RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/BA 7	R-1 ITEM NOMENCLATURE Commercial O&S Savings Initiative **PE 0604805D8Z**

COST *(In Millions)*	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Total Program Element (PE) Cost	9.541	22.735	10.320	10.517	10.737	10.970	11.196	Continuing	Continuing
Commercial O&S Savings Initiative/P805	9.541*	22.735	10.320	10.517	10.737	11.970	11.196	Continuing	Continuing

*Beginning in FY 2001, this pe transfers BA 5 to BA 7.

(U) A. Mission Description and Budget Item Justification

(U) BRIEF DESCRIPTION OF ELEMENT

The Commercial Operations and Support Savings Initiative (COSSI) uses commercial technology to increase the reliability and reduce the operations and support costs of legacy weapon systems. As systems age, O&S costs increase. In addition, older technology often tends to be less reliable than newer technology. COSSI uses technology insertions to lower O&S costs and increase reliability. COSSI also promotes the use of open system standards allowing DoD to take advantage of commercial technology cycles and modernize equipment faster. Adapting commercial technologies for use in military equipment typically requires non-recurring engineering, testing and qualification. COSSI provides the funds for this engineering and testing. If the testing is successful and the cost savings validated, the items are purchased as retrofits. All COSSI projects must have an endorsement by a military customer and be linked to an existing military system. Project proposals must include a plan for transitioning from prototype development to production.

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(U) Project Number and Title: P805 Commercial O&S Savings Initiative

(U) PROGRAM ACCOMPLISHMENTS AND PLANS

(U) FY 2001 Accomplishments:

(U) COSSI funds were used to support four projects: an electronic propeller control system for C-130 aircraft, an advanced symbol generator for the AN/AVS-7 night vision imaging system/heads-up-display, a new propeller deicing system for P-3 and C-130 aircraft and qualification testing of a new signal processor for the F-16 Fire Control Radar. The electronic propeller control system for the C-130 is a spin-off of a similar COSSI project for the P-3 started in FY 2000. The project is modifying the propeller control system currently used on ATR 42 and ATR 72 regional civil aircraft for use on the C-130. An electronic propeller control and electronic valve housing will replace the mechanical valve housing and synchrophaser. The project is expected to reduce propeller maintenance costs from approximately $19/flight hour to approximately $2/flight hour. The advanced symbol generator project is a follow-on to a previous COSSI project that developed active matrix electroluminescent flat panel displays for Army aviator night vision goggles. The project is replacing the current signal data converter (SDC) with a new one that is smaller, lighter, and less expensive to buy and maintain. The new SDC will be almost $10,000 less expensive to buy than the one being replaced. The propeller deicing project is developing a propeller mounted generator similar to the one designed for the Beech 1900D civil aircraft. The new design eliminates the carbon brushes currently used to transfer electrical power to the propellers. Having a generator mounted directly on the propeller will eliminate the need to clean the propeller and replace the brushes every 50 flight hours. Maintenance costs will be reduced by

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approximately $5 million/year. The new signal processor for the F-16 Fire Control Radar will increase reliability by more than 60 percent. COSSI funds are supporting the flight testing needed to qualify the processor. ($ 9.541 Million)

