

ATTACHMENT A - SCHEDULE

A.1 PURPOSE OF GRANT

The purpose of this Grant is to provide support to the "Nuclear Engineering Education Lab" as described in Attachment B entitled "Program Description."

A.2 PERIOD OF GRANT

1. The effective date of this Grant is July 1, 2010. The estimated completion date of this Grant is June 30, 2012.

2. Funds obligated hereunder are available for program expenditures for the estimated period: July 1, 2010 – June 30, 2012.

A. GENERAL

1. Total Estimated NRC Amount:	\$150,000
2. Total Obligated Amount:	\$150,000
3. Cost-Sharing Amount:	\$0
4. Activity Title:	Nuclear Engineering Education Lab
5. NRC Project Officer:	Randi Neff
6. DUNS No.:	002604817

B. SPECIFIC

RFPA No.:	HR-10-981
FFS:	N/A
Job Code:	T8453
BOC:	4110
B&R Number:	0-8415-5C1116
Appropriation #:	31X0200
Amount Obligated:	\$150,000

A.3 BUDGET

Revisions to the budget shall be made in accordance with Revision of Grant Budget in accordance with 2 CFR 215.25.

Direct Participant Cost	\$97,259.00
Indirect Cost	<u>\$52,741.00</u>
Yearly Total	\$150,000.00

All travel must be in accordance with the Drexel University Travel Regulations or the US Government Travel Policy absent Grantee's travel regulation.

A.4 AMOUNT OF AWARD AND PAYMENT PROCEDURES

1. The total estimated amount of this Award is \$150,000 for two (2) year period.
2. NRC hereby obligates the amount of \$150,000 for program expenditures during the period set forth above and in support of the Budget above. The Grantee will be given written notice by

the Contracting Officer when additional funds will be added. NRC is not obligated to reimburse the Grantee for the expenditure of amounts in excess of the total obligated amount.

3. Payment shall be made to the Grantee in accordance with procedures set forth in the Automated Standard Application For Payments (ASAP) Procedures set forth below.

Attachment B – Program Description

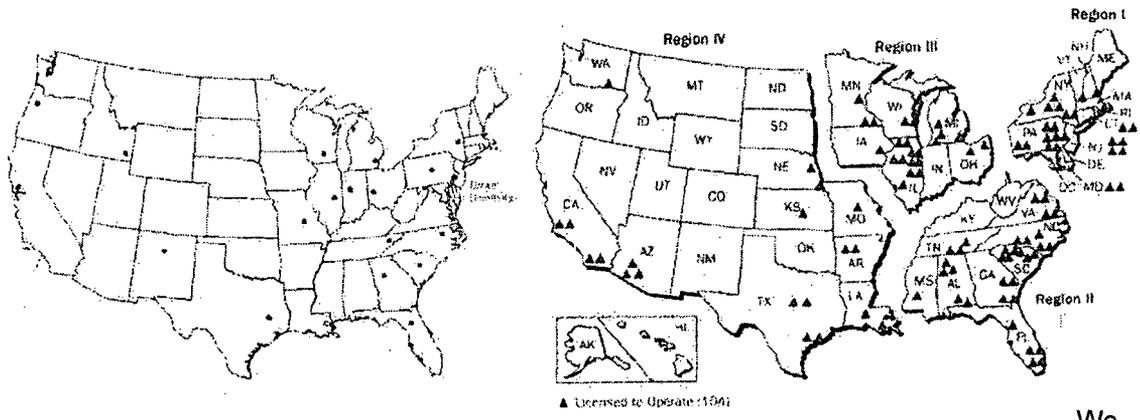
Nuclear Engineering Education Lab

B.1 Introduction

Recently, due to increases in the costs of fossil fuel products, the desire for energy independence, and other economic, environmental, and regulatory factors, nuclear power has re-emerged as a viable means of power on a large scale ¹. In anticipation, student enrollments in most Nuclear Engineering departments in the United States has increased, and several schools started looking into offering Nuclear Engineering minors and new degree programs. However, student and school reaction to market forces usually lag the increase in demand, and if new nuclear plants are to be built or other needs emerge to increase demand for nuclear engineers, the nation is likely to face shortages. The temporary solution would be the (costly) training of individuals with other types of engineering background (e.g., electrical, mechanical) for Nuclear Engineering assignments.

Although the number of students enrolled in nuclear engineering programs has increased, the need for nuclear engineers still exceeds the rate of graduating nuclear engineering students. During the 1990s, in response to adverse public opinion, nuclear engineering programs began diversifying into other areas, such as nuclear technology for medicine, non-power applications of radiation in industry, plasma-aided manufacturing, and materials. This began a declining trend in the number of faculty and students involved in education related to *power applications of nuclear engineering*. As noted in the recent report from the National Science Foundation Workshop on the Future Power Engineering Workforce², students in other non-power applications of nuclear engineering were still receiving nuclear engineering degrees, and the faculty in these non-power areas was still counted as nuclear engineering faculty. Consequently, the real decline in faculty and students involved in education related to power applications of nuclear engineering is likely greater than indicated by the statistics on enrollment and degrees granted.

Currently, there are only 20 ABET accredited nuclear engineering programs in the country (see Appendix A). While the number of applications for nuclear engineering students has tripled compared to five years ago, universities are operating at maximum capacity.



