

UNCLASSIFIED

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

DATE  
**February 2000**

**BUDGET ACTIVITY**  
**7 - Operational System Development**

**PE NUMBER AND TITLE**  
**0206623M Marine Corps Ground  
Combat/Supporting Arms Systems**

<i>COST (In Millions)</i>	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	16235	28679	22124	19088	10484	9583	9854	Continuing	Continuing
C0021 Assault Amphibious Vehicle 7A1 (AAV7A1)	512	396	406	357	368	378	390	Continuing	Continuing
C1555 Light Armored Vehicle (LAV) PIP	1829	8328	9849	6219	1328	1358	1394	Continuing	Continuing
C1901 Marine Corps Ground Weaponry PIP	5821	13244	8073	7878	4444	3091	3238	Continuing	Continuing
C2086 Marine Enhancement Program	3575	1475	1656	2604	2498	2813	2862	Continuing	Continuing
C2237 Amphibious Vehicle Test Branch	625	639	724	729	742	816	820	Continuing	Continuing
C2317 ASCIET	1	0	0	0	0	0	0	0	1155
C2503 Initial Issue	0	1613	1416	1301	1104	1127	1150	Continuing	Continuing
C2666 Automatic Target Tracker	1936	0	0	0	0	0	0	0	1936
C2667 Shortstop Electronic Protection System	1936	2984	0	0	0	0	0	0	4920
Quantity of RDT&E Articles									

**(U) Mission Description and Budget Item Justification:** This PE provides modification to Marine Corps Expeditionary Ground Force Weapon Systems to increase lethality, range, survivability and operational effectiveness. It also provides for the development of AAV7A1 reliability, maintainability, operational and safety modifications, improvements in command and control in the ADMS, product improvements to the family of LAVs and the development effort for the LAV-AD variant. The AVTB provides facilities and personnel which perform a broad range of testing, repair and technical services to amphibious vehicles.

**(U) Justification for Budget Activity:** This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it encompasses engineering and manufacturing and manufacturing development for upgrades of existing systems.

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Budget Item Justification

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BUDGET ACTIVITY <b>7 - Operational System Development</b>				PE NUMBER AND TITLE <b>0206623M Marine Corps Ground Combat/Supporting Arms Systems</b>				PROJECT <b>C0021</b>		
<i>COST (In Millions)</i>	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
C0021 Assault Amphibious Vehicle 7A1 (AAV7A1)	512	396	406	357	368	378	390	Continuing	Continuing	
Quantity of RDT&E Articles										
<p><b>A. (U) <u>Mission Description and Budget Item Justification:</u></b>                  (U) The AAV7A1 RDT&amp;E program provides for the development, test and preparation of Engineering Change Proposals (ECPs) to improve the performance, reliability, maintainability and safety of the AAV7A1 Family of Vehicles (FOV). This program also allows for the development of installation kits for the integration of communications and navigation equipment developed for integration into the AAV7A1 FOV.</p> <p><b>(U) FY 1999 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• (U) \$ 212 Continued providing engineering support for integration of modification kits into AAV7A1 Family of Vehicles.</li> <li>• (U) \$ 300 AAV communications Upgrade improvements to AAV7A1 Family of vehicles</li> </ul> <p>(U) Total \$ 512</p> <p><b>(U) FY 2000 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• (U) \$ 396 Continue providing engineering support for integration of modification kits into AAV7A1 Family of Vehicles.</li> </ul> <p>(U) Total \$ 396</p> <p><b>(U) FY 2001 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• (U) \$ 406 Continue providing engineering support for development and integration of modification kits into AAV7A1 Family of Vehicles.</li> </ul> <p>(U) Total \$ 406</p>										
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BUDGET ACTIVITY  
**7 - Operational System Development**

PE NUMBER AND TITLE  
**0206623M Marine Corps Ground  
Combat/Supporting Arms Systems**

PROJECT  
**C0021**

**B. (U) Project Change Summary**

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
(U) Previous President's Budget	216	398	409
(U) Adjustments to Previous President's Budget	296	-2	-3
(U) Current Budget Submit	512	396	406

(U) Change Summary Explanation:

(U) Funding: FY 1999 increase is due to the reprioritization of programs within the Marine Corps. FY 2000 and FY 2001 adjustments are due to minor affordability adjustments.

(U) Schedule: N/A

(U) Technical: N/A

**C. (U) Other Program Funding Summary**  
**(APPN, BLI #, NOMEN)**

	<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>
(U) PMC, 202100, AAV PIP	89,553	80,142	83,372	71,073	5,756	6,281	6,922	Cont.	Cont.

(U) **Related RDT&E:** PE 0603611M (Marine Corps Assault Vehicles)

**D. (U) Schedule Profile:** N/A

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<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>	DATE <b>February 2000</b>
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<b>BUDGET ACTIVITY</b> <b>7 - Operational System Development</b>	<b>PE NUMBER AND TITLE</b> <b>0206623M Marine Corps Ground Combat/Supporting Arms Systems</b>	<b>PROJECT</b> <b>C1555</b>
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COST (In Millions)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
C1555 Light Armored Vehicle (LAV) PIP	1829	8328	9849	6219	1328	1358	1394	Continuing	Continuing
Quantity of RDT&E Articles									

**A. (U) Mission Description and Budget Item Justification:**

The Light Armored Vehicle Family of Vehicles (LAV FOV) consists of seven fielded LAV configurations, and one communications/intelligence-configured asset on an LAV chassis (Mobile Electronic Warfare Smbjgupport System). Collectively, the LAV FOV provides a logistically self-contained, highly mobile, and lethal combined arms combat system to the Marine Air-Ground Task Force (MAGTF). This project funds for the development and testing of modifications falling within the purview of the LAV Service Life Extension Program (SLEP) (See PMC: LAV SLEP (FY 2002-FY 2005)) and the LAV Command and Control (See LAV C2 (FY2003) Product Improvement Programs. These programs will provide the following: (1) LAV SLEP will ensure the LAV FOV will be capable of conducting its assigned missions through FY 2015 by enhancing lethality and survivability; reliability, availability, maintainability and durability; as well as reducing operations and support costs. The LAV SLEP will essentially invest in technologies currently existing on newer generations of Light Armored Vehicles and other weapons systems. (2) The LAV C2 modification will enhance overall Light Armored Reconnaissance (LAR) Battalion and MAGTF command and control capabilities by investing in C4I systems that will enhance communications, interoperability, and connectivity with the LAR Battalions and within other USMC C4I systems.

**(U) FY 1999 Accomplishments:**

- (U) \$ 460 Completed development, testing and evaluation of urgent LAV RAM-D and readiness enhancements.
  - (U) \$ 1369 Continued study, development, and analysis of existing and other technological solutions; commence developmental and operational test planning for the LAV Service Life Extension Program.
- (U)Total \$ 1829

**(U) FY 2000 Planned Program:**

- (U) \$ 4500 Development of 5 LAV SLEP operational system prototypes for developmental & operational test and evaluation of SLEP modifications.
- (U) \$ 1828 Continue study, analysis, and development of existing and other alternative technological solutions for the LAV Service Life Extension Program.
- (U) \$ 508 Continue and complete developmental and operational test planning for the LAV Service Life Extension Program Test Planning

