D project spent in the U.S. Projects are implemented with the allied partners through international agreements which define the scope, cost and work sharing arrangements, management, contracting, security, data protection and third party transfers. By technology sharing the program jointly develops equipment with our allies to improve operational efforts by achieving multi-national force compatibility through the use of similar equipment and improved interfaces. Funds support all the R&amp;D costs including the identification of cooperative opportunities and administration of the program. All funds are used to pay for the U.S. work share in the United States at U.S. Government and U.S. contractor's facilities. This program focuses on international cooperative technology demonstration, validation, and interoperability of the Battlefield Combat Identification System, Force XXI Battle Command Brigade &amp; Below (FBCB2)/Appliqué Systems, Adaptive Digital Beamforming for THAAD radars, helicopter helmet mounted displays, military network switching, Patriot Tactical Operations Center, improved combat vehicle propulsion, missile seeker electronic countermeasures, eyesafe laser radar, artillery command and control, standoff chemical detectors, kinetic energy penetrators, and signal jamming subsystems. The final program will be reported separately as required by 10 USC 2350a(f).</p> <p><b>FY 1999 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• 2357 <b>Fighting Vehicle Propulsion Technology using Ceramic Materials (Partner: Japan):</b> Continued to develop, test and characterize advance materials including ceramics, high temperature combustion optimization, low heat rejection technology, and advanced friction and wear phenomena.</li> <li>• 345 <b>Focal Plane Array Countermeasures (FPACM) (Partner: United Kingdom):</b> Characterized and assessed advanced focal plane array missile seekers and develop electronic countermeasures (ECM) to defeat them through simulation, modeling and lab testing.</li> <li>• 500 <b>Cooperative Eyesafe Laser Project (CELRAP) (Partner: Japan):</b> Continued to develop a joint performance specification for a multifunctional, eyesafe laser radar for range finding, target profiling, obstacle avoidance, range and terrain mapping. Continued fabricating subsystems and brassboard.</li> <li>• 400 <b>Combat Identification (CI) Interoperability Demonstration (Partners: France, Germany, United Kingdom):</b> Developed a NATO STANAG for CI based upon the Battlefield Combat Identification System (BCIS) and the completed interoperability trials of prototype systems in Munster, GE.</li> <li>• 150 <b>Adaptive Beamforming Technology (ABFT) for Wide Band Phased Array Radars (Partner: United Kingdom):</b> Completed ABFT technology insertion program for THAAD Radar objective system, beamforming algorithms, hardware and software modifications. Published final point design.</li> <li>• 91 <b>Report to Congress:</b> Pursuant to 10 USC 2350a, prepared and provided to USD(A&amp;T) the Army section of the 1999 Report to Congress on the International Cooperative Research and Development Program</li> </ul> <p>Total 3843</p>												
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<p><b>FY 2000 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 950 <b>Command and Control (C2) Systems Interoperability Program (C2SIP) (Partners: Germany, France, United Kingdom):</b> Continue integration work from Battlefield Interoperability Program (BIP), Quadrilateral Interoperability Program (QIP), and the Army Tactical Command &amp; Control Information System (ATCCIS) into an Advance Technology Demonstration (ATD) to achieve NATO levels four (messaging) &amp; five (database) interoperability. This program will transition into the Multilateral Interoperability Program (MIP) in FY 2000.</li> <li>• 790 <b>Laser Stand-off Chemical Detector (LSCD) (Partner: France):</b> Continue development of technology that will allow U.S. troops to detect, identify, and quantify chemical agents from a distance by employment of the preferred doctrine of contamination avoidance.</li> <li>• 68 <b>Report to Congress:</b> Pursuant to 10 USC 2350a, prepare and provide to USD(A&amp;T) the Army section of the 2000 Report to Congress on the International Cooperative Research and Development Program.</li> <li>• 50 Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)</li> </ul> <p>Total 1858</p> <p><b>FY 2001 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 1840 <b>Multilateral Interoperability Program (MIP) (Partners: Germany, France, United Kingdom, Canada, Italy):</b> Continue integration work from the Command and Control Systems Interoperability Program (C2SIP) into an Advanced Concept Technology Demonstration (ACTD) to achieve NATO levels four (messaging) &amp; five (database) interoperability and also extends the effort into a sustainable program to incorporate lessons learned into national systems. Extends participation to include Canada and Italy.</li> <li>• 80 <b>Report to Congress:</b> Pursuant to 10 USC 2350a, prepare and provide to USD(A&amp;T) the Army section of the 2001 Report to Congress on the International Cooperative Research and Development Program.</li> </ul> <p>Total 1920</p>		
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<b>B. Program Change Summary</b>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget ( <u>FY 2000/2001 PB</u> )	4132	1872	1971
Appropriated Value	4161	1872	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-29		
b. SBIR / STTR	-109		
c. Omnibus or Other Above Threshold Reduction		-8	
d. Below Threshold Reprogramming	-162		
e. Rescissions	-18	-6	
Adjustments to Budget Years Since <u>FY 2000/2001 PB</u>			-51
Current Budget Submit ( <u>FY 2001 PB</u> )	3843	1858	1920

**C. Other Program Funding Summary:** None

**D. Acquisition Strategy:** All projects are test or technical demonstrations to feed into potential new requirements or as product improvements (such as the Adaptive Beamforming Technology insertion project), or to introduce interoperability into existing systems (such as the Combat Identification project).

