Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Office of Secretary Of Defense										DATE: February 2010	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 1: *Basic Research*				R-1 ITEM NOMENCLATURE PE 0601120D8Z: *National Defense Education Program (NDEP)*							
COST ($ in Millions)	**FY 2009 Actual**	**FY 2010 Estimate**	**FY 2011 Base Estimate**	**FY 2011 OCO Estimate**	**FY 2011 Total Estimate**	**FY 2012 Estimate**	**FY 2013 Estimate**	**FY 2014 Estimate**	**FY 2015 Estimate**	**Cost To Complete**	**Total Cost**
Total Program Element	67.108	79.333	109.911	0.000	109.911	122.947	125.068	127.441	129.874	Continuing	Continuing
P120: *National Defense Education Program (NDEP)*	67.108	79.333	109.911	0.000	109.911	122.947	125.068	127.441	129.874	Continuing	Continuing

A. Mission Description and Budget Item Justification

The National Defense Education Program (NDEP) supports science, technology, engineering and mathematics (STEM) research and education initiatives, at all educational levels, to inspire, attract and develop the next generation and the current generation of STEM talent to meet DoD's missions. Major components of NDEP include: the engagement of DoD laboratory scientists and engineers (S&Es) that play an important role in inspiring, enhancing and developing K-12 student and teacher STEM skills; supporting the education and training of undergraduate and graduate students in relevant STEM disciplines that result in DoD employment; and supporting world-class basic researchers and their students in areas of critical importance to DoD. NDEP basic researchers also are called upon to form strategic partnerships with DoD's laboratory S&Es as well as serve on DoD advisory panels. NDEP supports the inspire, develop and attract goals of the DoD-wide STEM Education and Outreach Strategic Plan completed in December, 2009.

In 2009, 260 new undergraduate and graduate students majoring in relevant STEM disciplines were supported. These students are primarily attending high to very high research universities. Approximately 75 Science, Mathematics And Research for Transformation (SMART) participants who earned a bachelor's, master's or doctoral degree transitioned into employment in a DoD laboratory or component. Ten highly distinguished university basic researchers were selected from over 500 eligible applicants. Among these researchers are members of the National Academy of Sciences, the National Academy of Engineering, and recipients of prestigious science awards.

In 2009, NDEP K-12 initiatives included four, week-long, summer teacher professional development institutes attended by 110 teachers and 35 laboratory scientists and engineers (S&Es). Science and math partnerships between laboratory S&Es and middle and high school classroom teachers are established in 20 States and respond to local needs. Three-day professional development workshops were conducted for 900 teachers and included 530 S&Es. To encourage middle school student's participation in math, DoD partnered with MATHCOUNTS to sponsor over 7,300 new mathematics clubs in schools across the U.S. reaching over 127,000 students. As a result, students from over 5,900 schools participated in a national math competition. Other student-focused informal educational activities included: “Lab TV” webisodes featuring laboratory S&E personnel demonstrating 30 different DoD technologies; 500 students participating in DoD STEM summer camps, mentoring programs and field trips to DoD laboratories.

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 1: *Basic Research*	**R-1 ITEM NOMENCLATURE** PE 0601120D8Z: *National Defense Education Program (NDEP)*

NDEP Historical Perspective (cumulative results): Since the program's inception in 2006, the NDEP K-12 initiatives resulted in 535 teachers trained, and the establishment of partnerships between laboratory scientists and engineers with middle and high school classroom teachers in 20 states. NDEP higher education initiatives have supported and trained nearly 570 undergraduate and graduate students. Approximately 150 SMART participants have transitioned into DoD employment since 2007. To date, 18 highly distinguished university faculty are conducting basic research crucial to enabling future applications in sensors, functional materials, surveillance, near shore navigation, communications and information security, energy independence, and force protection.

Current research and education awards will be sustained and new SMART and NSSEFF awards will be made in FY2010.

B. Program Change Summary ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Previous President's Budget	68.972	91.484	0.000	0.000	0.000
Current President's Budget	67.108	79.333	109.911	0.000	109.911
Total Adjustments	-1.864	-12.151	109.911	0.000	109.911
• Congressional General Reductions		0.000			
• Congressional Directed Reductions		0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds		0.000			
• Congressional Directed Transfers		0.000			
• Reprogrammings	-0.001	0.000			
• SBIR/STTR Transfer	-1.863	0.000			
• Other Program Adjustments	-1.000	-12.151	109.911	0.000	109.911
• Departmental Adjustment to correct administrative error in Prior Year	1.000	0.000	0.000	0.000	0.000

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 1: *Basic Research*	R-1 ITEM NOMENCLATURE PE 0601120D8Z: *National Defense Education Program (NDEP)*	PROJECT P120: *National Defense Education Program (NDEP)*	

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
P120: *National Defense Education Program (NDEP)*	67.108	79.333	109.911	0.000	109.911	122.947	125.068	127.441	129.874	Continuing	Continuing

A. Mission Description and Budget Item Justification

The National Defense Education Program (NDEP) supports science, technology, engineering and mathematics (STEM) research and education initiatives, at all educational levels, to inspire, attract and develop the next generation and the current generation of STEM talent to meet DoD's missions. Major components of NDEP include: the engagement of DoD laboratory scientists and engineers (S&Es) that play an important role in inspiring, enhancing and developing K-12 student and teacher STEM skills; supporting the education and training of undergraduate and graduate students in relevant STEM disciplines that result in DoD employment; and supporting world-class basic researchers and their students in areas of critical importance to DoD. NDEP basic researchers also are called upon to form strategic partnerships with DoD's laboratory S&Es as well as serve on DoD advisory panels. NDEP supports the inspire, develop and attract goals of the DoD-wide STEM Education and Outreach Strategic Plan completed in December, 2009.