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Budget Item Justification

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<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		DATE <b>February 2000</b>																				
<b>BUDGET ACTIVITY</b> <b>7 - Operational System Development</b>	<b>PE NUMBER AND TITLE</b> <b>0206623M Marine Corps Ground Combat/Supporting Arms Systems</b>	<b>PROJECT</b> <b>C1555</b>																				
<ul style="list-style-type: none"> <li>• (U) \$ 1492 Conduct research and development of LAV C2 architectural and systems interoperability requirements.</li> <li>(U)Total \$ 8328</li> </ul> <p><b>(U) FY 2001 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• (U) \$ 430 Complete development of LAV SLEP operational system prototypes for test and evaluation of SLEP modifications.</li> <li>• (U) \$ 4252 Commence developmental and operational testing and evaluation of 5 LAV SLEP modification prototypes.</li> <li>• (U) \$ 2200 Continue development of LAV Service Life Extension Program to include fielding requirements, training, ILS, future maintenance requirements, and impacts to depot-level maintenance program.</li> <li>• (U) \$ 2567 Develop LAV C2 Modification prototype system for developmental and operational test and evaluation.</li> <li>• (U) \$ 400 Continue development of LAV C2 developmental and operational test requirements and plan.</li> </ul> <p>(U)Total \$ 9849</p>																						
<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 35%;"></th> <th style="text-align: center;"><u>FY 1999</u></th> <th style="text-align: center;"><u>FY 2000</u></th> <th style="text-align: center;"><u>FY 2001</u></th> </tr> </thead> <tbody> <tr> <td><b>B. (U) <u>Project Change Summary</u></b></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) Previous President's Budget</td> <td style="text-align: center;">1548</td> <td style="text-align: center;">11706</td> <td style="text-align: center;">12556</td> </tr> <tr> <td>(U) Adjustments to Previous President's Budget</td> <td style="text-align: center;">281</td> <td style="text-align: center;">-3378</td> <td style="text-align: center;">-2707</td> </tr> <tr> <td>(U) Current Budget Submit</td> <td style="text-align: center;">1829</td> <td style="text-align: center;">8328</td> <td style="text-align: center;">9849</td> </tr> </tbody> </table>				<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<b>B. (U) <u>Project Change Summary</u></b>				(U) Previous President's Budget	1548	11706	12556	(U) Adjustments to Previous President's Budget	281	-3378	-2707	(U) Current Budget Submit	1829	8328	9849
	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>																			
<b>B. (U) <u>Project Change Summary</u></b>																						
(U) Previous President's Budget	1548	11706	12556																			
(U) Adjustments to Previous President's Budget	281	-3378	-2707																			
(U) Current Budget Submit	1829	8328	9849																			
<p>(U) Change Summary Explanation:</p> <p style="padding-left: 40px;">(U) Funding: FY 1999 change due to a decrease of \$12K for SBIR tax assessment as well as a decrease of \$7K for a minor affordability adjustment. Additionally, \$300K was added due to reprioritization of programs within the Marine Corps. FY 2000 decrease in the amount of \$3,378M due to a reprioritization of programs within the Marine Corps as well as a minor affordability adjustment. FY 2001 decrease reflects PBD604 reduction as well as a realignment of LAV Enhanced Fire Support Platform (EFSP) resources.</p> <p style="padding-left: 40px;">(U) Schedule: Schedule changes reflect current program estimates based on completion of Trade Studies and resultant definitization of program scope.</p> <p style="padding-left: 40px;">(U) Technical:</p>																						

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**0206623M Marine Corps Ground**  
**Combat/Supporting Arms Systems**

**PROJECT**  
**C1555**

<b>C. (U) <u>Other Program Funding Summary</u></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>	<u>To Compl</u>	<u>Tot. Cost</u>
<b>(APPN, BLI #, NOMEN)</b>									
(U) PMC, 203800, LAV PIP	1380	1694	1709	47314	71235	44053	41652	CONT	CONT

(U) **Related RDT&E:** Not applicable

**D. (U) Schedule Profile: LAV SLEP**

Milestone 0:	1 <sup>st</sup> Qtr, FY 1998	Milestone III:	2 <sup>nd</sup> Qtr, FY 2002
Milestone I:	2 <sup>nd</sup> Qtr, FY 1999	Contract Award:	2 <sup>nd</sup> Qtr, FY 2002
Milestone II:	2 <sup>nd</sup> Qtr, FY 2000	IOC:	1st Qtr, FY 2005
DT / OT:	2 <sup>nd</sup> Qtr, FY 2001	FOC:	1 <sup>st</sup> Qtr, FY 2009

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)							DATE February 2000			
BUDGET ACTIVITY <b>7 - Operational System Development</b>				PE NUMBER AND TITLE <b>0206623M Marine Corps Ground Combat/Supporting Arms Systems</b>			PROJECT <b>C1555</b>			
<b>A. (U) <u>Project Cost Breakdown</u></b>				<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>				
Product Development				1060	6371	3177				
Support Costs and Management				555	1167	996				
Test and Evaluation				214	790	5676				
Total				1829	8328	9849				
<b>B. <u>Budget Acquisition History and Planning Information</u></b>										
<b>Performing Organizations</b>										
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1999	FY 1999	FY 2000	FY 2001	Budget to Complete	Total Program
<b>Product Development Organizations</b>										
Dies Div, GM	C/FF	Dec 97	915	915	615	0	0	0	0	915
In-house Product Development	WR	1 <sup>st</sup> Qtr			512	448	1252	624	Continue	Continue
Booz Allen	C/FF	2 <sup>nd</sup> Qtr 99			200	300	0	0	0	0
Other	Various	Various			9680	312	5119	2553	Continue	Continue
<b>Support and Management Organizations</b>										
In-house Support	WR	1 <sup>st</sup> Qtr			23246	555	1167	996	Continue	Continue
<b>Test and Evaluation Organizations</b>										
Other (LAV Test Dir/YumaPrvGrd)	WR	Various			4442	214	790	5676	Continue	Continue

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Budget Item Justification

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)							DATE February 2000		
BUDGET ACTIVITY <b>7 - Operational System Development</b>				PE NUMBER AND TITLE <b>0206623M Marine Corps Ground Combat/Supporting Arms Systems</b>			PROJECT <b>C1555</b>		
<b>Government Furnished Property</b>									
	Contract								
Item	Method/Type	Award or		Total					
	or Funding	Obligation	Delivery	Prior to			Budget to	Total	
<u>Description</u>	<u>Vehicle</u>	<u>Date</u>	<u>Date</u>	<u>FY 1999</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>Complete</u>	<u>Program</u>
<b>Product Development Property</b>									
Not Applicable									
<b>Support and Management Property</b>									
Not Applicable									
<b>Test and Evaluation Property</b>									
Not Applicable									
				Total					
				Prior to				Budget to	Total
				<u>FY 1999</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>Complete</u>	<u>Program</u>
Subtotal Product Development				10807	1060	6371	3177	Continue	Continue
Subtotal Support and Management				23246	555	1167	996	Continue	Continue
Subtotal Test and Evaluation				4442	214	790	5676	Continue	Continue
Total Project				38495	1829	8328	9849	Continue	Continue

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Budget Item Justification

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<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>	DATE <b>February 2000</b>
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<b>BUDGET ACTIVITY</b> <b>7 - Operational System Development</b>	<b>PE NUMBER AND TITLE</b> <b>0206623M Marine Corps Ground Combat/Supporting Arms Systems</b>	<b>PROJECT</b> <b>C1901</b>
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COST (In Millions)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
C1901 Marine Corps Ground Weaponry PIP	5821	13244	8073	7878	4444	3091	3238	Continuing	Continuing
Quantity of RDT&E Articles									

**A. (U) Mission Description and Budget Item Justification:**

(U) This Project develops joint and Marine Corps unique improvements to infantry weapons and artillery technology, USMC unique Amphibious Armor Systems (AAS), improvements for the M1A1 Main Battle Tank and support systems, USMC Family of Small Craft, Night Vision Equipment and monitors national and international weapons developments.

**(U) FY 1999 Accomplishments:**

- (U) \$ 74 Armored Vehicle Driver's Viewer Enhancer (AVDVE): Completed integrated logistics documentation and testing for the Light Armored Vehicle/ Amphibious Assault Vehicle procurement of the Armored Vehicle Driver's Viewer Enhancer for all USMC vehicles.
- (U) \$ 413 M1A1 Armor Mods: Continued joint evaluation of modifications of amphibious armor including Component Enhancements, Advanced Fire Control Systems, survivability systems, M88 and Amored Vehicle Launch Bridge (AVLB) upgrades, combat identification and others.
- (U) \$ 2992 Target Location Designator Hand-off System (TLDHS): Continued participation in the joint-Service, U.S. Army-led EMD development of the Lightweight Laser Designator Rangefinder (LLDR) hardware and software, and continue to develop TLDHS-specific software application. Began continued integration of LLDR with the Digital Automated Communication Terminal ( DACT) C2PC, and the Marine Air-Ground Task Force (MAGTF) C4I architecture.
- (U) \$ 585 Fire Support Mods: Continued joint participation in artillery and fire support improvement projects. Specifically, continued joint sustainment of the M198 Howitzer and associated end items, to include development of updated Global Positioning System (GPS) Capability and user evaluations of the Elimination of Radioactive Light Sources (ERLS) collimater. Continued joint software modeling & design and field user evaluations of the Firefinder Radar Position Analysis System. Conducted technical, operational and cost analysis of Family of Artillery Munitions. Provided support to the Marine Corps Warfighting Lab for the development, evaluation and rapid transition of fire support initiatives.
- (U) \$ 110 Mortar Ballistic Computer (MBC): Continued unilateral development of USMC-unique ballistics software for the Mortar Ballistic Computer.