<b>E. Schedule Profile</b>	<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>
<b>Combat Identification Interoperability</b>							
Conclude MOU Amendment	1QTR						
Complete NATO Staff Requirement	4QTR						
Complete NATO STANAG for CI			2QTR				
<b>Command &amp; Control Interoperability / MIP</b>							
Conclude MIP MOU		2QTR					
Complete C2SIP ATCD				4QTR			
Complete Integration into MCS				4QTR			
<b>Fighting Vehicle Propulsion Technology</b>							
Preliminary Engine Analysis Complete	3QTR						
Materials Characterization/Test Complete	3QTR						
Combustion Test and Analysis Complete		2QTR					
Complete Developmental Tests			2QTR				

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<b>E. Schedule Profile</b>	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
<b>Focal Plane Array Countermeasures</b>							
Complete Software Simulations	3QTR						
Develop CM Model		4QTR					
Complete Testing of CM Model			2QTR				
<b>Cooperative Eyesafe Laser Project</b>							
Complete Development Testing	4QTR						
Complete Early Operational Testing		3QTR					
<b>Adaptive Beamforming Technology</b>							
Final Design	2QTR						
Final Report	3QTR						
<b>Laser Standoff Chemical Detector</b>							
Complete Analysis of Spectral Properties	3QTR						
Begin Laser Prototype Development	4QTR						
Complete Development Testing			3QTR				

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ARMY RDT&E COST ANALYSIS (R-3)										DATE February 2000		
BUDGET ACTIVITY <b>4 - Demonstration and Validation</b>				PE NUMBER AND TITLE <b>0603790A NATO Research &amp; Development</b>						PROJECT <b>D691</b>		
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. Command & Control Systems	CPFF	CSC Ft Washington, PA	15050	500		0		0		0	15550	18028
b. Combat Identification Systems	CPAF	TRW Redondo Bch, CA	3893	400		0		0		0	4293	3993
c. Command & Control Systems	CPFF	Madentech Shrewsbury, NJ	1600	100		0		0		0	1700	2050
d. Algorithm Development	CPFF	Georgia Tech Atlanta, GA	7820	75		0		0		0	7895	8120
e. Sensors	CPFF	Dynetics Huntsville, AL	450	75		0		0		0	525	850
f. Software	FFRDC	Mitre Boston, MA	300	100		100		100		400	1000	1000
g. High Temperature Lubricant Research	CPFF	Wayne State Univ Detroit, MI	1600	200		0		0		0	1800	1800
h. Combustion Research	CPFF	Rutgers Univ Brunswick, NJ	900	200		0		0		0	1100	1100
i. Software Development	CPFF	SRI Menlo Park , CA	1350	100		100		100		400	2050	2050
j. Diesel Engine Research	CPFF	Detroit Diesel Allison Detroit, MI	1000	811		0		0		0	1811	2000
k. Software Development	CPFF	Nichols Research Huntsville, AL	732	132		100		100		200	1264	1232
l. MIP Follow-on	CPFF	TBD	0	0		858		930			1788	
Subtotal Product Development:			34695	2693		1158		1230		1000	40776	53841

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**PROJECT**  
**D691**

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	MIPR	CECOM Ft. Monmouth, NJ	400	100		150		140		400	1190	
b. Engineering	MIPR	TACOM Warren, MI	400	100		0		0		0	500	
c. Logistics	MIPR	ICPA APG, MD	481	100		100		100		400	1181	
d. Logistics	MIPR	LOGSA Huntsville, AL	150	50		50		50		600	900	
e. Engineering	MIPR	AMCOM Huntsville, AL	130	100		0		0		0	230	
Subtotal Support Costs:			1561	450		300		290		1400	4001	

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. Independent Evaluations	MIPR	AMSAA APG, MD	400	100		50		50		300	900	
b. Software Validation	MIPR	CECOM Ft Monmouth, NJ	300	100		50		50		300	800	
c. System Testing	MIPR	Army Research Lab, APG, MD	300	0		0		0		0	300	
d. System Testing	MIPR	TECOM APG, MD	500	100		50		50		1760	2460	
Subtotal Test and Evaluation:			1500	300		150		150		2360	4460	

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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. Project Management	MIPR	PEO C3S Ft. Monmouth, NJ	600	50		100		100		600	1450	
b. Project Management	MIPR	TACOM Warren, MI	400	100		0		0		0	500	
c. Project Management	MIPR	PEO IEW Ft. Monmouth, NJ	500	100		0		0		0	600	
d. Project Management	MIPR	CBDCOM Edgewood Ars, MD	300	50		100		100		330	880	
e. Project Management	MIPR	Army Research Lab, APG, MD	200	0		0		0		0	200	
f. Project Management	MIPR	Army Research Lab, WSMR, NM	400	50		0		0		0	450	
g. Project Management	MIPR	CECOM Ft. Belvoir, VA	500	50		50		50		380	1030	
h. Project Management	MIPR	AMCOM Redstone Ars, AL	550	0		0		0		0	550	
Subtotal Management Services:			3450	400		250		250		1310	5660	
Project Total Cost:			41206	3843		1858		1920		6070	54897	53841