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Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Office of the Secretary Of Defense **Date:** February 2015

Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
0400: Research, Development, Test & Evaluation, Defense-Wide / BA 1: Basic Research					PE 0601120D8Z / National Defense Education Program (NDEP)							
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	72.866	58.405	49.453	-	49.453	49.398	50.244	53.378	54.060	Continuing	Continuing
P120: National Defense Education Program (NDEP)	-	72.866	58.405	49.453	-	49.453	49.398	50.244	53.378	54.060	Continuing	Continuing

Note

The National Security Science and Engineering Faculty Fellowship (NSSEFF) program was realigned from Program Element (PE) 0601120D8Z to PE 0601110D8Z (P060), Basic Research Initiatives, in fiscal year FY 2015.

A. Mission Description and Budget Item Justification

The National Defense Education Program (NDEP) ensures the Department of Defense (DoD) will have access to high-quality science, technology, engineering, and mathematics (STEM) personnel vital to national defense now and in the future. NDEP's portfolio provides solutions to workforce challenges, which include: (1) impending retirement of 33 percent of DoD's STEM workforce; (2) low college readiness rate and interest in STEM majors; and (3) challenges that DoD, like other Federal employers, face in recruiting and retaining high-quality STEM talent in a competitive environment.

NDEP aligns to the DoD Science and Technology (S&T) priorities and the Historically Black Colleges and Universities and Minority Institutions (HBCU/MIs) program. It is synchronized with the Federal Five-Year STEM Strategic Plan, the DoD STEM Strategic Plan, and the DoD Strategic Workforce Plan. NDEP components engage in assessment and evaluation as required by the Office of Management and Budget and the Government Accountability Office.

Science, Mathematics, and Research for Transformation (SMART) awards highly competitive scholarships-for-service to undergraduate and graduate students in 19 STEM academic disciplines and moves graduates directly into DoD's workforce following graduation. Internships engage SMART scholars in hands-on, research and work experiences in DoD facilities, thereby enhancing their educational experience. Since its inception as a pilot program in FY 2005, SMART has supported approximately 1,575 students from bachelor to doctoral levels and, to date, approximately 900 have completed program studies and are currently employed in the DoD workforce. SMART ensures that DoD has a steady infusion of high-quality U.S. technical talent, prepared in areas of critical importance to DoD, ready to apply their technical knowledge, skills, and abilities to fulfill DoD's mission.

The National Security Science and Engineering Faculty Fellowship (NSSEFF) program was realigned from the NDEP PE to PE 0601110D8Z, beginning in FY 2015. The NSSEFF program supports world-class researchers in scientific areas of critical importance to DoD and ensures the cultivation of exceptional talent. Fellows' work spans a broad set of emerging scientific areas. The NSSEFF program is a key resource that fosters close connections between academia and the DoD science and engineering enterprise, a primary goal of Strategic Support for Basic Research (SSBR) efforts. Fellows provide DoD the deep scientific expertise of today's leading research universities and collaborate with DoD scientists and engineers.

STEM Activities Support (SAS) supports initiatives to implement the Assistant Secretary of Defense for Research and Engineering (ASD(R&E))'s strategic plan for STEM. SAS fosters conditions for STEM investments to support a diverse, world-class STEM talent pool and workforce to meet national defense needs. Initiatives

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include developing and implementing policy guidance, conducting analyses, and developing standards, while ensuring adherence to DoD and Federal initiatives and objectives.

Section 233 of the National Defense Authorization Act for FY 2015 and the Consolidated and Further Continuing Appropriations Act, 2015 directed the Secretary of the Defense to establish a pilot program to enhance the preparation of dependents of members of the armed forces for careers in STEM and provide assistance to STEM teachers at elementary or secondary schools at which a significant number of military dependents are enrolled. In FY 2016, the Pre-kindergarten through twelfth grade (P-12) Military Child STEM Educational Program continues support for the pilot program.

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	77.241	45.488	48.212	-	48.212
Current President's Budget	72.866	58.405	49.453	-	49.453
Total Adjustments	-4.375	12.917	1.241	-	1.241
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	13.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-1.536	-			
• SBIR/STTR Transfer	-2.839	-			
• FFRDC Sec 8104	-	-0.083	-	-	-
• P-12 Military Child STEM Educational Program	-	-	3.000	-	3.000
• Realignment for Higher Priority Programs	-	-	-1.627	-	-1.627
• Economic Assumptions	-	-	-0.132	-	-0.132

Congressional Add Details (\$ in Millions, and Includes General Reductions)

Project: P120: *National Defense Education Program (NDEP)*

Congressional Add: *Military Child STEM Educational Programs*

	FY 2014	FY 2015
	-	13.000
Congressional Add Subtotals for Project: P120	-	13.000
Congressional Add Totals for all Projects	-	13.000

Change Summary Explanation

FY 2016 internal realignment reflects funding for higher Departmental priorities and requirements.