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**Combat/Supporting Arms Systems**

**PROJECT**  
**C1901**

- (U) \$ 686 Infantry Wpns Mods: Continued joint participation and Marine Corps unique activities for evaluation of safety, lethality, and technology improvements for Marine Corps infantry/reconnaissance individual and crew served weapons. Pursued solutions to integrate weapons systems with existing and planned night vision and sighting technologies including revisions of mounts and interfaces. Began weapon system ingetration into the Integrated Infantry Combat System (IICS) to enhance the efficiency, effectiveness and safety of the Combat System.
- (U) \$ 560 Thermal Weapons Sight (TWS)[AN/PAS-13]: Joint participation and Marine Corps unique activities for the testing and evaluation of TWS.
- (U) \$ 401 Family of Small Craft: Provided Fault Analysis and Fault Isolation (FAFI) for the Riverine Assault Craft (RAC) and the Rigid Raiding Craft (RRC) and associated equipment at MCPD, Fallbrook. Engineering support for the Raw Water Cooling System (RWCS) for the RAC.
- (U)Total \$ 5,821

**(U) FY 2000 Planned Program:**

- (U) \$ 460 M1A1 Armor Mods: Continue joint evaluation of modifications of amphibious armor including Component Enhancements, Advanced Fire Control Systems, survivability systems, Operations and Support Cost Reduction opportunities, combat identification and others.
- (U) \$ 1676 Target Location Designator Hand-off System (TLDHS): Complete Joint-service, U.S. Army-led EMD development and IOT&E of the LLDR. Complete initial systems integration between the LLDR and the DACT/Command & Control Personal Computer. Continue incremental refinement, coding, evaluation and Independent Verification & Validation (IV&V) of the TLDHS-specific software application to ensure interoperability with emerging Marine Corps tactical C4I architecture and with other fire support platforms and agencies. Conduct IOT&E of artillery (Variable Message Format/Package 11) fire support functionality.
- (U) \$ 1047 Fire Support Mods: Continue joint participation in artillery and fire support improvement projects including joint sustainment of the M198 Howitzer and Meterological Measuring Set (MMS). Continues software analysis and integration. Provide support to the Marine Corps Warfighting Lab for the development, evaluation and rapid transition of fire support initiatives.
- (U) \$ 1271 Infantry Wpns Mods: Continue joint participation and Marine Corps unique activities for evaluation of safety, lethality, and technology improvements for Marine Corps infantry/reconnaissance individual and crew served weapons. Pursue solutions to integrate weapons systems with existing and planned night vision and sighting technologies including revisions of mounts and interfaces. Continue weapon system integration into the Integrated Infantry Combat System (IICS) to enhance the efficiency, effectiveness and safety of the Combat System.
- (U) \$ 112 Thermal Weapons Sight (TWS)[AN/PAS-13]: Continue joint participation and Marine Corps unique activities for testing of the TWS.
- (U) \$ 623 Family of Small Craft: Provide Fault Analysis and Fault Isolation (FAFI) for the Riverine Assault Craft (RAC) and the Rigid Raiding Craft (RRC) and associated equipment at MCPD, Fallbrook, CA. Engineering support for the replacement engines for the RAC.
- (U) \$ 450 Night Vision Mod Line: Continue joint participation and Marine Corps unique activities for evaluation of safety, lethality and technology improvements for Marine Corps Night Vision Devices. Provides for In Service Engineering Activity (ISEA) at NSWC, Crane, IN. Participate with ARMY PM-Night Vision at Ft Belvoir, VA on new enhancements for image intensificaiton (I2). Travel/TAD to support enhanced systems development and review of tests.

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Budget Item Justification

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**PE NUMBER AND TITLE**  
**0206623M Marine Corps Ground**  
**Combat/Supporting Arms Systems**

**PROJECT**  
**C1901**

- (U) \$ 265 Begin in-depth requirements analysis to establish the types and amounts of future ammunition required by the USMC. Establish active monitoring of US Army artillery ammunition development programs in order to leverage off and influence Army munitions R&D effort. Allow Marine Corps Operational Test and Evaluation Activity participation in all tests to collect/analyze data to support a procurement decision for M795 HE.
  - (U) \$ 460 Improved Recovery Vehicle: For Landing Craft Air Cushion (LCAC) testing of Improved Recovery Vehicle.
  - (U) \$ 6680 M1A1 Firepower Enhancements: Conduct trade studies to determine most cost effective upgrades to the tank fire control system. Initiate preliminary design of integrated NDI package to include improved thermal sight and north-finding/far target location capability. Begin fabrication/testing of prototype integrated system. Develop preliminary system specification, interface control documents, item development specification, conduct System Requirements Review (SRR)
  - (U) \$ 200 Family of Improved Lightweight Mortars: In conjunction with Program manager for Mortars, conduct concept exploration initiatives to determine the feasibility of alternative concepts for the Pointing Device (PD) for the Mortar Fire Control System (Light) (MFCS). The PD provides precise deflection, elevation, and Global Positioning System interface for the MFCS. Will down-select to no more than two alternatives for further development.
- (U)Total \$ 13,244

**(U) FY 2001 Planned Program:**

- (U) \$ 266 M1A1 Armor Mods: Continue joint evaluation of modifications of amphibious armor including Component Enhancements, Advanced Fire Control Systems, survivability systems, combat identification and others.
- (U) \$ 735 Target Location Designator Hand-off System (TLDHS): Continue incremental refinement, coding, evaluation and IV&V of the TLDHS-specific software application to ensure interoperability with the emerging Marine Corps tactical C4I architecture and with other fire support platforms and agencies. Conduct IOT&E of close-air-support (JVMF format) functionality.
- (U) \$ 910 Fire Support Mods: Continue joint participation in artillery and fire support improvement projects. Specifically, continue joint sustainment of the M198 Howitzer, Meteorological Measuring System and Firefinder Radar to include safety modifications and service life extension efforts. Provide support to the Marine Corps Warfighting Lab for the development, evaluation and rapid transition of fire support initiatives.
- (U) \$ 834 Infantry Wpns Mods: Continued joint participation and Marine Corps unique activities for evaluation of safety, lethality, and technology improvements for Marine Corps infantry/reconnaissance individual and crew served weapons. Pursue solutions to integrate weapons systems with existing and planned night vision and sighting technologies including revisions of mounts and interfaces. Continue weapon system integration into the Integrated Infantry Combat System (IICS) to enhance the efficiency, effectiveness and safety of the Combat System.
- (U) \$ 114 Thermal Weapons Sight (TWS)[AN/PAS-13]: Provide for joint participation in P3I for TWS – remote image transfer, laser range finder, airport reticle, mounting brackets for future small arms weapons, vertical angle measurement, automated airport reticle.

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<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		DATE <b>February 2000</b>							
<b>BUDGET ACTIVITY</b> <b>7 - Operational System Development</b>	<b>PE NUMBER AND TITLE</b> <b>0206623M Marine Corps Ground Combat/Supporting Arms Systems</b>	<b>PROJECT</b> <b>C1901</b>							
<ul style="list-style-type: none"> <li>• (U) \$ 585 Family of Small Craft: Provide Fault Analysis and Fault Isolation (FAFI) for the Riverine Assault Craft (RAC) and the Rigid Raiding Craft (RRC) and associated equipment at MCPD, Fallbrook, CA. Engineering analysis and development for the replacement Intercom System for the RAC.</li> <li>• (U) \$ 446 Night Vision Mod Line: Continue joint participation and Marine Corps unique activities for evaluation of safety, lethality and technology improvements for Marine Corps Night Vision Devices. Provides for In Service Engineering Activity (ISEA) at NSWC, Crane. Participate with ARMY PM-Night Vision at Ft Belvoir on new enhancements for I2. Travel/TAD to support enhanced systems development and review of tests.</li> <li>• (U) \$ 269 Continue in-depth requirements analysis to establish the types and amounts of future ammunition required by the USMC. Continue active monitoring of US Army artillery ammunition development programs in order to leverage off and influence Army munitions R&amp;D effort. Continue MCOTEA participation in all tests to collect/analyze data to support a procurement decision.</li> <li>• (U) \$ 3617 Firepower Enhancements: Continue preliminary design of integrated NDI package to include improved thermal sight, automatic target tracker and north-finding far target location capability. Continue fabricating/testing of prototype integrated systems. .</li> <li>• (U) \$ 297 Family of Improved Lightweight Mortars. In conjunction with the Program Manager for Mortars, refine the PD for the MFCS. Develop alternatives for integrating the PD with the Commander's Interface.</li> </ul> <p>(U)Total \$ 8073</p>									
<b>B. (U) Project Change Summary</b>									
	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>						
(U) Previous President's Budget	7462	24488	18695						
(U) Adjustments to Previous President's Budget	-1641	-11244	-10622						
(U) Current Budget Submit	5821	13244	8073						
(U) Change Summary Explanation:									
(U) Funding: FY 1999 decrease of \$1641, FY 2000 decrease of \$11,244 and FY 2001 decrease of \$10,622 due to reprioritization of programs within the Marine Corps including deletion of the AVLB and MBC programs and transfer of \$7.2M in FY 00 from R&D to PMC for the IRV program.									
(U) Schedule: N/A									
(U) Technical: N/A									
<b>C. (U) Other Program Funding Summary</b>									
<b>(APPN, BLI #, NOMEN)</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>	<u>To</u>	<u>Total</u>
								<u>Compl</u>	<u>Cost</u>