We

propose to initiate a nuclear engineering curriculum at Drexel University, located in Philadelphia, Pennsylvania, within the College of Engineering. Drexel University is an ABET accredited academic institution with a history of providing multidisciplinary engineering education to its students, preparing them for both industry and academic environments. The university possesses a unique Co-Op experience⁴ that provides a suitable foundation for industry relations and graduate job placement. All Drexel students participate in the Co-Op program and students typically are employed for three 6-month periods in companies and research laboratories across the nation.

Drexel University's Electrical Engineering Department presently maintains a strong relationship with a major local energy company owned by the Exelon Corporation; PECO Energy is located only blocks from the main campus, and hires several Drexel Engineering Co-Ops each hiring cycle (there are two hiring cycles per year). Exelon Nuclear⁵, also a unit of Exelon Corporation, operates the largest nuclear fleet in the nation and the third largest fleet in the world. Exelon's ten stations (four of them residing in Region I) - with 17 reactors - represent approximately 20 percent of the U.S. nuclear industry's power capacity.

Drexel's location also provides an advantage in terms of building relations with the NRC and local nuclear power generating stations. The location of each university with an ABET accredited nuclear engineering program is shown in Figure 1 (left). Figure 1 (right) displays the locations of commercial nuclear power plants across the United States, with numerous nuclear power plants located in the Delaware Valley. Additionally, two offices of the Nuclear Regulatory Commission are located nearby, with the headquarters approximately 2.5 hours away and the Region I office only 30 minutes from Philadelphia.

8.2 Curriculum Development Proposal

Drexel University is currently taking proactive measures to support the re-emergence of Nuclear Engineering education by creating a Nuclear Engineering minor within the College of Engineering. Due to the inherent multidisciplinary nature of Nuclear Engineering, students from all engineering disciplines will have an opportunity to enroll in the minor.

The first class, *Introduction to Nuclear Engineering* (ECEP 490/MEM 343), was offered this fall, and attracted over 50 students. The second class, *Radiation Detection and Measurement* (ECEP 490), has been offered this winter term, and has an enrollment of over 30 students. These initial enrollment figures testify to the interest students have in Nuclear Engineering at Drexel University. With its traditional role as a major educator of engineers for industry and the armed forces, Drexel University is well placed to attract students to Nuclear Engineering classes and laboratories, and to provide Nuclear Engineering background to students in related disciplines.

The Electrical and Computer Engineering (ECE) department at Drexel University is poised to contribute to this effort through its strengths in power engineering, signal processing/detection,

and control. The development of courses with Nuclear Engineering applications in the areas of detection, control, and digital instrumentation is of great interest to the Department, and it also has long-term plans for nuclear reactor development. To this end, the Department has planned, and through this project will implement, strengthen, and expand, the Drexel University Nuclear Engineering Education Laboratory (DUNEEL).

DUNEEL is dedicated to providing education in the field nuclear engineering, with emphasis on nuclear power and radiation detection. The proposed project is to acquire, integrate, and put at the service of students a series of regularly scheduled labs, using software and hardware required for experimentation in Nuclear Engineering, as well as the development and installation of courses. The capabilities of DUNEEL will include: power plant modeling, detector design, and extensive experimentation and hands-on opportunities in the areas of radiation detection and measurement.

The existing *Radiation Detection and Measurement* class, of which this laboratory will be a part, is currently offered at Drexel, and serves as a foundation for several key topics in Nuclear Engineering. Needless to say, radiation detection is important in areas such as health physics, nuclear safeguards, and reactor control. In addition to the traditional subjects, Drexel students will have the opportunity to engage in extensive project work in the area of Nuclear Medicine, through the continued collaboration of Drexel with the Hahnemann Hospital and the Thomas Jefferson University and Hospital of Philadelphia.

Philadelphia is home to over 1.5 million people and several universities, servicing the metropolitan area,

as well as the Delaware Valley. Students are required to participate in a highly successful co-op program. Many students are employed by one of the numerous power engineering plants and firms in the Delaware Valley for the co-op. The proposed project will provide critical knowledge and hands-on experience in addition to the co-op program, supplying highly educated engineers ready for the nuclear workforce upon graduation. The formation of the Nuclear Engineering minor allows the University to grow and service more people throughout the country and the world.

Hardware and software are being obtained to begin the initial population of DUN EEL. Software obtained includes the freeware GEANT4 (a radiation transport C code) and JANIS (nuclear data program). Numerous resources are already available at the University, such as MATLAB, LABVIEW, and PSPICE. MATLAB and LabVIEW are industry standard software suites widely used by engineers for various functions such as plotting, data analysis, modeling and simulation, and control of hardware. PSPICE is a circuit design and analysis software package, and is already used in the current radiation detection course. Significant funding from the University itself has permitted the initial population of the Drexel University Nuclear Engineering Education Laboratory, purchasing state of the art radiation detection equipment. This equipment allows students to conduct experiments such as half-life estimation, shielding/absorption, and spectroscopy (alpha, beta, gamma). Individual components, sliding into card slots of a Nuclear Instrumentation Module (NIM) Bin, provide students maximum understanding in the process of radiation detection instead of black box systems. Figure 2 displays the station and equipment breakdown. The initial investment for hardware indicates a desire to play a significant role in Nuclear Engineering education and to sustain the developed Nuclear Engineering minor.