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Appropriation/Budget Activity 0400 / 1	R-1 Program Element (Number/Name) PE 0601120D8Z / National Defense Education Program (NDEP)	Project (Number/Name) P120 / National Defense Education Program (NDEP)
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COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
P120: National Defense Education Program (NDEP)	-	72.866	58.405	49.453	-	49.453	49.398	50.244	53.378	54.060	Continuing	Continuing

Note

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A. Mission Description and Budget Item Justification

The National Defense Education Program (NDEP) ensures the Department of Defense (DoD) will have access to high-quality science, technology, engineering, and mathematics (STEM) personnel vital to national defense now and in the future. NDEP's portfolio provides solutions to workforce challenges, which include: (1) impending retirement of 33 percent of the Department's STEM workforce; (2) low college readiness rate and interest in STEM majors; and (3) challenges that the DoD, like other Federal employers, face in recruiting and retaining high-quality STEM talent in a competitive environment.

NDEP aligns to the DoD Science and Technology (S&T) priorities and the Historically Black Colleges and Universities and Minority Institutions (HBCU/MIs) program. It is synchronized with the Federal Five-Year STEM Strategic Plan, the DoD STEM Strategic Plan, and the DoD Strategic Workforce Plan. NDEP components engage in assessment and evaluation as required by the Office of Management and Budget and the Government Accountability Office.

Science, Mathematics, and Research for Transformation (SMART) awards highly competitive scholarships-for-service to undergraduate and graduate students in 19 STEM academic disciplines and moves graduates directly into DoD's workforce following graduation. Internships engage SMART scholars in hands-on, research and work experiences in DoD facilities, thereby enhancing their educational experience. Since its inception as a pilot program in FY 2005, SMART has supported approximately 1,575 students from bachelor to doctoral levels and, to date, approximately 900 have completed program studies and are currently employed in the DoD workforce. SMART ensures that DoD has a steady infusion of high-quality U.S. technical talent, prepared in areas of critical importance to DoD, ready to apply their technical knowledge, skills, and abilities to fulfill DoD's mission.

The National Security Science and Engineering Faculty Fellowship (NSSEFF) program was realigned from the NDEP PE to PE 0601110D8Z, beginning in FY 2015. The NSSEFF program supports world-class researchers in scientific areas of critical importance to DoD and ensures the cultivation of exceptional talent. Fellows' work spans a broad set of emerging scientific areas. The NSSEFF program is a key resource that fosters close connections between academia and the DoD science and engineering enterprise, a primary goal of Strategic Support for Basic Research (SSBR) efforts. Fellows provide DoD the deep scientific expertise of today's leading research universities and collaborate with DoD scientists and engineers.

STEM Activities Support (SAS) supports initiatives to implement the Assistant Secretary of Defense for Research and Engineering (ASD(R&E))'s strategic plan for STEM. SAS fosters conditions for STEM investments to support a diverse, world-class STEM talent pool and workforce to meet national defense needs. Initiatives

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include developing and implementing policy guidance, conducting analyses, and developing standards, while ensuring adherence to DoD and Federal initiatives and objectives.			
Section 233 of the National Defense Authorization Act for FY 2015 and the Consolidated and Further Continuing Appropriations Act, 2015 directed the Secretary of the Defense to establish a pilot program to enhance the preparation of dependents of members of the armed forces for careers in STEM and provide assistance to STEM teachers at elementary or secondary schools at which a significant number of military dependents are enrolled. In FY 2016, the Pre-kindergarten through twelfth grade (P-12) Military Child STEM Educational Program continues support for the pilot program.			
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2014	FY 2015
Title: Science, Mathematics, and Research for Transformation (SMART) Defense Education Program		37.692	36.000
Description: SMART is a scholarship-for-service program that provides support to high performing U.S. graduate and undergraduate students in 19 academic STEM disciplines identified as areas of future workforce need by DoD.			
The disciplines align with the Department's seven S&T priorities and emerging scientific research areas. The disciplines are: Aeronautical and Astronautical Engineering; Biosciences; Chemical Engineering; Chemistry; Civil Engineering; Cognitive, Neural, and Behavioral Sciences; Computer Science; Electrical Engineering; Geosciences; Industrial and Systems Engineering; Information Sciences; Materials Science and Engineering; Mathematics; Mechanical Engineering; Naval Architecture and Ocean Engineering; Nuclear Engineering; Oceanography; Operations Research; and Physics. Upon completion of their degree, students fulfill a service commitment to DoD on a one-to-one payback per year of education funded. In part, SMART's success is measured by participants that remain in the DoD workforce beyond their required service commitment. 77 percent have completed their service commitment and are still employed by DoD beyond their original service commitment.			
Oversight of the SMART program falls under the Office of the Assistant Secretary of Defense for Research and Engineering (OASD(R&E)). Two types of individuals participate in the program: (1) retention scholars who are current DoD employees; and (2) recruitment scholars who are college students enrolled in undergraduate and graduate programs and represent new talent for the Department. Internships provide SMART scholars with an opportunity to engage in hands-on research and work experiences in defense laboratories, thereby enhancing their educational experience.			
Since FY 2005, approximately 1,575 students have participated in the SMART program at approximately 160 sponsoring facilities. As of August 2014, approximately 900 SMART scholars have transitioned into the service commitment phase. To date, these scholars have transitioned as civilian employees into the Air Force, Army, Navy, and other DoD components.			
FY 2014 Accomplishments:			
• Provided oversight to the SMART program per Directive-Type Memorandum (DTM) 13-007 and began coordination of a draft DoD Instruction (DoDI).			