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

DATE **February 2000**

**BUDGET ACTIVITY**  
**7 - Operational System Development**

**PE NUMBER AND TITLE**  
**0206623M Marine Corps Ground**  
**Combat/Supporting Arms Systems**

**PROJECT**  
**C1901**

<b>C. (U) Other Program Funding Summary</b> <b>(APPN, BLI #, NOMEN)</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>	To <u>Compl</u>	Total <u>Cost</u>
(U) PMC (BLI#206300) Modifications Kits (Tracked Vehicles)	7708	82762	20815	3793	3327	36145	38003	Cont.	Cont.
(U) PMC (BLI#210500) Items Less Than \$5 Million (Tracked Vehicles)	97	0	0	0	0	0	0	0	2040
(U) PMC (BLI#220900) Modifications Kits (Arty & Other)	2803	3265	3891	1466	8195	9856	7247	Cont.	Cont.
(U) PMC (BLI#221000) Items Less Than \$5 Million (Other)	105	0	0	0	0	0	0	0	1758
(U) PMC (BLI#468300) AN/TPQ-36 Firefinder Radar Upgrades	588	0	0	0	0	0	0	0	34355
* (U) PMC (BLI#493000) Night Vision Equipment	23586	17408	14351	22604	22528	25162	0	Cont.	Cont.
(U) PMC (BLI#473300) Fire Support Systems	0	4964	12343	17530	17355	19028	0	0	67287
(U) PMC (BLI#643400) Amphibious Raid Equipment	2797	0	0	0	0	0	0	0	2797
(U) PMC (BLI#222000) Weapons and Combat Vehicles	0	321	415	252	303	315	321	Cont.	Cont.
(U) PMC (BLI#462000) Items Less Than \$5M (Communications and Electronics)	0	11112	8320	6828	10215	9377	5497	Cont.	Cont.
((U) PMC (BLI#667000) Items Less Than \$5M	0	12016	5591	7883	8081	9338	6261	Cont.	Cont.
(U) PMC (BLI#206200) Improved Recovery Vehicle	0	0	42623	25019	25670	18782	752	0	112846

**(U) Related RDT&E**

(U) All Ground Weapons and Ground Ammunition Systems: Army, Navy, Air Force, Coast Guard, and Special Operations Command.

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

DATE **February 2000**

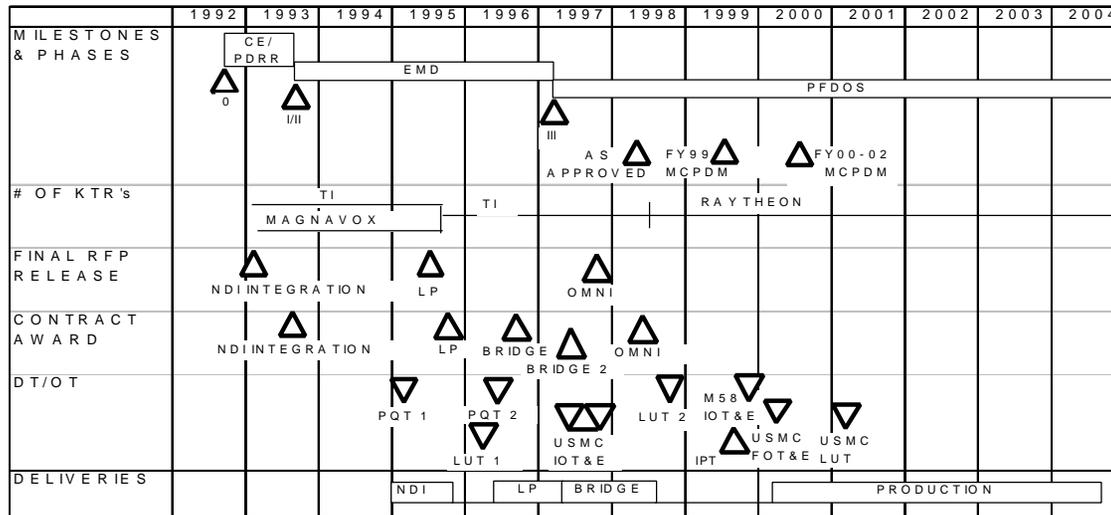
**BUDGET ACTIVITY**  
**7 - Operational System Development**

**PE NUMBER AND TITLE**  
**0206623M Marine Corps Ground**  
**Combat/Supporting Arms Systems**

**PROJECT**  
**C1901**

**D. (U) Schedule Profile:**

AVDVE



R-1 Line Item 176

Budget Item Justification

(Exhibit R-2, Page 14 of 35)

**UNCLASSIFIED**

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

DATE **February 2000**

BUDGET ACTIVITY  
**7 - Operational System Development**

PE NUMBER AND TITLE  
**0206623M Marine Corps Ground  
Combat/Supporting Arms Systems**

PROJECT  
**C1901**

**T H E R M A L   W E A P O N S   S I G H T**

	96		1997				1998				1999				2000				2001				2002				2003			
	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Army LRIP	██████████																													
USMC MS 0	◆																													
Change 1 to O&O		◆																												
ARMY OT			██████████																											
Develop/Staff LAP							██████████																							
Publish LAP							██████████																							
Develop LRFS			◆																											
Revise LRFS											◆																			
Update HARDMAN							██████████				██████████																			
Army MS III (LRIP/Bridge)							◆																							
OMNIBUS Contract							██████████				██████████				██████████				██████████											
Develop/Staff ULSS															██████████															
OT III (USMC OT)											██████████				██████████															
USMC MS I/III (ADM)															◆															
Contract Award																			◆											

R-1 Line Item 176

Budget Item Justification

(Exhibit R-2, Page 15 of 35)

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

DATE **February 2000**

BUDGET ACTIVITY  
**7 - Operational System Development**

PE NUMBER AND TITLE  
**0206623M Marine Corps Ground  
Combat/Supporting Arms Systems**

PROJECT  
**C1901**

TL DHS

**Program Schedule**

EVENT	97				98				99				00				01				02				03				04				05			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Milestone I/II																																				
EMD Contract Award																																				
<b>EMD Phase</b>																																				
System Development LLDR																																				
System Development THS																																				
LLDR Test Article Delivery																																				
<b>Test Phase</b>																																				
LLDR LMMD																																				
LLDR DT Testing																																				
USMC Unique OT (MAWTS)																																				
LLDR Joint Service IOT&E																																				
IOT&E Artillery (VMF)																																				
IOT&E CAS (JVMF)																																				
IOT&E Naval Surface Fire																																				
Army Milestone III LLDR																																				
<b>USMC Production Decision LLDR</b>																																				
Production Delivery																																				
TL DHS MCPDM (Total System)																																				
IOC																																				
FOC																																				

R-1 Line Item 176

Budget Item Justification

(Exhibit R-2, Page 16 of 35)

UNCLASSIFIED

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

DATE **February 2000**

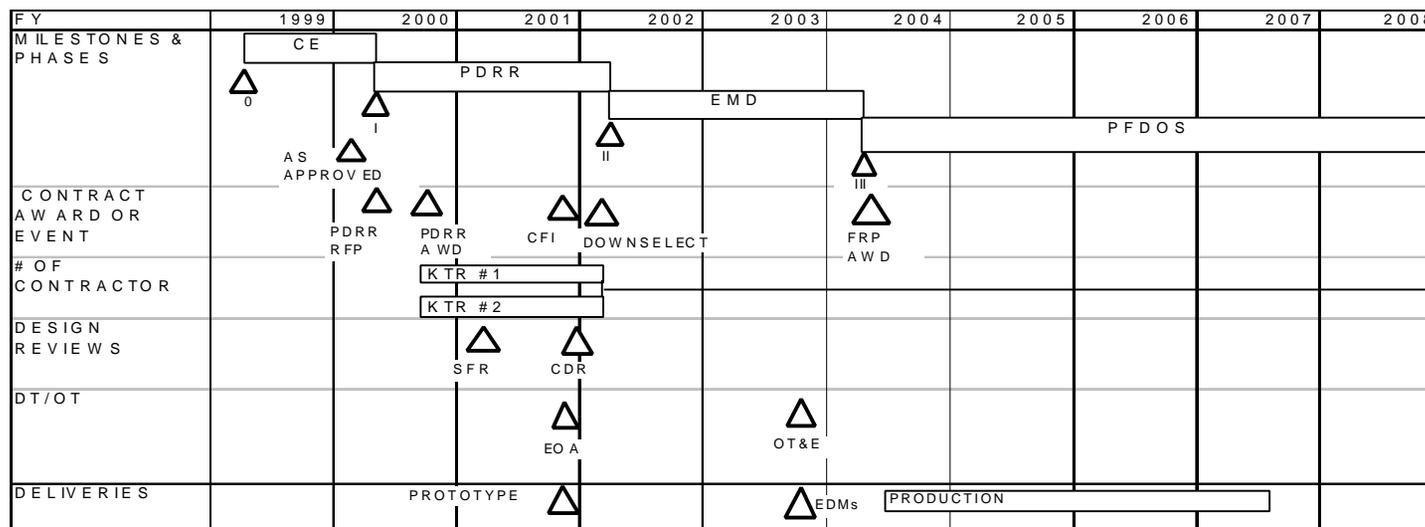
BUDGET ACTIVITY  
**7 - Operational System Development**