Alpha Spectroscopy Station Charged Particle Detector(alpha) Vacuum Chamber Portable Pumping Station NIM Bin and Power Supply Multi-Channel Analyzer Oscilloscope JANIS(Software) GEANT 4(Software)	Alpha Spectroscopy Station Charged Particle Detector(beta) Spectroscopy Amplifier Vacuum Chamber Portable Pumping Station NIM Bin and Power Supply Multi-Channel Analyzer Oscilloscope JANIS(Software) GEANT 4(Software)	Beta Spectroscopy Station Charged Particle Detector(beta) Spectroscopy Amplifier Vacuum Chamber Portable Pumping Station NIM Bin and Power Supply Multi-Channel Analyzer Oscilloscope JANIS(Software) GEANT4(Software)
Misc. Station Geiger Mueller Tube Spectroscopy Amplifier Pulse Inverter NIM Bin and Power Supply High Voltage Bias Supply Pulser		Additional Equipment Storage Absorber Foils Geiger Counter NRC Exempt Radioactive Sources Cabling

Oscilloscope JANIS(Software) GEANT 4(Software)	Chart of the Nuclides	Single Channel Analyzer Nanosecond Delay Dual Spectroscopy Amplifier
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The proposed project is to implement, strengthen, and improve DUNEEL through the enhancement and development of core classes relevant to nuclear engineering. As previously stated, the course *Radiation Detection and Measurement* has been introduced this winter term, with extensive detection equipment to support fundamental experiments. Part of this proposed project is to improve this course using radiation transport software. Additionally, the second part of this project is to develop courses in fundamental nuclear reactor physics and nuclear power plant design and operation, with assistance from software. These three prerequisite classes will lead to the development of other classes, such as health physics, nuclear controls, digital nuclear instrumentation, and nuclear safeguards.

Implementing of the Nuclear Engineering minor will require new courses to be developed. Part of the funding request will be for the creation and development of three courses: *Introduction to Nuclear Reactor Theory*, *Nuclear Power Plant Operation and Design*, and *Radiation Transport and Simulation Design*. The first two classes, *Introduction to Nuclear Reactor Theory* and *Nuclear Power Plant Operation and Design* will strengthen and complement our popular power track, allowing students to learn both the mechanical and electrical side of nuclear power plants. The *Radiation Transport and Simulation Design* class will educate students on the fundamental approaches, such as Monte Carlo methods, used to develop radiation transport software.

The *Introduction to Nuclear Reactor Theory* course, which is planned to start this fall term, will provide students with elementary, but essential, theory of nuclear reactors. Popular classical topics will be covered, including interaction of radiation with matter, nuclear fuels, neutron flux, criticality, rod worth, as well as pressurized and boiling water reactors. Simulations will be used to reinforce topics covered in class. Moreover, a small design project will be required to ensure students maximize understanding of the fundamental concepts of nuclear reactors.

The *Nuclear Power Plant Operation and Design* course covers topics related to the design of the steam and auxiliary systems used to support the nuclear reactor. Students will design the steam side of a nuclear power plant by developing specifications necessary to meet power requirements. Additionally, off-point operating characteristics will be analyzed to ensure the proper operation of the power plant.

This course is important in many fields, such as health physics, detector design, shielding, and reactor vessel analysis.

A small fraction of the funding requested will help procure two software packages, MCNPX/MCNP5 and GateCycle. The MCNPX/MCNP5 program is a particle transport code, and will be used in the *Radiation Detection and Measurements* and *Introduction to Nuclear Reactor Theory* courses. GateCycle, a steam plant analysis program, will support the *Nuclear Power Plant Design and Operation* course. This software allows for off-point and parametric analysis of the steam side of power plants. MCNPX/MCNP5 will be critical in helping students develop an understanding of the behavior and transport of particles.

The *Radiation Detection and Measurements* class will benefit from purchasing the transport code software, articulating the ubiquity and necessity of ionizing radiation detection. Simulations will cover topics such as, but are not limited to radiation interactions, medical use, homeland security, and shielding. Examples of simulations used in the class will be shielding development, electron and proton beam interactions with flesh for cancer therapy, and comparison of simulations with the experiments conducted in the laboratory.

Simulations for the *Introduction to Nuclear Reactor Theory* course will provide students with visual aids to enhance understanding. Examples of simulations planned include homogenous and heterogeneous neutron flux analysis, reactivity, differential and integrated rod worth, criticality, and a pressurized water reactor. Simulations will be used to reinforce the topics covered.

Figure 3 displays the timeline for the project. An initial learning curve is expected for the software packages.

The *Radiation Transport and Simulation Design* course will instruct students the different methods used to analyze the transport of radiation through material. Utilizing basic physical phenomenon (e.g., photoelectric effect, Compton scattering, and pair production) and different simulation approaches, students will be required to develop basic simulation analysis software.

b.

C. Budget Narrative

The funding requested is for a faculty member to develop the desired courses over one year, with oversight from the Department Head (Co-Pion this proposal). Additionally, part of the funding requested

is to pay for the stipend of a teaching assistant to help develop said courses. No funding from this effort will be used in paying the graduate student's tuition. Additional funds, not to exceed \$12,000, will be used to acquire software for use in the courses described.

