OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 1	**0601120D8Z - National Defense Education Progam (NDEP)**

Cost ($ in Millions)		FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total Program Element (PE) Cost		11.420	19.420	44.372	58.972	86.938	106.021	113.106	114.884
P120	National Defense Education Act (NDEA)	11.420	19.420	44.372	58.972	86.938	106.021	113.106	114.884

A. Mission Description and Budget Item Justification: (U) Section 1101 of the National Defense Authorization Act (NDAA) for Fiscal Year 2005 and the National Defense Authorization Act of 2006 establish and modify this program

(U) DoD employs almost half of the Federal Government's scientists and engineers. NDEP attacks a continuing DoD challenge: educating, training, recruiting, and retaining workers in the science, technology, engineering, and mathematics (STEM) disciplines that are critical to the national security. In the US, there is a long-term, downward trend in defense-relevant science and engineering degrees at all levels awarded to clearable persons, whether native-born or naturalized. This trend is exacerbated by a general erosion of US competency in math and science at the middle and high school levels. Basic science and mathematics competence, gained in grades K-12, form the foundation of an educated, capable, technical future workforce for DoD. NDEP is a bridge from DoD STEM education efforts in mid and late term education to future defense community employment. One of NDEP's major programs is the Science, Mathematics and Research for Transformation (SMART) Defense Education Program.

(U) SMART awards physical science and engineering scholarships to current and future scientists, mathematicians, and engineers. Scholarships are awarded at undergraduate and graduate levels and recipients are required to obtain security clearances and to enter government civilian service for a period of time commensurate with the duration of educational support they receive. SMART scholars gain additional education, develop skills, talents, and expertise that are directly applicable to specific DoD needs through interaction at DoD laboratories.

(U) The NDAA of 2006 amendment to SMART further enables the development of DoD's future workforce. The amendment establishes a permanent program (the initial FY 2005 program was a pilot) with four features: 1.) increased development, recruitment, and retention of individuals with acumen in physical science disciplines critical to the Department of Defense; 2.) expanded the kinds of academic degrees covered by the program, including the associate's degree; 3.) authorized DoD to employ SMART scholars in over-strength positions while pursuing their studies and for up to two years after completion; and 4.) increased the recipient's types of allowable expenses.

B. Program Change Summary	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY 2007)	10.119	19.532	26.075	31.663
Current BES/President's Budget (FY 2008/2009)	11.420	19.420	44.372	58.972
Total Adjustments	1.301	-0.112	18.297	27.309
Congressional Program Reductions		-0.112		
Congressional Rescissions				
Congressional Increases				

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Reprogrammings	1.589			
SBIR/STTR Transfer	-0.288			
Other			18.297	27.309

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Performance Metrics: Not Applicable.

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RDT&E/ Defense Wide BA# 1	**0601120D8Z - National Defense Education Act (NDEA)**	**P120**

Cost ($ in Millions)		FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
P120	National Defense Education Act (NDEA)	11.420	19.420	44.372	58.972	86.938	106.021	113.106	114.884

A. Mission Description and Project Justification: (U) DoD laboratories expect to lose 13,000 scientists and engineers over the next ten years. At the same time, the overall US demand for scientists is projected to increase by 17 percent, and for engineers by 22 percent. NDEP attacks this continuing DoD challenge: educating, training, recruiting, and retaining workers in the science, technology, engineering, and mathematics (STEM) disciplines that are critical to the national security. NDEP is a bridge from DoD STEM education efforts in mid and late term K-12 education to future defense community employment. The program provides support for the study of physical sciences and engineering in pre-college, undergraduate, graduate, and postgraduate projects.

(U) Pre-college: These two projects improve teacher skills and techniques, stimulate student interest, and promote competence in physical sciences and math. They are evidence based, multidisciplinary, hands-on activities for middle through high school students. Additionally, they connect working DoD laboratory scientists and engineers with local teachers to provide assistance in teaching scientific concepts through real-world applications.

There are two projects in this area: Material World Modules and Pre-Engineering Modules.

(U) Undergraduate, Graduate, Post-Graduate: These two projects educate, recruit, and retain clearable scientists and engineers by awarding scholarships and fellowships, some of which require civil service "payback" employment. Assistance is for clearable and employable candidates. They receive comprehensive academic education and training as well as mentorship, internship, and employment. These programs generate competent STEM professionals in critical DoD physical science disciplines and engage the nation's top university researchers in critical, long-term DoD research.