PE NUMBER AND TITLE  
**0206623M Marine Corps Ground  
Combat/Supporting Arms Systems**

PROJECT  
**C1901**

## M1A1 FIREPOWER ENHANCEMENT

### *Macro Program Schedule*



R-1 Line Item 176

Budget Item Justification

(Exhibit R-2, Page 17 of 35)

UNCLASSIFIED

# RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE **February 2000**

**BUDGET ACTIVITY**  
**7 - Operational System Development**

**PE NUMBER AND TITLE**  
**0206623M Marine Corps Ground**  
**Combat/Supporting Arms Systems**

**PROJECT**  
**C1901**

**A. (U) Project Cost Breakdown**

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Systems Engineering & Development	4249	10998	6265
Program Management and Support	580	1305	1260
Test and Evaluation	992	941	548
Total	5821	13244	8073

**B. Budget Acquisition History and Planning Information**

**Performing Organizations**

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1999	FY 1999	FY 2000	FY 2001	Budget to Complete	Total Program
<b>Product Development Organizations</b>										
Acquisition	WR/RCP	1 <sup>st</sup> Qtr			3988	240	310	290	CONT.	CONT.
Logistics Support, Dumfries, VA										
NSWC, Crane, IN	WR/RCP	1 <sup>st</sup> Qtr			1399	190	190	190	CONT.	CONT.
AMCOM, Huntsville, AL	MIPR	1 <sup>st</sup> Qtr			3851	300	340	225	CONT.	CONT.
NSWC, Dahlgren, VA	WR/RCP	1 <sup>st</sup> Qtr			3575	300	250	275	CONT.	CONT.
MCPD, Fall Brook, CA	WR/RCP	1 <sup>st</sup> Qtr			703	380	580	540	CONT.	CONT.
NSWC, Indian Head, MD	WR/RCP	1 <sup>st</sup> Qtr			425	375	410	345	CONT.	CONT.
BENET LABS, Albany NY	MIPR	1 <sup>st</sup> Qtr			185	110	120	158	CONT.	CONT.
PM NVRSTA, Ft Belvoir, VA	MIPR	1 <sup>st</sup> Qtr			1190	310	490	264	CONT.	CONT.
U.S. Army CECOM, NJ	MIPR	1 <sup>st</sup> Qtr			290	630	210	55	CONT.	CONT.

R-1 Line Item 176

Budget Item Justification

(Exhibit R-3, Page 18 of 35)

**UNCLASSIFIED**

## RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE  
**February 2000**

<b>BUDGET ACTIVITY</b> <b>7 - Operational System Development</b>	<b>PE NUMBER AND TITLE</b> <b>0206623M Marine Corps Ground Combat/Supporting Arms Systems</b>	<b>PROJECT</b> <b>C1901</b>
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Rock Island Arsenal, IL	MIPR	1st Qtr			125	115	120	120	CONT.	CONT.
MCTSSA, Camp Pendleton, CA	WR/RCP	1 <sup>st</sup> Qtr			1018	1009	878	97	CONT.	CONT.
MCCDC, Quantico, VA	WR	1 <sup>st</sup> Qtr			3968	290	325	215	CONT.	CONT.
ARDEC	MIPR	1 <sup>st</sup> Qtr			0	0	125	126	CONT.	CONT.
UDLP York, PA (IRV)	MIPR	2 <sup>ND</sup> Qtr	0	0	0	0	55	0	0	0
KR TBD (M1A1 Firepower)	Comp/CPFF	JUL 00	10745	10745	0	0	5905	2875	3945	10745
Night Vision Lab Ft Belvoir, VA (M1A1 Firepower)	MIPR	Nov 99			0	0	200	200	CONT.	CONT.
PM Mortars (Ktr TBD)	FFP	TBD	580	580	0	0	190	290	100	580
Center for Naval Analysis (M1A1 Mod)	RFP	2 <sup>nd</sup> Qtr	0	0	0	0	300	0	0	0
Misc					3042	0	0	0	0	0
Total Product Development					23759	4249	10998	6265		
<b>Support and Management Organizations</b>										
Aquisition Logistics Support, Dumfries, VA	WR/RCP	Various			20036	580	640	645	CONT.	CONT.
MCCDC	WR	1 <sup>st</sup> Qtr			0	0	30	30	CONT.	CONT.

R-1 Line Item 176

Budget Item Justification

(Exhibit R-3, Page 19 of 35)

**UNCLASSIFIED**

## RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE  
**February 2000**

BUDGET ACTIVITY	PE NUMBER AND TITLE								PROJECT	
<b>7 - Operational System Development</b>	<b>0206623M Marine Corps Ground Combat/Supporting Arms Systems</b>								<b>C1901</b>	
Acquisition	RCP	Various	0	0	0	0	50	0	0	0
Logistics Support, Dumfries, VA (IRV)										
Acquisition	RCP	Various	300	300	0	0	75	75	150	300
Logistics Support, Dumfries, VA (M1A1 Firepower)										
GDLS, Warren, MI (M1A1 Firepower)	MIPR	1 <sup>st</sup> Qtr			0	0	500	500	CONT.	CONT.
ALS (Mortars)	RCP	TBD	20	20	0	0	10	10	0	20
Total Support and Management					20036	580	1305	1260	CONT.	CONT.
<b>Test and Evaluation Organizations</b>										
AMCOM, Huntsville, AL	MIPR	1 <sup>st</sup> Qtr			5310	0	0	0	CONT.	CONT.
CECOM, New Jersey	MIPR	1 <sup>st</sup> Qtr			150	0	0	0	CONT.	CONT.
MCCDC, Quantico, VA	WR/RCP	1 <sup>st</sup> Qtr			5560	700	230	150	CONT.	CONT.
MCPD, Fallbrook, CA	WR/RCP	1 <sup>st</sup> Qtr			341	0	18	20	CONT.	CONT.
NSWC , Dahlgren, VA	WR/RCP	1 <sup>st</sup> Qtr			4985	150	155	125	CONT.	CONT.
NSWC, Crane, IN	WR/RCP	1 <sup>st</sup> Qtr			1767	75	125	100	CONT.	CONT.
PM NVRSTA, Ft Belvoir, VA	MIPR	1 <sup>st</sup> Qtr			0	50	0	50	CONT.	CONT.

R-1 Line Item 176

Budget Item Justification

(Exhibit R-3, Page 20 of 35)

**UNCLASSIFIED**

## RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE  
**February 2000**

<b>BUDGET ACTIVITY</b> <b>7 - Operational System Development</b>	<b>PE NUMBER AND TITLE</b> <b>0206623M Marine Corps Ground Combat/Supporting Arms Systems</b>	<b>PROJECT</b> <b>C1901</b>
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MCOTEA, Quantico, VA										
				0	0	50	50	CONT.	CONT.	
MCOTEA, Quantico, VA (IRV)	WR		1100	1100	0	0	88	0	1100	1100
Coastal Sys Station, Panama, City, FL (IRV)	WR	1 <sup>st</sup> Qtr			0	0	260	0	CONT.	CONT.
MCOTEA, Quantico, VA (MIA1 Firepower)	WR		1000	1000	0	0	0	0	1000	1000
Misc	Various	Various			4606	17	15	53	CONT.	CONT.
Total Test & Eval					22719	992	941	548	CONT.	CONT.