D. Outreach and Relationships

Students attending Drexel University (including the Mt. Laurel campus) participate in cooperative work agreements during the undergraduate academic process. These co-ops provide students with crucial experiential learning. Employers with nuclear technology, such as Army Research Lab, have already expressed interest in hiring co-ops with a Nuclear Engineering background. This project will help form relationships with such companies to help fill the needs of the employers.

Many courses require projects as a contribution to the class. Part of this project will seek to connect two courses, *Introduction to Nuclear Reactor Theory* and *Nuclear Power Plant Design and Operation*. The previous class will require students to design a simplified nuclear reactor (using MCNPX/MCNP5), while the successive class requires students to design the steam side of a plant using GateCycle. The combined project will provide many advantages. Students will obtain a systems level approach of an integrated nuclear power plant. Additionally, the combined approach is attractive to employers. An appreciation for the complexity and interrelationships of the systems of a nuclear power plant will be formed.

Two professional societies, the American Nuclear Society (ANS) and the Institute of Electrical and Electronic Engineers (IEEE) have been notified of our intent to implement a college-wide Nuclear Engineering minor, and have responded enthusiastically. Professor Moshe Kam, the Co-PI in this proposal, is the current president-elect of the IEEE. We will foster relationships in both societies, helping guide us to the needs of the Nuclear Engineering field.

Drexel University has recently expanded its course offerings into an additional campus in New Jersey. Our satellite campus at the Burlington County College (BCC), Mt. Laurel campus enables students to achieve a bachelor's degree via attending BCC for the first two years and transfer to Drexel University for the remaining part of their undergraduate education. Electrical, computer, and mechanical engineering bachelor degrees can be earned at the BCC campus. Currently, the *Introduction to Nuclear Engineering* class is offered, with several students have enrolled in this class. Moreover, a diverse population of electrical, computer, and mechanical engineering students are in attendance, indicating the multidisciplinary nature of the class. The large enrollment of students identifies the growing interest of

nuclear engineering. Furthermore, the radiation detection and measurement class will be offered next term, allowing students at the satellite campus to experience the same quality of class offered on the main campus. The project will provide Nuclear Engineering education to both campuses via on-site learning. Moreover, the availability of the Nuclear Engineering minor at the Mt. Laurel campus is expected to attract additional students, increasing the nuclear educated students for the workforce.

Philadelphia AMP

Philadelphia AMP, now in its fifteenth year of operation, represents a diverse alliance of public and private, two- and four-year, research and non-research, Historically Black Colleges and Universities (HBCUs) and majority institutions in three states dedicated to promoting minority student persistence, achievement and progression in the scientific enterprise. Participating institutions are: Cheyney University, Community College of Philadelphia, Delaware State University, Drexel University, Lincoln University, New Jersey Institute of Technology, Temple University, University of Delaware and the University of Pennsylvania. Through synergistic collaborations, the Alliance utilizes its operational infrastructure to expand available options to enrich programs at partner institutions and beyond. Philadelphia AMP has long recognized that sustained increases in the quality and quantity of minority students in undergraduate and graduate STEM degree programs will require a re-engineering of the educational system at all levels. This re-engineering process has resulted in sustainable changes in the learning environment in the alliance institutions, as well as in their policies and practices in terms of allocations of finances, personnel, recruitment, and admissions. Throughout the Philadelphia AMP, students are able to participate in a wide variety of programs, such as summer pre-freshman bridge and academic year support, career awareness and preparation for graduate school, internships with industry sponsors, learning communities, undergraduate research projects and symposia, international study abroad, programs to facilitate the transition from high school to college, from community college to four-year institutions, and teacher preparation. In general, these programs help to better prepare students for matriculation to graduate school.

Since 2003, the Bridge to the Doctorate (BTD) program has played a major role in the embedding of the AMP philosophy at institutions and in the organization of complex strategies to support and sustain graduate students in completing the PhD. The grant provides a substantial fellowship for twelve candidates and covers their tuition and the cost of education, including health benefits. Intrinsic in this BTD fellowship is the identification of the candidates who may be, by traditional standards, marginally acceptable to most graduate programs. The utilization of the AMP model supplemented with the unique preparation for graduate education has proven to be very successful in our Alliance. With strong senior

level administrative commitment and vision across the Alliance, Philadelphia AMP has leveraged the LSAMP, the Bridge to the Doctorate, IGERT, GK-12 and GAANN awards using a strategy that is directed at meeting workforce and leadership demands for the 21st century.

During the successive BTM Cohorts I (2003), II (2004), and III (2005), we have documented the issues and practices that have proven successful. In the matriculation of the graduate candidates through to the completion of their PhD, BTM Cohorts I and II created a test bed of information and management structure which established an operational format that would prove invaluable in the future by developing student recruitment practices, BTM site selection criteria, and departmental student monitoring strategies. The development of a BTM Retreat that would establish an environment to nurture the graduate experience was developed between Cohorts I and II. This process has informed the subsequent Retreats and has proven to be the best opportunity of building a graduate community with BTM Cohorts from other institutions across the Alliance.

