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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)							DATE February 2000		
BUDGET ACTIVITY <b>5 - Engineering and Manufacturing Development</b>				PE NUMBER AND TITLE <b>0604641A Tactical Unmanned Ground Vehicle</b>				PROJECT <b>DE47</b>	
COST (In Thousands)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DE47 Tactical Unmanned Ground Vehicle (TUGV)	2528	4905	0	0	0	0	0	0	0
<p><b>A. Mission Description and Budget Item Justification:</b> The Army is the lead for this joint service program. The development of a Tactical Unmanned Ground Vehicle (TUGV) is within the Family of Tactical Unmanned Vehicles (FTUV) within the OSD Joint Robotics Program. TUGV provides commanders the ability to see the battlespace while at the same time reducing soldiers' exposure during dangerous reconnaissance, surveillance, target acquisition (RSTA) and Nuclear Biological and Chemical (NBC) detection missions. Performs as a force multiplier, eliminates trickle-down combat information, reduces the "fog-of-war" and fills the brigade intelligence gap. Most importantly, the TUGV will remove brigade and battalion commanders from the bottom of the combat intelligence food chain. Unmanned systems, operating out front, provide a force multiplication capability where TUGVs report the nature of the terrain, find the enemy, locate obstacles, acquire targets, detect chemical vapors, and provide this information directly to those who need it the most –the battalion commander's battle staff. There will be at least two versions of the TUGV. A medium version, Tactical Unmanned Vehicle-Medium (TUV-M), will be developed for emerging requirements from the United States Marine Corps and U.S. Army Infantry Center for Scout/surveillance and engineer reconnaissance. Tactical Unmanned Vehicle-Light (TUV-L) will be a man-packable unit for intelligence collection and dissemination, and conducting remote/area/building reconnaissance. The platforms will include a minimum day/night audio/video, and accept a family of modular multi-sensor capabilities such as through-wall and countersniper sensors. Data will be produced in a format compatible with higher level communications architecture. This PE supports the critical transition of Defense Advanced Research Project Agency (DARPA) and Army Research Laboratory (ARL) developed technologies to the Project Manager (PM) Unmanned Ground Vehicles/Systems so that they can be assessed (maturity, supportability, operationally) during user appraisals, advanced concept technology demonstrations (ACTD) and, packaged and readied for incorporation into the TUV Engineering and Manufacturing Development (EMD) performance specifications.</p> <p><b>FY 1999 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• 1107 Concept Exploration/Design – TUV – Light/Medium participated in Military Operations in Urban Terrain (MOUT) ACTD, and Advanced Warfighting Experiments/Limited Objective Experiments (AWE/LOE).</li> <li>• 619 Modeling and simulation .</li> <li>• 200 Assessed Demo III technology for insertion into the FTUV specification.</li> <li>• 602 Datalink Testing and fiber optic design and build.</li> </ul> <p>Total 2528</p> <p><b>FY 2000 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 4273 Integration of Haaglunds flail technology and SRS kit onto selected platform. Single test prototype for ACTD.</li> <li>• 500 Mine testing in various soil types.</li> <li>• 132 Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)</li> </ul> <p>Total 4905</p>									
Project DE47			Page 1 of 5 Pages				Exhibit R-2 (PE 0604641A)		

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**FY 2001 Planned Program:** Program not funded in FY 2001

<b>B. Program Change Summary</b>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 2000 / 2001 PB)	2452	0	0
Appropriated Value	2468	5000	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-16		
b. SBIR / STTR	-65		
c. Omnibus or Other Above Threshold Reductions		-20	
d. Below Threshold Reprogramming	+151		
e. Rescissions	-10	-75	
Adjustments to Budget Years since FY 2000/2001 PB			
Current Budget Submit (FY 2001 PB)	2528	4905	0

**Change Summary Explanation:** Funding – FY 2000: Congressionally directed Viking flail effort is a second phase project to adapt Norwegian Haaglunds flail technology to an acceptable platform and to assess its potential to meet U.S. requirements. The effort involves incorporation of the Standardized Robotic System, flail integration, and evaluation in an ACTD setting.