In 2009, 260 new undergraduate and graduate students majoring in relevant STEM disciplines were supported. These students are primarily attending high to very high research universities. Approximately 75 Science, Mathematics And Research for Transformation (SMART) participants who earned a bachelor's, master's or doctoral degree transitioned into employment in a DoD laboratory or component. Ten highly distinguished university basic researchers were selected from over 500 eligible applicants. Among these researchers are members of the National Academy of Sciences, the National Academy of Engineering, and recipients of prestigious science awards.

In 2009, NDEP K-12 initiatives included four, week-long, summer teacher professional development institutes attended by 110 teachers and 35 laboratory scientists and engineers (S&Es). Science and math partnerships between laboratory S&Es and middle and high school classroom teachers are established in 20 States and respond to local needs. Three-day professional development workshops were conducted for 900 teachers and included 530 S&Es. To encourage middle school student's participation in math, DoD partnered with MATHCOUNTS to sponsor over 7,300 new mathematics clubs in schools across the U.S. reaching over 127,000 students. As a result, students from over 5,900 schools participated in a national math competition. Other student-focused informal educational activities included: “Lab TV” webisodes featuring laboratory S&E personnel demonstrating 30 different DoD technologies; 500 students participating in DoD STEM summer camps, mentoring programs and field trips to DoD laboratories.

NDEP Historical Perspective (cumulative results): Since the program's inception in 2006, the NDEP K-12 initiatives resulted in 535 teachers trained, and the establishment of partnerships between laboratory scientists and engineers with middle and high school classroom teachers in 20 states. NDEP higher education initiatives have supported and trained nearly 570 undergraduate and graduate students. Approximately 150 SMART participants have transitioned into DoD

employment since 2007. To date, 18 highly distinguished university faculty are conducting basic research crucial to enabling future applications in sensors, functional materials, surveillance, near shore navigation, communications and information security, energy independence, and force protection.

Current research and education awards will be sustained and new SMART and National Security Science and Engineering Faculty Fellowship awards will be made in FY2010.

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Science, Mathematics and Research for Transformation (SMART) Defense Education Program	27.108	32.676	45.567	0.000	45.567

The Science, Mathematics and Research for Transformation (SMART) Defense Education Program awards undergraduate scholarships and graduate fellowships to current and future scientists and engineers in areas of importance to DoD. Participants are required to obtain security clearances and agree to a year of DoD employment in return for each year of academic support received. Through research experiences at DoD labs, SMART scholars gain additional skills and expertise that are directly applicable to mission needs. To date, SMART has supported and trained over 570 undergraduate and graduate students earning bachelor's, master's or Ph.D degrees in science, technology, engineering and mathematics (STEM) disciplines at very high and high research universities. An additional benefit has been the resulting masters' theses and doctoral dissertations work in DoD relevant topic areas. Since the program's inception, nearly 150 students have transitioned into the DoD laboratory and components workforce. The program is expected to reach steady-state in FY 2012 when the number of new scholarships will be approximately equal to the number of SMART graduates.

FY 2009 Accomplishments:

Made 260 new STEM undergraduate and graduate scholarship-for-service awards of which Army selected 40%, Navy selected 25% and Air Force selected 35%. Additionally, of the 260 students selected, 50% will earn bachelor's degrees, 20% will earn master's degrees and 30% will earn doctoral degrees. Increased the number of DoD sites participating in SMART to slightly more than 100. Initiated new efforts to increase awareness of program among, and applications from, members of under-represented groups, veterans, and individuals separating the armed services. Conducted

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
an annual program review. Conducted site visits to laboratories to visit with SMART students and mentors. Obtained feedback from transitioned SMART participants. Developed schedule for a third-party program evaluation. Transitioned approximately 75 SMART participants to the DoD workforce. Completed development of the SMART management information system (MIS) to automate key business processes and information transfers used to manage and execute the SMART program. NOTE: Actual Cost is 26.108, 1.000 added in order to correct and balance administrative error in BA 2, PE 0602228D8Z. *FY 2010 Plans:* Increase the quality and number of eligible applicants from under-represented groups, veterans, and individuals separating from the armed services. Increase the number of application reviewers from HBCU/MIs. Develop new mentoring and workforce development initiatives for current program participants. Conduct a program evaluation. Transition approximately 150 new SMART participants to the DoD workforce. Conduct a program review to include external reviewers. *FY 2011 Base Plans:* Continue to work toward goal of selecting ~200 new students to reach ~1,000 SMART scholarships awarded. Continue efforts to increase the number of eligible applications from students from under-represented groups, veterans, and individuals separating from the armed services. Continue efforts to increase the number of application reviewers from under-represented groups. Transition approximately 175 additional SMART participants to DoD workforce. Conduct a program review to include external reviewers.					
National Security Science and Engineering Faculty Fellowship (NSSEFF) NSSEFF supports innovative basic science and engineering research within academia, as well as education initiatives that seek to create and develop the next generation of high-performing scientists and engineers for the defense and national security workforce in areas of interest to DoD. It also	25.000	32.657	46.344	0.000	46.344