Through the experience gained from the management of BTM Cohorts III (2005) and V (2007) the importance of: a) pairing students with active research faculty, b) allowing students to have research laboratory experiences during their first year of graduate study, c) providing students with technical support for the development of their thesis statements, d) developing dual strategies to monitor the student's academic progress, as well as their personal development, and e) helping students to secure continued funding for doctoral study by the end of the first semester of the second year of the BTM program, characterized best practices for successful terminal degree completion.

In BTM Cohort IV (2006) as an Alliance we specifically earmarked one of our Historically Black Colleges and Universities (HBCUs) to be the BTM site. The program was hosted at Delaware State University (DSU). While DSU had three PhD programs in its STEM offerings, this site would allow some advance preparation for the PhD candidacy by allowing the BTM candidates to matriculate, in some cases, at the PhD institution that they would ultimately be attending. It was the collective intention of the partner institutions to test the mechanisms which have developed due to the first three cohorts of the BTM program to enhance the capacity of the HBCU to broaden its PhD offerings and establish new joint MS/PhD programs with other Research One institutions. The national statistics continue to demonstrate that the majority of the minority PhDs in this country result from the influences of students who have had an HBCU experience.

By the end of the first year, the BTM Cohort IV (2006) students were involved in research at DSU, Drexel, University of Delaware, Brookhaven National Laboratory, and the DuPont Corporation. A major part of our initiative with DSU included the introduction of the BTM students to each one of our Research One

institutions and the opportunities for PhD study. In addition, we had identified visits and trips with other national Research One institutions.

The Alliance continued to embrace the new paradigm shift of using the HBCU institutions as feeders for all of the PhD degree granting institutions in the Alliance for Cohorts VI (2008) and VII (2009) which were also hosted by DSU. The engagement of STEM faculty, departments, and institutional infrastructures, and the development of new MS/PhD pathways and interinstitutional offerings will not only serve the best interests of the individual students, but will have a profound impact on the partner institutions, as well as STEM education in the Tri-state region as a whole for years to come. At DSU, the experience of hosting Cohorts IV, VI and VII helped its STEM graduate programs mature considerably to the benefit of all STEM graduate students, not just the Bridge to the Doctorate Fellows, leveraging NSF's investment in a powerful and innovative way. In addition, Cohorts VI and VII helped the Alliance solidify the importance of incorporating the engagement of the BTD research faculty mentors as a collective body during site visitations as part of its standard monitoring protocol.

The establishment and successful development of Philadelphia AMP BTD Cohorts I-VII programs provide a uniquely strong pre-existing foundation for the effective implementation of the proposed BTD Cohort VIII program which will be hosted by Drexel University. As noted in Table 1 below, as of December 2009, seventy-eight (78) of the ninety-one (91) students (or 86%) from the BTD Cohorts I - VII programs persisted, and seventy-four students (or 94%) have committed to complete the PhD degree. Of the students retained, thirty-six (36) students (or 46%) have been accepted into PhD programs, thirteen (13) students have already passed their PhD qualifier examination, and one (1) student was awarded her PhD degree. The remaining students who have passed their PhD qualifier examination are projected to complete the terminal degree in the 2010/2011 academic year. Efforts are underway to transition additional students into PhD programs. The BTD PhD student distribution by STEM category is as follows: 25% Engineering, 36% Life/Biological Sciences, 25% Physical Sciences, and 14% Mathematics and Computational Sciences.

Table 1: Philadelphia AMP Bridge to the Doctorate Productivity Rates and Commitment to Ph.D. Degree Attainment by Cohort as of December 2009. (* Includes Replacements)

Cohort (Year)	Site / Funding	# Admitted*	# Dropped or Withdrew	# Retained (% from # Admitted)	# Completed MS or Equivalent as of 12/2009 [1]	# Committed to complete PhD	# Enrolled / Accepted into PhD program (% from # retained)	Passed PhD Qualifier Exam	# Received PhD
I	UDelaware /	12	4	8 (67%)	8	7	4 (50%)	1	0

(2003)	\$770K								
II (2004)	NJIT / \$987K	12	1	11 (92%)	11	8	4 (36%)	1	0
III (2005)	Drexel/ \$987K	14	2	12 (86%)	12	12	10 (83%)	10	1
IV (2006)	Delaware State / \$987K	14	2	12 (86%)	11	12	6 (50%)	N/A	N/A
V (2007)	Temple / \$987K	13	2	11 (85%)	11	11	7 (64%)	1	N/A
VI (2008)	Delaware State / \$987K	14	2	12 (86%)	N/A	12	3 (3%) [2]	N/A	N/A
VII (2009)	Delaware State / \$987K	12	0	12 (100%)	N/A	12	2 (2%) [2J]	N/A	N/A
Totals		91	13	78 (86%)	53	74	36 (46%)	13	1

[1] Some students have made the decision to transition into a Ph.D. program without obtaining their MS degree.

[2] Cohort VI participants have not completed the second year of the BTM program. Cohort VII have not completed the first year of the BTM program.

The Alliance's first BTM doctoral degree was awarded to Quincy Brown in Computer Science from Drexel University (Cohort III) in August 2009. Dr. Brown was also awarded a Computing Innovation Postdoctoral Fellowship that provides her with support to conduct research at the University of Maryland at College Park, in the iSchool, as of October 2009.