**C. Other Program Funding Summary:** Not applicable.

**D. Acquisition Strategy:** The Joint Project Office is following a disciplined Evolutionary Acquisition strategy. This strategy requires Horizontal Technology Integration (HTI) of emerging sensors, lasers, and command and control data link technologies so that the first generation TUGV will enable soldiers to perform dangerous scout/RSTA, biological and chemical detection, and targeting missions from remote and safer locations. This program differs from traditional acquisition programs by incorporating an in-house Program Definition and Risk Reduction phase. TUV-M prototype systems are being built during this phase using state-of-the-art sensors, controlling actuators, low bandwidth communications, mission planning, and off-road navigation technologies. The program utilizes a TUGV Integrating Integrated Product Team (IIPT) approach. TUV-M Engineering and Manufacturing Development will begin with a projected Milestone II decision in FY 2000 using OSD PE 0604709D8Z (FTUV) funding. Viking acquisition will be accomplished through a two phased study, design, fabricate, and test program. Viking will be a candidate for the Joint Area Clearance ACTD in FY02.

<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>
ACTD Participation	3-4Q						
Demonstration Alpha (Demo III)	4Q						
Demo III IPRs/CDRs	3Q						
Participate in Demo III Communications IPT	1-4Q						
Datalink Testing	1-4Q						

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<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>
Viking Flail integration feasibility study		1Q					
Viking Material Procurement Decision		2Q					
Viking Phase II IPR		2Q	1Q				
Viking Hydraulic interface design/fab/install		2Q-4Q	1Q				
Viking Platform modifications		2Q-4Q	2Q				
Viking Test/Integration		4Q	1Q-3Q				

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<b>ARMY RDT&amp;E COST ANALYSIS (R-3)</b>	DATE <b>February 2000</b>
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<b>BUDGET ACTIVITY</b> <b>5 - Engineering and Manufacturing Development</b>	<b>PE NUMBER AND TITLE</b> <b>0604641A Tactical Unmanned Ground Vehicle</b>	<b>PROJECT</b> <b>DE47</b>
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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. TUV Development and Prototypes	CPFF	Various	4062								4062	
b. TUV-L ACTD	CPFF	Mesa Associates, Inc*		534	2Q						534	534
c. Viking Development	TBD	Summa Technologies*				4188	2Q				4188	
Subtotal Product Development:			4062	534		4188					8784	

\*Mesa Associates, Inc., 9238 Madison Blvd., Bldg. 2, Ste. 116, Madison, AL 35758  
 \*Summa Technologies, 140 Sparkman Drive, Huntsville, AL 35805

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. TUV Spt for Dev and Prototyping	MIPR	Various	340								340	
b. Requirements Dev and TUV Support of ACTD	MIPR	USAIC, Ft. Benning, GA	85	150	3Q						235	
c. TUV Support	MOA	MRDEC, Redstone Arsenal, AL	879	318	2Q						1197	
d. SETA Support for Viking	CPFF	Uwohali, Inc*				17	2QFY96				17	
Subtotal Support Costs:			1304	468		17					1789	

\*Uwohali, Inc., 4950 Research Dr., Huntsville, AL 35805

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. TUV Modeling and Simulation	MOA	MRDEC, Redstone Arsenal, AL	200	619							819	
b. TUV Electromagnetic Enviro Effects Prog	MOA	RTTC, Redstone Arsenal, AL		170							170	
c. Data Link	FFP	SAIC *		187							187	
d. TUV Fiber Optic (FO) Development and Testing	MOA	MRDEC, Redstone Arsenal, AL		195							195	
e. FO ARTS Prog/Alt FO	CPFF	Morgan Research **		90							90	
f. Viking Test Support	MIPR	DTC, APG, MD				200					200	

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**0604641A Tactical Unmanned Ground Vehicle**

**PROJECT**  
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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
g. Viking Test Support	MIPR	AFRL, Tyndall AFB, FL				300					300	
Subtotal Test and Evaluation:			200	1261		500					1961	

\*SAC Tech Services Div., OPN of Tech Svc CO MS44, 10260 Camput Point Dr., San Diego, CA 92121

\*\*Morgan Research Corp, 2707 Artie SW, Huntsville, AL 35805

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/ Engineering	MOA	MRDEC/CAD, Redstone Arsenal, AL	265	265	2Q						530	
b. Viking Support	In-house	AMCOM, RSA, AL				200					200	
Subtotal Management Services:			265	265		200					730	

<b>Project Total Cost:</b>			5831	2528		4905					13264	
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