UNCLASSIFIED

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2014	FY 2015	FY 2016
<ul style="list-style-type: none"> Continued to examine the effectiveness of efforts to increase the number of eligible applicants from underrepresented groups, such as women and minorities, veterans, and individuals preparing to separate from the military. Continued to enhance relationships between SMART and HBCU/MIs. Continued to assess SMART mentoring and workforce development initiatives for current participants and the effectiveness of the transition process. Transitioned approximately 100 participants into the DoD workforce. Increased the number of candidate spots and select new participants based on available funding. Continued to document effectiveness of SMART program with metrics such as: (1) percentage of eligible SMART participants transitioned to the DoD workforce; and (2) percentage of SMART scholars retained post-service commitment. <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> Establish a SMART DoDI in accordance with DTM 13-007. Transition the SMART program to the Services with Navy as Lead Service. Continue to examine the effectiveness of efforts to increase the number of eligible applicants from underrepresented groups such as women and minorities, veterans, and individuals preparing to separate from the military. Examine SMART participation at HBCU/MIs. Continue to assess SMART mentoring and workforce development initiatives for current participants and the effectiveness of the transition process. Transition approximately 100 participants into the DoD workforce. Increase the number of candidate spots and select new participants based on available funding. Document effectiveness of SMART program with metrics such as: (1) percentage of eligible SMART participants transitioned to the DoD workforce; (2) percentage of SMART scholars retained post-service commitment; and (3) percentage of SMART participants enrolled at HBCU/MIs. <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> Provide oversight of the SMART program per DTM 13-007 and SMART DoDI. Fully transition the SMART program to the Services. 				
<p>Title: National Security Science and Engineering Faculty Fellowship (NSSEFF)</p> <p>Description: NSSEFF ensures that the DoD has a research portfolio that supports the foremost creative, innovative, and productive university researchers.</p> <p>The objectives of the program are to: (1) support scientific research that may lead to extraordinary outcomes; (2) educate and train outstanding student and post-doctoral researchers for the defense and national security workforce; (3) foster long-term relationships between outstanding university researchers and the DoD; (4) familiarize select university researchers and their</p>		20.940	-	-

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
<p>students with DoD's current and future challenges; and (5) increase the number of exceptionally talented technical experts that are contributing to the Department's mission.</p> <p>FY 2014 Accomplishments:</p> <ul style="list-style-type: none"> Continued support for current NSSEFF Fellows. Conducted a NSSEFF program review and report on Fellows' progress. Used this venue to identify and facilitate new connections between Fellows and defense scientists and engineers. Issued a new competitive solicitation for NSSEFF Fellows. Developed metrics for NSSEFF program effectiveness as both a high prestige scientific program for national leaders in their fields, and as an effective means for long-term engagement of the Principal Investigators (PIs) and their research teams with DoD scientific staff. 			
<p>Title: STEM Activities Support (SAS)</p> <p>Description: SAS supports initiatives to implement the ASD(R&E)'s strategic plan for STEM. SAS fosters conditions for STEM investments to support a diverse, world-class STEM talent pool and workforce to meet national defense needs. Initiatives include developing and implementing policy guidance, conducting analyses, and developing standards, while ensuring adherence to DoD and Federal initiatives and objectives.</p> <p>FY 2014 Accomplishments:</p> <ul style="list-style-type: none"> Provided DoD-wide STEM guidance and oversight through the STEM Executive Board and Executive Board Working Group. Executed national STEM program in partnership with laboratories and facilities, i.e. For Inspiration and Recognition of Science and Technology Robotics Competition. Implemented the STEM Diversity Campaign in coordination with the Office of Diversity Management and Equal Opportunity (Office of the Under Secretary of Defense for Personnel and Readiness) and the Services/Components. Managed the development of the STEM DoD Instruction. Supported activities for the SMART program, including participant selections and awards, contracts, governance, debt collection and program improvements. Completed the collection of baseline information for the FY 2014 Annual Performance Plan and Accountability Report (APPAR). Participated in interagency collaboration on the Committee on Science, Technology, Engineering, and Math Education (CoSTEM), interagency working groups, and the Science and Engineering Workforce Fast Track Action Group. Provided responses to Congressional inquiries and U.S. Government Accountability Office (GAO) reports. Completed Acquisition, Technology, and Logistics STEM Inventory Report. <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> Continue program management and oversight, studies support, and responses to Congressional inquiries and other reports. 	14.234	9.405	9.453