The BTM candidates exemplify the spirit of a new breed of technically competent and creative minority scientist and engineers who will lead the nation in cutting edge research. The Philadelphia Alliance takes great pride in being the launch site for talent, which will have a national, as well as an international impact on the scientific enterprise.

The LSAMP program and the Bridge to the Doctorate supplement is the best mechanism to support the development and expansion of the Nuclear Science and Engineering program and curriculum development in our region. Not only is the Alliance in three states but also has established partnerships and collaborations between and among research one institutions and HBCU's to broaden the participation of underrepresented students in the nuclear programs. We are uniquely positioned to expand the mission and objectives of the Nuclear Regulatory Commission.

Attachment C – Standard Terms and Conditions

The Nuclear Regulatory Commission's Standard Terms and Conditions for U.S. Nongovernmental Grantees

Preface

This award is based on the application submitted to, and as approved by, the Nuclear Regulatory Commission (NRC) under the authorization 42 USC 2051(b) pursuant to section 31b and 141b of the Atomic Energy Act of 1954, as amended, and is subject to the terms and conditions incorporated either directly or by reference in the following:

- Grant program legislation and program regulation cited in this Notice of Grant Award.
- Restrictions on the expenditure of Federal funds in appropriation acts, to the extent those restrictions are pertinent to the award.
- Code of Federal Regulations/Regulatory Requirements - 2 CFR 215 Uniform Administrative Requirements For Grants And Agreements With Institutions Of Higher Education, Hospitals, And Other Non-Profit Organizations (OMB Circulars), as applicable.

To assist with finding additional guidance for selected items of cost as required in 2 CFR 220, 2 CFR 225, and 2 CFR 230 these URLs to the Office of Management and Budget Cost Circulars are included for reference:

A-21 (now 2CFR 220): <http://www.whitehouse.gov/omb/circulars/a021/print/a021.html>
 A-87 (now 2CFR 225): <http://www.whitehouse.gov/omb/circulars/a087/print/a087-all.html>
 A-122 (now 2CFR 230): <http://www.whitehouse.gov/omb/circulars/a122/print/a122.html>
 A-102, SF 424: <http://www.whitehouse.gov/omb/circulars/a102/print/a102.html>
 Form 990: <http://www.irs.gov/pub/irs-pdf/i990-ez.pdf>

Any inconsistency or conflict in terms and conditions specified in the award will be resolved according to the following order of precedence: public laws, regulations, applicable notices published in the Federal Register, Executive Orders (EOs), Office of Management and Budget (OMB) Circulars, the Nuclear Regulatory Commission's (NRC) Mandatory Standard Provisions, special award conditions, and standard award conditions.

By drawing funds from the Automated Standard Application for Payment system (ASAP), the recipient agrees to the terms and conditions of an award.

Certifications and representations. These terms incorporate the certifications and representations required by statute, executive order, or regulation that were submitted with the SF424B application through Grants.gov.

I. Mandatory General Requirements

The order of these requirements does not make one requirement more important than any other requirement.

1. Applicability of 2 CFR Part 215

a. All provisions of 2 CFR Part 215 and all Standard Provisions attached to this grant/cooperative agreement are applicable to the Grantee and to sub-recipients which meet the definition of "Grantee" in Part 215, unless a section specifically excludes a sub-recipient from coverage. The Grantee and any sub-recipients must, in addition to the assurances made as part of the application, comply and require each of its sub-awardees employed in the completion of the project to comply with Subpart C of 2 CFR 215 Part 180 and include this term in lower-tier (subaward) covered transactions.

b. Grantees must comply with monitoring procedures and audit requirements in accordance with OMB Circular A-133. <
http://www.whitehouse.gov/omb/circulars/a133_compliance/08/08toc.aspx >

2. Award Package

Grant Performance Metrics:

The Office of Management and Budget requires all Federal Agencies providing funding for educational related funding to report on specific metrics. These metrics are part of the Academic Competitiveness Council's (ACC) 2007 report and specifically relates to Science, Technology, Engineering, and Mathematics (STEM) curricula.

As part of the FY 2010 HR curriculum development grant awards, in addition to the customary performance progress report requested on the SF-PPR, SF-PPR-B, and SF-PPR-E forms, HR requires the following metrics to be reported on by the awardees as follows:

1. Overall number of new courses developed in NRC designated STEM areas;
2. Number of students enrolled in new STEM courses;
3. Number of these enrolled students retained in STEM major.

§ 215.41 Grantee responsibilities.

The Grantee is obligated to conduct such project oversight as may be appropriate, to manage the funds with prudence, and to comply with the provisions outlined in 2 CFR 215.41. Within this framework, the Principal Investigator (PI) named on the award face page, Block 11, is responsible for the scientific or technical direction of the project and for preparation of the project performance reports. This award is funded on a cost reimbursement basis not to exceed the amount awarded as indicated on the face page, Block 16., and is subject to a refund of unexpended funds to NRC.

The standards contained in this section do not relieve the Grantee of the contractual responsibilities arising under its contract(s). The Grantee is the responsible authority, without recourse to the NRC, regarding the settlement and satisfaction of all contractual and administrative issues arising out of procurements entered into in support of an award or other agreement. This includes disputes, claims, protests of award, source evaluation or other matters of a contractual nature. Matters concerning violation of statute are to be referred to such Federal, State or local authority as may have proper jurisdiction.