**Government Furnished Property N/A**

Contract									
Method/Type	Award or			Total					
Item	or Funding	Obligation	Delivery	Prior to				Budget to	Total
<u>Description</u>	<u>Vehicle</u>	<u>Date</u>	<u>Date</u>	<u>FY 1999</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>Complete</u>	<u>Program</u>

**Product Development Property**

**Support and Management Property**

**Test and Evaluation Property**

R-1 Line Item 176

Budget Item Justification

(Exhibit R-3, Page 21 of 35)

**UNCLASSIFIED**

# RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE **February 2000**

BUDGET ACTIVITY  
**7 - Operational System Development**

PE NUMBER AND TITLE  
**0206623M Marine Corps Ground  
Combat/Supporting Arms Systems**

PROJECT  
**C1901**

	Total Prior to <u>FY 1999</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	Budget to <u>Complete</u>	Total <u>Program</u>
Subtotal Product Development	23759	4249	10998	6265	Con't	Con't
Subtotal Support and Management	20036	580	1305	1260	Con't	Con't
Subtotal Test and Evaluation	22719	992	941	548	Con't	Con't
Total Project	66514	5821	13244	8073	Con't	Con't

R-1 Line Item 176

Budget Item Justification

(Exhibit R-3, Page 22 of 35)

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**UNCLASSIFIED**

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>							DATE <b>February 2000</b>			
BUDGET ACTIVITY <b>7 - Operational System Development</b>				PE NUMBER AND TITLE <b>0206623M Marine Corps Ground Combat/Supporting Arms Systems</b>				PROJECT <b>C2086</b>		
<i>COST (In Millions)</i>	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
C2086 Marine Enhancement Program	3575	1475	1656	2604	2498	2813	2862	Continuing	Continuing	
Quantity of RDT&E Articles										
<p><b>A. (U) <u>Mission Description and Budget Item Justification:</u></b></p> <p>(U) This program was formerly titled Soldier/Marine Enhancement. MEP provides Research, Development, Test and Evaluation funding for low visibility, low cost items. It focuses on items of equipment which will benefit the individual Marine by reducing the load, increasing survivability, enhancing safety and improving combat effectiveness. The emphasis of the program is on non-developmental/commercially available items which can be quickly evaluated and fielded. This program is coordinated with the Army's Soldier Enhancement Program and the Special Operations Command.</p> <p><b>(U) FY 1999 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• (U) \$ 510 Continued to explore NDI equipment that will improve the combat effectiveness and enhance safety and survivability of the Individual Marine.</li> <li>• (U) \$ 556 Continued to explore clothing and individual equipment NDI categories.</li> <li>• (U) \$ 509 Continued to explore ground weapons, communications and command and control equipment NDI categories.</li> <li>• (U) \$ 250 Continued development of prototype model for the Medical Forward Resuscitative Surgery System (MFRSS)</li> <li>• (U) \$ 1750 Explored initial issue clothing and individual equipment categories.</li> </ul> <p>(U)Total \$ 3,575</p> <p><b>(U) FY 2000 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• (U) \$ 502 Continue to explore NDI equipment that will improve the combat effectiveness and enhance safety and survivability of the Individual Marine.</li> <li>• (U) \$ 465 Continue to explore clothing and individual equipment NDI categories.</li> <li>• (U) \$ 508 Continue to explore ground weapons, communications and command and control equipment NDI categories.</li> </ul> <p>(U)Total \$ 1,475</p> <p><b>(U) FY 2001 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• (U) \$ 566 Continue to explore NDI equipment that will improve the combat effectiveness and enhance safety and survivability of the Individual Marine.</li> </ul>										
R-1 Line Item 176					Budget Item Justification					

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

DATE **February 2000**

**BUDGET ACTIVITY**  
**7 - Operational System Development**

**PE NUMBER AND TITLE**  
**0206623M Marine Corps Ground  
Combat/Supporting Arms Systems**

**PROJECT**  
**C2086**

- (U) \$ 543 Continue to explore clothing and individual equipment NDI categories.
  - (U) \$ 547 Continue to explore ground weapons, communications and command and control equipment NDI categories.
- (U) Total \$ 1,656

**B. (U) Project Change Summary**

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
(U) Previous President's Budget	3009	1484	1672
(U) Adjustments to Previous President's Budget	566	-9	-16
(U) Current Budget Submit	3575	1475	1656

(U) Change Summary Explanation:

(U) Funding: FY 99: Increase in the amount of \$566K is due to reprioritization of programs within the Marine Corps. FY00 and FY01 decreases are due to minor affordability adjustments.

(U) Schedule: N/A

(U) Technical: N/A

**C. (U) Other Program Funding Summary**  
**(APPN, BLI #, NOMEN)**

	<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>	<u>To</u>	<u>Total</u>
(U) PMC (BLI #221100) MEP	2070	2935	6413	2217	4159	4077	4140	<u>Compl</u>	<u>Cost</u>
(U) O&M Initial Issue Active	65593	44693	32173	27662	28288	28808	29442	Cont.	Cont.
(U) O&M Initial Issue Reserve	12293	15523	12758	7749	7900	7997	8095		

(U) **Related RDT&E:** PE 0604713A (Combat Feeding, Clothing and Equipment)

**D. (U) Schedule Profile:** N/A

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)							DATE			
							February 2000			
BUDGET ACTIVITY				PE NUMBER AND TITLE			PROJECT			
7 - Operational System Development				0206623M Marine Corps Ground Combat/Supporting Arms Systems			C2086			
<b>A. (U) Project Cost Breakdown</b>				<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>				
Systems Engineering				418	136	150				
Development Test and Evaluation				726	277	326				
Program Management and Support				453	295	330				
Integrated Logistics Support				619	302	345				
Test/Evaluations				541	141	144				
Government Engineering Support				504	213	234				
Miscellaneous				314	111	138				
Total				3575	1475	1656				
<b>B. Budget Acquisition History and Planning Information</b>										
<b>Performing Organizations</b>										
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1999	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	Budget to Complete	Total Program
<b>Product Development Organizations</b>										
Lexington – Bluegrass	WR	1 <sup>st</sup> Qtr			2357	35	42	48	Cont.	Con't
Lexington, KY NOC PacDiv	WR	1 <sup>st</sup> Qtr			173	86	30	35	Con't	Con't
Fallbrook, CA MCTSSA CamPen,	WR/RCP	1 <sup>st</sup> Qtr			604	22	4	5	Con't	Con't
CA NCTRF,	WR/RCP	1 <sup>st</sup> Qtr			299	25	21	21	Con't	Con't
Aberdeen, MD NATICK, Natick,	MIPR	2 <sup>nd</sup> Qtr			1298	492	60	70	Con't	Con't
MA										
					R-1 Line Item 176					
						Budget Item Justification				

## RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE  
**February 2000**

BUDGET ACTIVITY	PE NUMBER AND TITLE				PROJECT			
<b>7 - Operational System Development</b>	<b>0206623M Marine Corps Ground Combat/Supporting Arms Systems</b>				<b>C2086</b>			
ARL/APG Aberdeen, MD	MIPR	1 <sup>st</sup> Qtr	247	25	7	8	Con't	Con't
PM, Mortar, Ft. Monmouth, NJ	MIPR	1 <sup>st</sup> Qtr	544	0	0	0	Con't	Con't
PPSC, Philadelphia, PA	MIPR	3 <sup>rd</sup> Qtr	13	0	0	0	Con't	Con't
MCAGCC, Twenty-Nine Palms, CA	WR/RCP	1 <sup>st</sup> Qtr	104	0	0	0	Con't	Con't
NSMA Washington, DC	MIPR	1 <sup>st</sup> Qtr	175	10	14	16	Con't	Con't
TACOM, Warren, MI	MIPR	1 <sup>st</sup> Qtr	67	118	10	11	Con't	Con't
NHRC, Crane, IN	MIPR	2 <sup>nd</sup> Qtr	389	33	18	20	Con't	Con't
2 <sup>nd</sup> MARDIV CamLej, NC	WR	1 <sup>st</sup> Qtr	66	5	2	4	Con't	Con't
NCCOSC, San Diego, CA	WR	1 <sup>st</sup> Qtr	217	39	16	14	Con't	Con't
NCSS, Pamama City, FL	WR	1 <sup>st</sup> Qtr	1880	10	8	12	Con't	Con't
NSWC, Crane, IN	WR	1 <sup>st</sup> Qtr	2000	362	58	44	Con't	Con't
NAWC Air Div Patuxent River, MD	WR	1 <sup>st</sup> Qtr	256	56	42	41	Con't	Con't
II MEF, CamLej, NC	WR	1 <sup>st</sup> Qtr	80	0	5	5	Con't	Con't
NFESC, San Diego, CA	MIPR	2 <sup>nd</sup> Qtr	344	0	0	0	Con't	Con't
NSWC IHD, Indian Head, MD	WR	4 <sup>th</sup> Qtr	164	0	0	0	Con't	Con't
<b>Support and Management Organizations</b>								
R-1 Line Item 176				Budget Item Justification				

## RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE  
**February 2000**

BUDGET ACTIVITY	PE NUMBER AND TITLE						PROJECT	
<b>7 - Operational System Development</b>	<b>0206623M Marine Corps Ground Combat/Supporting Arms Systems</b>						<b>C2086</b>	
MCCDC, Quantico, VA	WR	1 <sup>st</sup> Qtr	2039	192	37	37	Con't	Con't
MISC	Various	Various	4434	60	40	41	Con't	Con't
<b>Test and Evaluation Organizations</b>								
MCTSSA, CamPen, CA	WR/RCP	1 <sup>st</sup> Qtr	1818	47	24	24	Con't	Conb't
NCTRF, Aberdeen, MD	WR/RCP	1 <sup>st</sup> Qtr	851	3	5	5	Con't	Con't
NATICK, Natick, MA	MIPR	2 <sup>nd</sup> Qtr	2470	750	125	185	Con't	Con't
ARL/APG, Aberdeen, MD	MIPR	1 <sup>st</sup> Qtr	801	19	12	14	Con't	Con't
PM, Mortors, Ft. Monmouth, NJ	MIPR	1 <sup>st</sup> Qtr	1803	0	0	0	Con't	Con't
PPSC, Philadelphia, PA	MIPR	3 <sup>rd</sup> Qtr	46	0	4	5	Con't	Con't
MCAGCC Twenty-Nine Palms, CA	WR/RCP	1 <sup>st</sup> Qtr	351	18	8	10	Con't	Con't
NSMA, Washington, DC	MIPR	1 <sup>st</sup> Qtr	539	43	21	21	Con't	Con't
TACOM, Warren, MI	MIPR	1 <sup>st</sup> Qtr	199	25	21	21	Con't	Con't
NHRC, Crane, IN	MIPR	2 <sup>nd</sup> Qtr	1473	380	150	200	Con't	Con't
2 <sup>nd</sup> MarDiv, CamLej, NC	WR	1 <sup>st</sup> Qtr	224	10	12	12	Con't	Con't
NCCOSC, San Diego, CA	WR	1 <sup>st</sup> Qtr	674	31	36	36	Con't	Con't
NCSS, Panama City, FL	WR	1 <sup>st</sup> Qtr	6192	15	15	15	Con't	Con't

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Budget Item Justification

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)							DATE February 2000			
BUDGET ACTIVITY <b>7 - Operational System Development</b>				PE NUMBER AND TITLE <b>0206623M Marine Corps Ground Combat/Supporting Arms Systems</b>				PROJECT <b>C2086</b>		
NSWC, Crane, IN	WR	1 <sup>st</sup> Qtr		6560	410	260	284	Con't	Con't	
NAWC Air Div, Patuxent River, MD	WR	1 <sup>st</sup> Qtr		788	154	162	176	Con't	Con't	
II MEF CamLej, NC	WR	1 <sup>st</sup> Qtr		5506	0	0	0	Con't	Con't	
NFESC, San Diego CA	MIPR	2 <sup>nd</sup> Qtr		1139	0	0	0	Con't	Con't	
NSWC IHD, Indian Head, MD	WR	4 <sup>th</sup> Qtr		556	10	10	10	Con't	Con't	
MISC	Various	Various		8851	90	196	206	Con't	Con't	
<b>Government Furnished Property</b>										
	Contract									
Item	Method/Type	Award or	Delivery	Total				Budget to	Total	
<u>Description</u>	<u>Vehicle</u>	<u>Obligation</u>	<u>Date</u>	<u>Prior to</u>	<u>FY 1999</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>Complete</u>	<u>Program</u>
<b>Product Development Property</b>										
Not Applicable										
<b>Support and Management Property</b>										
<b>Test and Evaluation Property</b>										
				Total				Budget to	Total	
				<u>Prior to</u>	<u>FY 1999</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>Complete</u>	<u>Program</u>
Subtotal Product Development				11277	1318	337	354	Con't	Con't	
Subtotal Support and Management				6473	252	77	78	Con't	Con't	
Subtotal Test and Evaluation				40741	2005	1061	1224	Con't	Con't	
Total Project				58491	3575	1475	1656	Con't	Con't	

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Budget Item Justification

(Exhibit R-3, Page 28 of 35)

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<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>	DATE <b>February 2000</b>
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<b>BUDGET ACTIVITY</b> <b>7 - Operational System Development</b>	<b>PE NUMBER AND TITLE</b> <b>0206623M Marine Corps Ground Combat/Supporting Arms Systems</b>	<b>PROJECT</b> <b>C2237</b>
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COST (In Millions)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
C2237 Amphibious Vehicle Test Branch	625	639	724	729	742	816	820	Continuing	Continuing
Quantity of RDT&E Articles									

**A. (U) Mission Description and Budget Item Justification:**

(U) The Amphibious Vehicle Test Branch (AVTB) is a one-of-a-kind Department of Defense test facility for amphibious vehicles and supports the requirements of all Services. The AVTB conducts developmental, combined developmental/operational, and follow-on testing and evaluation of production hardware. It also conducts Product Assurance Testing and Substitute or alternative parts and material testing for amphibious vehicles and associated equipment. Because of its year-round temperate climate, diverse terrain, and 17 miles of coastline, the AVTB is ideal for amphibious vehicle, as well as ship related testing. The AVTB is in close proximity to San Clemente island which is used frequently for live fire sea-to-shore testing and high-speed water testing. The AVTB is committed to testing product improvement programs, engineering change proposal design changes, and field change requests.

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**(U) FY 1999 Accomplishments:**

- (U) \$ 474 Program support, supplies and services at AVTB test site supported scheduled Amphibious Assault Vehicle 7A1 (AAV7A1) “rebuild to standard” testing, Advanced Amphibious Assault Vehicle (AAAV) Development Testing as well as other Marine Corps mobility and mine warfare programs. Program on-site support, supplies, and services supported Naval Sea System Command and Naval Mine Warfare Command for development testing of Navy mine countermeasures system. Provided services and support to the Department of Defense Common Test and Training Range Architecture workshops. These funds provided organic supply support including management operations, general accounting, and a maintenance float of equipment. Provided intermediate maintenance (third echelon) of organic non-developmental communication electronic and ordnance equipment.
- (U) \$ 151 Provided funding for necessary services provided by Marine Corps Base, Camp Pendleton (MCB CAMPEN), California and off-station units for for electricity, heating, and other power charges; long distance telephone support; and calibration of laboratory test equipment and maintenance.

(U)Total \$ 625

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<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		DATE <b>February 2000</b>
<b>BUDGET ACTIVITY</b> <b>7 - Operational System Development</b>	<b>PE NUMBER AND TITLE</b> <b>0206623M Marine Corps Ground Combat/Supporting Arms Systems</b>	<b>PROJECT</b> <b>C2237</b>
<p><b>(U) FY 2000 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• (U) \$ 490 Maintenance, refurbishment, upgrade, and replacement of test equipment and instrumentation needed to provide program support, supplies, and services at AVTB test site to support scheduled and unscheduled Assault Amphibious Vehicle 7A1 (AAV7A1) component testing, Advanced Assault Amphibious Vehicle (AAAV) Development Testing as well as other Marine Corps mobility and mine warfare programs. Upgrade instrumentations for over the horizon capability in developing weapons systems to support operational maneuver from the sea. Program on-site support, supplies, and services to support Naval Sea System Command and Naval Mine Warfare Command for development testing of Navy mine countermeasures system. Provide services and support to the Department of Defense Common Test and Training Range Architecture workshops. These funds provide organic supply support including management operations, general accounting, and a maintenance float of equipment. Provide intermediate maintenance (third echelon) of organic non-developmental communication electronic and ordnance equipment.</li> <li>• (U) \$ 149 Provide funding for necessary services provided by Marine Corps Base, Camp Pendleton (MCB CAMPEN), California for electricity, heating, and other power charges; and long distance telephone support. Provide funding for calibration of laboratory test equipment and maintenance services provided by Marine Corps Logistics Bases (MCLB) Barstow and 1FSSG.</li> </ul> <p>(U)Total \$ 639</p> <p><b>(U) FY 2001 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• (U) \$ 569 Maintenance, refurbishment, upgrade, and replacement of test equipment and instrumentation needed to provide program support, supplies, and services at AVTB test site to support scheduled and unscheduled Assault Amphibious Vehicle 7A1 (AAV7A1) component testing, Advanced Amphibious Assault Vehicle (AAAV) Development Testing Light Armored Vehicle Service Life Extension Program as well as other Marine Corps mobility and mine warfare programs. Upgrade instrumentation for over the horizon capability in developing weapons systems to support operational maneuver from the sea. Program on-site support, supplies, and services to support Naval Sea System Command and Naval Mine Warfare Command for development testing of Navy mine countermeasures system. Provide services and support to the Department of Defense Common Test and Training Range Architecture workshops. These funds provide organic supply support including management operations, general accounting, and a maintenance float of equipment. Provide intermediate maintenance (third echelon) of organic non-developmental communication electronic and ordnance equipment .</li> <li>• (U) \$ 155 Provide funding for necessary services provided by Marine Corps Base, Camp Pendleton (MCB CAMPEN), California for electricity, heating, and other power charges; and long distance telephone support. Provide funding for calibration of laboratory test equipment and maintenance services provided by MCLB Barstow and 1 Force Service Support Group (FSSG).</li> </ul> <p>(U)Total \$ 724</p>		
R-1 Line Item 176		Budget Item Justification

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

DATE **February 2000**

**BUDGET ACTIVITY**  
**7 - Operational System Development**

**PE NUMBER AND TITLE**  
**0206623M Marine Corps Ground**  
**Combat/Supporting Arms Systems**

**PROJECT**  
**C2237**

**B. (U) Project Change Summary**

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
(U) Previous President's Budget	1960	643	722
(U) Adjustments to Previous President's Budget	-1335	-4	+2
(U) Current Budget Submit	625	639	724

(U) Change Summary Explanation:

(U) Funding: FY 1999 Decrease in the amount of \$1328K is due to reprioritization of programs within the Marine Corps and a decrease of \$7K decrease is for SBIR tax assessment. FY00 \$4K decrease due to minor affordability adjustments. FY01 \$2K increase due to NWCF rate change.