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2014	FY 2015
<ul style="list-style-type: none"> Develop systems and standards to support STEM policy implementation, oversight, and assessment. Enhance assessment and evaluation standards to support investment decision making. Implement policy, assign responsibilities, and provide policy guidance including the STEM Instruction and legislative proposals. Support inter- and intra-departmental collaboration to achieve DoD and Federal objectives in STEM. <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> Continue program management and oversight, studies support, and responses to Congressional inquiries and other reports. Develop and/or maintain systems and standards to support STEM policy implementation, oversight, and assessment. Enhance assessment and evaluation standards to support investment. Implement policy, assign responsibilities and provide policy guidance including the STEM Instruction and legislative proposals. Support inter- and intra-departmental collaboration to achieve DoD and Federal objectives in STEM. Provide support and coordinate Departmental participation in the USA Science and Engineering Festival. 			
<p>Title: P-12 Military Child STEM Educational Program</p> <p>Description: The P-12 Military Child STEM Educational Program supports the pilot program established in FY 2015. The objectives are to enhance the preparation of dependents of members of the armed forces for careers in STEM and provide assistance to STEM teachers at elementary or secondary schools at which a significant number of military dependents are enrolled.</p> <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> Continue implementation and assessment of the pilot program. Expand access for military-connected children to attend classes in STEM. Implement activities to improve the quality of STEM educational and training opportunities for students and teachers, including the development and improvement of curricula. Submit to the Committees on Armed Services of the U.S. Senate and the House of Representatives a report on activities carried out under the pilot program. 		-	-
Accomplishments/Planned Programs Subtotals		72.866	45.405
		FY 2014	FY 2015
Congressional Add: Military Child STEM Educational Programs		-	13.000
FY 2015 Plans: • Establish a Department-wide, coordinated effort to create, implement, and assess the pilot program in accordance with the FY 2015 NDAA and the Consolidated and Further Continuing Appropriations Act of 2015.			

UNCLASSIFIED

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	FY 2014	FY 2015
<ul style="list-style-type: none"> • Activities that may be implemented include: (1) expansion of access for military-connected children to attend classes in STEM at covered schools that service military families; (2) establishment of targeted internships and cooperative research opportunities for students and teachers at defense laboratories and other technical centers; (3) establishment of scholarships and fellowships; (4) efforts and activities that improve the quality of STEM educational and training opportunities for students and teachers, to include the development and improvement of curricula; and (5) development of travel opportunities, demonstrations, mentoring programs, and informal science education for students and teachers. • Establish outcome-based metrics and internal and external assessments to evaluate the merits and benefits of activities conducted under the pilot program with respect to the needs of the Department. 		
Congressional Adds Subtotals	-	13.000

C. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

- The increase in the direct and indirect connectivity of NDEP participants with DoD.
- SMART PhD scholars research productivity: (1) number of research papers; (2) number of research citations; (3) patents.
- The increase in the number of SMART scholars who are transitioned into the DoD workforce.
- The number of SMART scholars who are retained by DoD post-service commitment.
- The number of eligible SMART applicants from HBCU/MIs.
- The number of SMART application reviewers from HBCU/MIs.
- Benchmark the performance of SMART PhD scholars (i.e., time to degree) with those of their peers in the general U.S. PhD population.
- Increase directly and indirectly the connectivity of NSSEFF Fellows with the broad DoD S&T enterprise, including inclusion in special DoD task forces, advisory panels, and the broad set of engagements of PIs, postdocs, and students.
- The increase in the direct support and/or advancement of research into DoD S&T emphasis areas and emerging research areas by: (1) recognized transformational discoveries, insights, and other measures of scientific progress, such as scientifically relevant publications in peer reviewed journals; and (2) new patents filed/awarded in these areas.
- The number of co-authored papers between NSSEFF Fellows and DoD S&Es.
- Develop program to increase access for military-connected children to attend classes in STEM at covered schools that service military families.