Subgrants

Appendix A to Part 215—Contract Provisions

Sub-recipients, sub-awardees, and contractors have no relationship with NRC under the terms of this grant/cooperative agreement. All required NRC approvals must be directed through the Grantee to NRC. See 2 CFR 215.180 and 215.41.

Nondiscrimination

(This provision is applicable when work under the grant/cooperative agreement is performed in the U.S. or when employees are recruited in the U.S.)

No U.S. citizen or legal resident shall be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity funded by this award on the basis of race, color, national origin, age, religion, handicap, or sex. The Grantee agrees to comply with the non-discrimination requirements below:

Title VI of the Civil Rights Act of 1964 (42 USC §§ 2000d et seq)

Title IX of the Education Amendments of 1972 (20 USC §§ 1681 et seq)

Section 504 of the Rehabilitation Act of 1973, as amended (29 USC § 794)

The Age Discrimination Act of 1975, as amended (42 USC §§ 6101 et seq)
The Americans with Disabilities Act of 1990 (42 USC §§ 12101 et seq)
Parts II and III of EO 11246 as amended by EO 11375 and 12086.
EO 13166, "Improving Access to Services for Persons with Limited English Proficiency."
Any other applicable non-discrimination law(s).

Generally, Title VII of the Civil Rights Act of 1964, 42 USC § 2000e et seq, provides that it shall be an unlawful employment practice for an employer to discharge any individual or otherwise to discriminate against an individual with respect to compensation, terms, conditions, or privileges of employment because of such individual's race, color, religion, sex, or national origin. However, Title VII, 42 USC § 2000e-1(a), expressly exempts from the prohibition against discrimination on the basis of religion, a religious corporation, association, educational institution, or society with respect to the employment of individuals of a particular religion to perform work connected with the carrying on by such corporation, association, educational institution, or society of its activities.

Modifications/Prior Approval

NRC prior written approval may be required before a Grantee makes certain budget modifications or undertakes particular activities. If NRC approval is required for changes in the grant or cooperative agreement, it must be requested of, and obtained from, the NRC Grants Officer in advance of the change or obligation of funds. All requests for NRC prior approval must be made, in writing (which includes submission by e-mail), to the designated Grants Specialist and Program Office no later than 30 days before the proposed change. The request must be signed by both the PI and the authorized organizational official. Failure to obtain prior approval, when required, from the NRC Grants Officer may result in the disallowance of costs, termination of the award, or other enforcement action within NRC's authority.

Lobbying Restrictions

The Grantee will comply, as applicable, with provisions of the Hatch Act (5 U.S.C. §§1501-1508 and 7324-7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.

The Grantee shall comply with provisions of 31 USC § 1352. This provision generally prohibits the use of Federal funds for lobbying in the Executive or Legislative Branches of the Federal Government in connection with the award, and requires disclosure of the use of non-Federal funds for lobbying.

The Grantee receiving in excess of \$100,000 in Federal funding shall submit a completed Standard Form (SF) LLL, "Disclosure of Lobbying Activities," regarding the use of non-Federal funds for lobbying within 30 days following the end of the calendar quarter in which there occurs any event that requires disclosure or that materially affects the accuracy of the information contained in any disclosure form previously filed. The Grantee must submit the SF-LLL, including those received from sub-recipients, contractors, and subcontractors, to the Grants Officer.

§ 215.13 Debarment And Suspension.

The Grantee agrees to notify the Grants Officer immediately upon learning that it or any of its principals:

(1) Are presently excluded or disqualified from covered transactions by any Federal department or agency;

(2) Have been convicted within the preceding three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, receiving stolen property, making false claims, or obstruction of justice; commission of any other offense indicating a lack of business integrity or business honesty that seriously and directly affects your present responsibility;

(3) Are presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph (1)(b); and

(4) Have had one or more public transactions (Federal, State, or local) terminated for cause or default within the preceding three years.

b. The Grantee agrees that, unless authorized by the Grants Officer, it will not knowingly enter into any subgrant or contracts under this grant/cooperative agreement with a person or entity that is included on the Excluded Parties List System (<http://epls.arnet.gov>).

The Grantee further agrees to include the following provision in any subgrant or contracts entered into under this award:

'Debarment, Suspension, Ineligibility, and Voluntary Exclusion

The Grantee certifies that neither it nor its principals is presently excluded or disqualified from participation in this transaction by any Federal department or agency. The policies and procedures applicable to debarment, suspension, and ineligibility under NRC-financed transactions are set forth in 2 CFR Part 180.'

Drug-Free Workplace

The Grantee must be in compliance with The Federal Drug Free Workplace Act of 1988. The policies and procedures applicable to violations of these requirements are set forth in 41 USC 702.

Implementation of E.O. 13224 -- Executive Order On Terrorist Financing

The Grantee is reminded that U.S. Executive Orders and U.S. law prohibits transactions with, and the provision of resources and support to, individuals and organizations associated with terrorism. It is the legal responsibility of the Grantee to ensure compliance with these Executive Orders and laws. This provision must be included in all contracts/sub-awards issued under this grant/cooperative agreement.

Award Grantees must comply with Executive Order 13224, Blocking Property and Prohibiting Transactions with Persons who Commit, Threaten to Commit, or Support Terrorism. Information about this Executive Order can be found at: www.fas.org/irp/offdocs/eo/eo-13224.htm.