There are two projects in this area: Science, Mathematics, and Research for Transformation (SMART) scholarships and the National Security Science and Engineering Faculty Fellowships (NSSEFF).

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Material World Modules	2.969	4.600	2.000	0.000

FY 2006 Accomplishments:

• National & Maryland Centers established, impact experiment completed, teacher training completed. A cadre of teachers was trained (at a summer institute) in the use of Inquiry-Based Instruction and the use of the Materials World Modules (MWM) as a teaching tool. A random matched experiment to determine the effectiveness of the MWM as a learning tool was also conducted. An independent

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evaluator assessed teacher training and student experiment components.
- Results of the experiment are expected in early 2007.

FY 2007 Planned program
- Expand DoD laboratory involvement to threes states and partner with private sector STEM stakeholders in a coordinated efforts on STEM education in middle and high school.
- Organize and conduct next teacher training institutes.

FY 2008 Planned program
- Expand DoD laboratory involvement to nine states and partner with private sector STEM stakeholders in a coordinated efforts on STEM education in middle and high school.
- Organize and conduct final teacher training institutes.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Pre-Engineering Modules (new start)	0.000	0.000	13.000	10.000

FY 2008 Planned program
- Provide hands-on, inquiry-based learning of real-world math, engineering, and science principles that tie physical science and mathematics learning to real-world applications for middle school students.
- Fund development of additional computer-based curriculum modules that encourage, stimulate, and engage middle school students
- Evaluate and select proposals for broad module implementation.
- Award contracts

FY 2009 Planned program
- Provide hands-on, inquiry-based learning of real-world math, engineering, and science principles that tie physical science and mathematics learning to real-world applications for middle school students.
- Fund development of additional computer-based curriculum modules
- Initiate assessment of module effectiveness for purpose intended
- Exercise first contract option for implementation or re-compete

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Science, Mathematics and Research for Transformation (SMART)	8.451	14.820	23.972	37.572

FY 2006 Accomplishments
- 32 SMART awards made.

FY 2007 Planned program
- Invite applications from the public for science and engineering educational support at the associate, undergraduate, and graduate degree levels.
- Modify program as indicated based upon input from the previous year lessons learned.
- Continue assessment of SMART program.

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- Develop metrics to assess utility of SMART program.

FY 2008 Planned program
- Invite applications from the public for science and engineering educational support at the associate, undergraduate, and graduate degree levels.
- Modify program as indicated based upon input from the previous year lessons learned.
- Report assessment of SMART program.
- Review metrics with field activity directors to assess utility of SMART program

FY 2009 Planned program
- Invite applications from the public for science and engineering educational support at the associate, undergraduate, and graduate degree levels.
- Modify program as indicated based upon input from the previous year lessons learned.
- Report assessment of SMART program.
- Review metrics with field activity directors to assess utility of SMART program

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
National Security Science and Engineering Faculty Fellowships (NSSEFF) (new start)	0.000	0.000	5.400	11.400

FY 2008 Planned program
- Creates a competitive award program with substantial financial support for outstanding scientists and engineers that is large enough to be attractive and long enough to produce quantifiable research results. Fellowships awards are $600K annually for five consecutive years. Funds 50 top-flight researchers over the FYDP and adds 10 more each year thereafter, all working (up to the SECRET level) on critical DoD research issues. Engages, without additional funding, at least double that number of graduate students and post-docs, each receiving substantial DoD funding at a critical juncture in their careers. Engages for the long-term, the absolute best available university research talent to pursue DoD research.
- Issue competitive fellowship announcement for research in areas of DoD long-term interest
- Evaluate proposals and select first nine fellowship recipients. Biased toward early-career faculty members.

FY 2009 Planned program
- Conduct Fellows S&T conclave with COCOM leaders - assess results
- Re-direct and revise research areas as needed for FY 2008 and FY 2009
- Issue competitive fellowship announcement for research in areas of COCOM long-term interest
- Evaluate proposals and select next ten fellowship recipients.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

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E. Major Performers

Category	Name	Location	Type of Work and Description	Award Date
Labs				
	Naval Post Graduate School	Monteray, CA	These funds are provided for the execution of the Science Mathematics and Research for Transformation (SMART), Pilot Scholarship Program.	26 APR 2005