(U) FY 2002 Plans

Six projects will be initiated in FY 2002. Digital Electronic Warfare (EW) Receiver for the F-22 ($12.000 million) Recent technological advances have permitted analog based EW components to be converted to digital electronics. Digital receivers are expected to reduce supportability costs and increase combat performance. This project will complete the requisite systems software development, design, and test of a digital receiver and two associated modules for the F-22. Electronic Characterization and Diagnostics (ECAD) of Wiring in Aircraft and Submarines ($3.000 million) DoD spends a considerable amount of time, money and effort maintaining the wiring and cables in aircraft and submarines. Often, wiring and cable failures can only be detected through a process of elimination as maintenance personnel troubleshoot a system failure. In some cases, electronic components are removed and tested when in fact the failure is due to faulty wiring and not the component itself. This project will modify a technology originally developed for the nuclear power industry and apply it to determine the condition of wiring in military systems. Synthetic Instrumentation for Automated Test Systems ($3.320 million) Automated test equipment (ATE) used by the military is often based on 1980s technology and is comprised of a collection of individual instruments with unique interfaces. Because ATE was developed in the 1980s, it is experiencing widespread obsolescence problems. Recent commercial technology allows for the development of synthetic instruments that can be configured in real time to perform various test functions. Signals are converted into digital representations which are then analyzed using high speed digital signal processing techniques. As a result, a single "synthetic" instrument can replace numerous single function instruments thereby reducing the logistics footprint and solving obsolescence problems. Health and Usage Monitoring System for U.S. Army Special Forces' Aircraft ($1.215 million) This project will install a Health and Usage Monitoring System Processor Module on the U.S. Army Special Forces fleet of MH-47D and MH 47E helicopters. The module will provide the capability to perform embedded diagnostics including rotor track and balance, performance monitoring, exceedance detection, and vibration monitoring. This on board capability will significantly reduce the labor and test flight hours needed for rotor track and balance. Other benefits include a reduction in scheduled and unscheduled maintenance actions, an expected reduction in accidents, and accurate tracking of aircraft usage of flight hours from HUMS data instead of pilot logs. Integrated Malaria Augmentation Package ($2.000 million) Malaria constitutes a serious infectious disease threat in many parts of the world.

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Some U.S. forces contracted malaria during Operation Restore Hope (Somalia) and Operation Uphold Democracy (Haiti). The current method for diagnosing malaria involves microscopic examination of a blood sample and does not lend itself to rapid in-theater diagnosis. This project will modify an existing commercial malaria test and treatment kit for field use and perform the testing needed for Food and Drug Administration (FDA) approval. Although the kit is currently available outside the U.S., FDA approval for sales within the U.S. is required before it can be used by our military personnel. The kit uses test strips instead of microscopic examination and can be deployed in the field. Support for the Modernization of the STANDARD Missile Common Guidance System ($1.200 million) The STANDARD Missile (SM) is the principal surface ship defense weapon for the Navy. There are several variants of the SM and each one has its own guidance system. This project will support the development of a common, high reliability guidance system that can be used on all variants. Six unique plates will be replaced by two common plates based on an open commercial standard, resulting in a higher reliability guidance system. Many of the obsolescence problems currently being experienced will also be eliminated. ($22.735 million)

(U) FY 2003 Plans:

(U) As in the past, DoD will issue a call for projects in February, with project proposals due in May. The proposals will be evaluated and the best ones selected for the funding available. Based on previous experience, proposals are expected to pertain to upgrading electronics and computers. Some FY 2003 funds will be used to perform flight testing of the C-130 electronic propeller control developed with FY 2001 funds ($1.900 million) and to complete the Health and Usage Monitoring System for U.S. Army Special Forces' Aircraft started in FY 2002 ($1.721 million) and the STANDARD Missile Common Guidance System started in FY 2002 ($1.800 million)..($ 10.320 million)

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(U) B. Program Change Summary	FY 2001	FY 2002	FY 2003	Total Cost
Previous President's Budget Submit	0.000	0.000	10.348	
Delta	9.541	10.805	0.028	
FY 2002 Amended President's Budget Submit	9.541	10.805	10.320	
Appropriated Value	9.629	22.805	0.000	Continuing
Adjustments to Appropriated Value				
a. Congressionally Directed Undistributed Reduction	0.000	-0.070	0.000	
b. Rescission/Below-threshold Reprogramming, Inflation Adjustment	-0.088	0.000	0.000	
c. Other	0.000	0.000	0.000	
Current President's Budget	9.541	22.735	10.320	Continuing

Change Summary Explanation:

(U) **Funding**: FY 2001 reductions reflect Section 8086 reductions.

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(U) **Schedule**: N/A

(U) **Technical**: N/A

(U) **C.** **Other Program Funding Summary Cost**: N/A

(U) **D.** **Acquisition Strategy**: N/A

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