(U) Schedule: N/A

(U) Technical: N/A

**C. (U) Other Program Funding Summary**  
**(APPN, BLI #, NOMEN)**

	<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	Total
								<u>Compl</u>	<u>Cost</u>

(U) Not Applicable

(U) **Related RDT&E:** PE 0603611M (Marine Corps Assault Vehicles)

**D. (U) Schedule Profile**

Testing conducted at AVTB includes all aspects of Marine Corps Assault Amphibious Vehicles. Testing planned for FY 00 and beyond includes MK 155 Minefield Breaching System, NBC overpressure system, RAM/RS (Reliability, Availability and Maintainability/Rebuild to Standard) Proof of Principle Developmental Testing, Operational Testing Support and Production Assurance testing. Engineering Change Proposals (ECP) as required; combined Recoil Booster (CRB) for adoption of Multiple Integrated Laser Engagement System (MILES) for AAV use; upgrade instrumentation for over the horizon capability in developing weapons systems to support operational maneuver from the sea, support for the Light Armored Vehicle Service Life Extension Program; C4I integrated support for AAV Communications and 7 RAM/RS. AVTB will also support the testing of the Advanced Amphibian Assault Vehicle (AAAV) as directed, by DRPM AAA, during the Program Definition & Risk Reduction phase of the AAAV Program Development

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<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>							DATE <b>February 2000</b>			
BUDGET ACTIVITY <b>7 - Operational System Development</b>				PE NUMBER AND TITLE <b>0206623M Marine Corps Ground Combat/Supporting Arms Systems</b>				PROJECT <b>C2503</b>		
<i>COST (In Millions)</i>	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
C2503 Initial Issue	0	1613	1416	1301	1104	1127	1150	Continuing	Continuing	
Quantity of RDT&E Articles										
<p><b>A. (U) <u>Mission Description and Budget Item Justification:</u></b> This program was formerly reported under C2086, Marine Enhancement Program. The Initial Issue program provides Research, Development, Test and Evaluation of low visibility, low cost items with emphasis on non-developmental/commercial available items. Items approved for procurement will transition into the O&amp;M Initial Issue program. Focus is on clothing and equipment items (i.e. improved Jungle and Desert Boots, Light Weight Helmet, combat boots, sleeping bags) which will benefit the individual Marine by reducing the load with less bulky, lightweight, comfortable equipment, increasing survivability and improving combat effectiveness. Initial Issue continues to explore the spectrum of technologies commercially available that can provide enhancement in individual protection, tactical mobility and application of state-of-the-art technologies through studies and testing.</p> <p><b>(U) FY 1999 Accomplishments:</b> This program is contained in Project C2086 in this PE.</p> <p><b>(U) FY 2000 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• (U) \$ 1016 Explore and evaluate across a broad spectrum of commercially available technologies that can be incorporated into existing or new designs of individual clothing and equipment in an effort to reduce weight, increase survivability, increase lethality, improve safety, increase mobility, and improve combat performance of the individual Marine. (Marine load system product improvement, redesign, conduct testing and evaluation; improve jungle and desert boot; conduct boot outsole traction study to optimize performance of boot soles for traction, durability, and resale-ability; Body armor and light weight helmet ballistic testing to include cadaver testing and analysis of ballistic effects of shock forces of the torso, neck and spine; Review uniform sizing integration (less sizes covering same population with potential cost savings associated with stock and storage). Provide recommendation to uniform board on Marine uniform product improvements in an effort to reduce cost, utilize commercial manufacturing techniques, improve durability, and retain sharp appearance.</li> <li>• (U) \$ 98 Begin research and development of a lighter, easier to use, Digital Radiology System that will store data electronically.</li> <li>• (U) \$ 499 Conduct validation of the model and testing of the Forward Resuscitative Surgery System prototypes.</li> </ul> <p>(U)Total \$ 1,613</p>										
R-1 Line Item 176					Budget Item Justification					

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

DATE **February 2000**

**BUDGET ACTIVITY**  
**7 - Operational System Development**

**PE NUMBER AND TITLE**  
**0206623M Marine Corps Ground**  
**Combat/Supporting Arms Systems**

**PROJECT**  
**C2503**

**(U) FY 2001 Planned Program:**

- (U) \$ 1033 Continue to validate and incorporate commercial technologies into individual combat clothing and equipment. Conduct comparative analysis through boot study (fatigue, shear force, injury rates, energy consumption ) of new infantry combat boots and existing foot wear. Conduct study/analysis of the Army's Land Warrior program for commercial technology insertion to complement the Marine Corps Integral Combat System (our version of Land Warrior). Evaluate commercial power source/recharging systems through individual movement (Piezoelectrics). Evaluate and incorporate cost-effective commercial fabric technologies into the Battle Dress uniform.
  - (U) \$ 284 Complete development and test of the Forward Resusitative Surgery System.
  - (U) \$ 99 Continue development and providing test data to Medical Community for acceptance.
- (U)Total \$ 1416

**B. (U) Project Change Summary**

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
(U) Previous President's Budget	0	1222	1432
(U) Adjustments to Previous President's Budget	0	391	-16
(U) Current Budget Submit	0	1613	1416

**(U) Change Summary Explanation:**

(U) Funding: FY00 adjustment of +400K provides funds for validation testing of Forward Resusitative Surgery System prototype and -9K for general reductions and Non-Purchase Inflation. Collectively a net Increase of \$391K. FY01 reduction of \$16K for PBD 604 and Non-Purchase Inflation Adjustment.

(U) Schedule: Not Applicable.

(U) Technical: Not Applicable.

**C. (U) Other Program Funding Summary**  
**(APPN, BLI #, NOMEN)**

	<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>	<u>To</u>	<u>Total</u>
								<u>Compl</u>	<u>Cost</u>
(U) PMC Line (BLI#652200) Field Med Equip	0	0	0	1108	4744	3212	0		9064
(U) O&M Initial Issue	65593	44693	32173	27662	28188	28808	29442	Cont.	Cont.

**(U) Related RDT&E:** Not Applicable.

**D. (U) Schedule Profile:** Not Applicable.

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Budget Item Justification

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<b>RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)</b>							DATE <b>February 2000</b>			
BUDGET ACTIVITY <b>7 - Operational System Development</b>				PE NUMBER AND TITLE <b>0206623M Marine Corps Ground Combat/Supporting Arms Systems</b>			PROJECT <b>C2503</b>			
<b>A. (U) <u>Project Cost Breakdown</u></b>				<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>				
Product Development				0	921	1048				
Product Test				0	692	368				
Total				0	1613	1416				
<b>B. <u>Budget Acquisition History and Planning Information</u></b>										
<b>Performing Organizations</b>										
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1999	FY 1999	FY 2000	FY 2001	Budget to Complete	Total Program
<b>Product Development Organizations</b>										
NATICK	MIPR	Oct 99			0	0	721	713	CONT	CONT
USAMRA	MIPR	Oct 99				0	200	335	CONT	CONT
<b>Support and Management Organizations</b>										
<b>Test and Evaluation Organizations</b>										
NATICK	MIPR	Oct 99			0	0	692	318	CONT	CONT
AMED	MIPR	Oct 99			0	0	0	50	CONT	CONT
<b>Government Furnished Property</b>										
Item <u>Description</u>	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date		Total Prior to FY 1999	FY 1999	FY 2000	FY 2001	Budget to Complete	Total Program
<b>Product Development Property</b>										
<b>Support and Management Property</b>										
<b>Test and Evaluation Property</b>										

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Budget Item Justification

(Exhibit R-3, Page 34 of 35)

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<b>RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)</b>					DATE <b>February 2000</b>	
<b>BUDGET ACTIVITY</b> <b>7 - Operational System Development</b>	<b>PE NUMBER AND TITLE</b> <b>0206623M Marine Corps Ground Combat/Supporting Arms Systems</b>			<b>PROJECT</b> <b>C2503</b>		
	Total Prior to <u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	Budget to <u>Complete</u>	Total <u>Program</u>
Subtotal Product Development	0	0	921	1048	CONT	CONT
Subtotal Support and Management	0	0	0	0	0	0
Subtotal Test and Evaluation	0	0	692	368	CONT	CONT
Total Project	0	0	1613	1416	CONT	CONT
R-1 Line Item 176			Budget Item Justification			