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
seeks to foster long-term relationships between the NSSEFF Felllows, who are distinguished university researchers, their students and postdoctoral scientists and the DoD. NSSEFF Fellows conduct basic research in core science and engineering disciplines that underpin future DoD technology development. NSSEFF awards are funded up to $850K annually for up to five consecutive years. Approximately ten awards are funded each year. By FY 2012, NSSEFF will support a steady state of up to 50 researchers and engage, without additional funding, at least double that number of graduate students and post-docs. *FY 2009 Accomplishments:* Nearly 100 DoD scientists and engineers reviewed ~470 eligible white papers. Ten basic research awards funded distinguished university faculty in crucial areas enabling future applications in sensors, functional materials, surveillance, near shore navigation, communications and information security, energy independence, and force protection. NSSEFF also engages these leaders with senior DoD officials, as well as scientists and engineers in DoD laboratories. A DoD NSSEFF Conference was held in June to introduce Fellows to the DoD community. Fellows visited the Army Research Laboratory (ARL), the Naval Research Laboratory (NRL), and the Air Force Research Laboratory (AFRL). Fellows submitted progress reports and were provided opportunities to brief their progress. *FY 2010 Plans:* Conduct new competition, make additional awards to distinguished university researchers and modify the review process to include university reviewers. Invite current NSSEFF Fellows to brief the DoD scientific community on their progress. Build on NSSEFF Fellows' integration into DoD's research community and laboratory scientific and engineering engagements. Develop an internship and postdoctoral program for NSSEFF students and posdoctoral scientists at DoD laboratories for the purpose of increasing collaborations and for providing career and workforce development opportunities. Review annual progress reports and conduct a program review.					

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2011 Base Plans: Continue to work toward steady-state goal of ~50 active NSSEFF research awards. Conduct new competition and make additional awards to distinguished university researchers. Assess Fellows integration and laboratory scientific and engineering engagements. Review annual progress reports. Conduct a program review and assess the internship and postdoctoral research experience at DoD laboratories.					
K-12 The K-12 component supports the building of STEM talent with initiatives that are designed to meet local school needs and desires. There is professional development for middle and high school teachers available at summer institutes or in a modified, three-day, format which can be delivered locally. STEM teachers receive inquiry-based training and are partnered with DoD laboratory scientists and engineers. Informal educational activities included: “Lab TV” webisodes featuring laboratory scientific and engineering personnel demonstrating DoD technologies; DoD STEM summer camps; mentoring and student field trips to DoD laboratories. *FY 2009 Accomplishments:* Increased the number of K-12 partnerships between DoD scientific and engineering laboratory personnel and local schools in defense laboratory communities in Ohio, Massachusetts, Mississippi, and Rhode Island. Supported 10 top-tier U.S. high school students through Research Science Institute summer research experience at MIT in areas of importance to DoD. Conducted four week-long summer teacher professional development institutes which were attended by 110 teachers and 35 laboratory scientists and engineers. Developed a three-day teacher professional development institute which was attended by 900 teachers and 530 scientists and engineers. Supported over 7,300 mathematics club in schools nationwide with over 127,000 students participating in the club program. Of those schools, more than 5,900 also participated in a national competition program. Supported the formation of 34 elementary/middle school teams and 13 high school robotics teams competing at	15.000	14.000	18.000	0.000	18.000

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
the national level. Assessed K-12 learning modules and implementation approach in Harford County, Maryland. Developed 30 LabTV webisodes that feature DoD scientists and engineers demonstrating technology to stimulate interest of middle and high school audiences. Completed classroom STEM learning activities involving 1,500 teachers and almost 100,000 students. *FY 2010 Plans:* Increase K-12 partnerships between DoD scientists and engineers and local schools in defense laboratory communities in four additional States. Expand and balance partnerships with STEM stakeholders in a coordinated effort on STEM education at the middle and high school level in defense laboratory communities. Develop supplemental learning material to accompany LabTV webisodes. Contribute to DoD STEM Education and Outreach Strategic Plan goals and objectives. *FY 2011 Base Plans:* Increase K-12 partnerships between DoD scientists and engineers and local schools in defense laboratory communities. Conduct assessment of the implementation and impact with respect to the local defense community school system.					
Accomplishments/Planned Programs Subtotals	67.108	79.333	109.911	0.000	109.911

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Performance Metrics within the National Defense Education Program:

1) Increase the number of STEM undergraduates and graduates that are transitioned into the DoD workforce.

2) Increase the number of teachers, without math or science certification, that receive professional development training with a DoD laboratory scientist or engineer.