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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)								DATE February 2000		
BUDGET ACTIVITY 02 - Applied Research				PE NUMBER AND TITLE 0602269F Hypersonic Technology Program				PROJECT 621025		
COST (\$ in Thousands)		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
621025	Hypersonic Technology Program	16,031	15,808	0	0	0	0	0	Continuing	TBD
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0
<p>Note: In FY 2000, this program was terminated by the Air Force. However, Congress added \$16.0 million in FY 2000 to restore the program. In FY 2001, funding for this program is contained in PEs 0602203F Aerospace Propulsion, 0603202F, Aerospace Propulsion Subsystems Integration, and 0603216F, Aerospace Propulsion and Power Technology. Beginning in FY 2002, these efforts will be shifted to PE 0602203F, Aerospace Propulsion.</p> <p>(U) <u>A. Mission Description</u> This program develops advanced hypersonic technologies that will provide revolutionary propulsion options to satisfy Air Force needs for future hypersonic weapons and space launch concepts. This program will focus on hydrocarbon fueled hypersonic vehicle technologies and demonstrate their feasibility. Technologies developed under this program will be dual-use and applicable to both Department of Defense and National Aeronautical and Space Agency requirements. Planned efforts include analyses, hypersonic materials/structures, airbreathing propulsion, hydrocarbon fuels, and integrated technology test demonstrations.</p> <p>(U) <u>FY 1999 (\$ in Thousands)</u> (U) \$14,127 Designed, developed, and tested propulsion components, structures, and integrated propulsion designs to demonstrate performance and durability of advanced hypersonic propulsion concepts. (U) \$1,063 Designed, developed, and tested advanced high-temperature, high-strength materials and structures for durability in hypersonic applications. (U) \$392 Developed technologies for instrumentation and test in realistic hypersonic conditions to enable appropriate system testing. (U) \$349 Developed and extended computational technologies for supersonic combustion flow paths, validated these technologies, and applied them to predict internal flows and performance of scramjet engines for accurate prediction of system performance. (U) \$100 Conducted feasibility studies, design trades, and simulations to integrate hypersonic technologies into advanced vehicle designs for hypersonic applications that will improve warfighting capability and satisfy the requirements of Global Reach/Global Power. (U) \$16,031 Total</p> <p>(U) <u>FY 2000 (\$ in Thousands)</u> (U) \$15,028 Design, develop, and test propulsion components, structures, and integrated propulsion devices for advanced hypersonic propulsion concepts. Continue testing of scramjet engine components (e.g., inlet, combustor, and nozzle) capable of demonstrating positive thrust at Mach 4-8 while withstanding severe internal conditions. Complete demonstration of heavyweight scramjet engine in freejet. Initiate fabrication and testing of flight type scramjet combustor and inlet.</p>										
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<p>(U) <u>A. Mission Description Continued</u></p> <p>(U) <u>FY 2000 (\$ in Thousands) Continued</u></p> <p>(U) \$405 Develop technologies for instrumentation and test in realistic hypersonic conditions. Continue application of hypersonic test instrumentation to freejet engine configurations and establishment of test instrumentation protocol for freejet testing.</p> <p>(U) \$275 Develop and extend computational technologies from low-speed and supersonic flight to the hypersonic environment. Continue validation of computational methods in instrumented engine flowpath test rigs.</p> <p>(U) \$100 Conduct feasibility studies, system design trades, and simulations to integrate hypersonics technologies into advanced vehicle designs for hypersonic applications that will improve warfighting capability and satisfy the requirements of Global Reach/Global Power. Continue mission analyses to characterize user requirements and technology maturity. Update detailed missile design to guide complex interdisciplinary technology requirements definition and development of integrated hypersonic vehicles to support Defense Advanced Research Projects Agency's affordable rapid response missile demonstrator program.</p> <p>(U) \$15,808 Total</p> <p>(U) <u>FY 2001 (\$ in Thousands)</u></p> <p>(U) \$0 Effort moved to PE 0602203F, PE 0603202F, and PE 0603216F.</p> <p>(U) \$0 Total</p> <p>(U) <u>B. Budget Activity Justification</u></p> <p>This program is in Budget Activity 2, Applied Research, since it develops and determines the technical feasibility and military utility of evolutionary and revolutionary technologies.</p> <p>(U) <u>C. Program Change Summary (\$ in Thousands)</u></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;"></th> <th style="width: 10%; text-align: center;"><u>FY 1999</u></th> <th style="width: 10%; text-align: center;"><u>FY 2000</u></th> <th style="width: 10%; text-align: center;"><u>FY 2001</u></th> <th style="width: 10%; text-align: center;"><u>Total Cost</u></th> </tr> </thead> <tbody> <tr> <td>(U) Previous President's Budget (FY 2000 PBR)</td> <td style="text-align: center;">16,586</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td></td> </tr> <tr> <td>(U) Appropriated Value</td> <td style="text-align: center;">16,649</td> <td style="text-align: center;">16,000</td> <td></td> <td></td> </tr> <tr> <td>(U) Adjustments to Appropriated Value</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td> a. Congressional/General Reductions</td> <td style="text-align: center;">-63</td> <td></td> <td></td> <td></td> </tr> <tr> <td> b. Small Business Innovative Research</td> <td style="text-align: center;">-465</td> <td></td> <td></td> <td></td> </tr> <tr> <td> c. Omnibus or Other Above Threshold Reprogram</td> <td></td> <td style="text-align: center;">-87</td> <td></td> <td></td> </tr> <tr> <td> d. Below Threshold Reprogram</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td> e. Rescissions</td> <td style="text-align: center;">-90</td> <td style="text-align: center;">-105</td> <td></td> <td></td> </tr> <tr> <td> f. Other</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>				<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>Total Cost</u>	(U) Previous President's Budget (FY 2000 PBR)	16,586	0	0		(U) Appropriated Value	16,649	16,000			(U) Adjustments to Appropriated Value					a. Congressional/General Reductions	-63				b. Small Business Innovative Research	-465				c. Omnibus or Other Above Threshold Reprogram		-87			d. Below Threshold Reprogram					e. Rescissions	-90	-105			f. Other				
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