Procurement Standards. § 215.40

Sections 215.41 through 215.48 set forth standards for use by Grantees in establishing procedures for the procurement of supplies and other expendable property, equipment, real property and other services with Federal funds. These standards are furnished to ensure that

such materials and services are obtained in an effective manner and in compliance with the provisions of applicable Federal statutes and executive orders. No additional procurement standards or requirements shall be imposed by the Federal awarding agencies upon Grantees, unless specifically required by Federal statute or executive order or approved by OMB.

Travel

Travel is an appropriate charge to this award and prior authorization for specific trips are not required, as long as the trip is identified in the Grantee's original program description and original budget. All other travel, domestic or international, must not increase the total estimated award amount. Trips that have not been identified in the approved budget require the written prior approval of the Grants Officer.

Travel will be in accordance with the US Government Travel Regulations at: www.gsa.gov/federaltravelregulation and the per diem rates set forth at: www.gsa.gov/perdiem.

Travel costs to the grant must be consistent with provisions as established in Appendix A to 2 CFR 220 (J.53)

Property Management Standards

Property standards of this award shall follow provisions as established in 2 CFR 215.30.

Equipment procedures shall follow provision established in 2 CFR 215.34.

Procurement Standards

Procurement standards of this award shall follow provisions as established in 2 CFR 215.40.

Intangible and Intellectual Property

Intangible and intellectual property of this award shall generally follow provisions established in 2 CFR 215.36.

Inventions Report - The Bayh-Dole Act (P.L. 96-517) affords Grantees the right to elect title and retain ownership to inventions they develop with funding under an NRC grant award ("subject inventions"). In accepting an award, the Grantee agrees to comply with applicable NRC policies, the Bayh-Dole Act, and its Government-wide implementing regulations found at Title 37, Code of Federal Regulations (CFR) Part 401. A significant part of the regulations require that the Grantee report all subject inventions to the awarding agency (NRC) as well as include an acknowledgement of federal support in any patents. NRC participates in the trans-government Interagency Edison system (<http://www.iedison.gov>) and expects NRC funding Grantees to use this system to comply with Bayh-Dole and related intellectual property reporting requirements. The system allows for Grantees to submit reports electronically via the Internet. In addition, the invention must be reported in continuation applications (competing or non-competing).

Patent Notification Procedures- Pursuant to EO 12889, NRC is required to notify the owner of any valid patent covering technology whenever the NRC or its financial assistance Grantees, without making a patent search, knows (or has demonstrable reasonable grounds to know) that technology covered by a valid United States patent has been or will be used without a license from the owner. To ensure proper notification, if the Grantee uses or has used patented technology under this award without license or permission from the owner, the Grantee must notify the Grants Officer. This notice does not necessarily mean that the Government

authorizes and consents to any copyright or patent infringement occurring under the financial assistance.

Data, Databases, and Software - The rights to any work produced or purchased under a NRC federal financial assistance award are determined by 2 CFR 215.36. Such works may include data, databases or software. The Grantee owns any work produced or purchased under a NRC federal financial assistance award subject to NRC's right to obtain, reproduce, publish or otherwise use the work or authorize others to receive, reproduce, publish or otherwise use the data for Government purposes.

Copyright - The Grantee may copyright any work produced under a NRC federal financial assistance award subject to NRC's royalty-free nonexclusive and irrevocable right to reproduce, publish or otherwise use the work or authorize others to do so for Government purposes. Works jointly authored by NRC and Grantee employees may be copyrighted but only the part authored by the Grantee is protected because, under 17 USC § 105, works produced by Government employees are not copyrightable in the United States. On occasion, NRC may ask the Grantee to transfer to NRC its copyright in a particular work when NRC is undertaking the primary dissemination of the work. Ownership of copyright by the Government through assignment is permitted under 17 USC § 105.

Records retention and access requirements for records of the Grantee shall follow established provisions in 2 CFR 215.53.

Organizational Prior Approval System

In order to carry out its responsibilities for monitoring project performance and for adhering to award terms and conditions, each Grantee organization shall have a system to ensure that appropriate authorized officials provide necessary organizational reviews and approvals in advance of any action that would result in either the performance or modification of an NRC supported activity where prior approvals are required, including the obligation or expenditure of funds where the governing cost principles either prescribe conditions or require approvals.

The Grantee shall designate an appropriate official or officials to review and approve the actions requiring NRC prior approval. Preferably, the authorized official(s) should be the same official(s) who sign(s) or countersign(s) those types of requests that require prior approval by NRC. The authorized organization official(s) shall not be the principal investigator or any official having direct responsibility for the actual conduct of the project, or a subordinate of such individual.

Conflict Of Interest Standards of this award shall follow provisions as established in 2 CFR 215.42 Codes of Conduct.

Dispute Review Procedures

a. Any request for review of a notice of termination or other adverse decision should be addressed to the Grants Officer. It must be postmarked or transmitted electronically no later than 30 days after the postmarked date of such termination or adverse decision from the Grants Officer.

b. The request for review must contain a full statement of the Grantee's position and the pertinent facts and reasons in support of such position.

c. The Grants Officer will promptly acknowledge receipt of the request for review and shall forward it to the Director, Office of Administration, who shall appoint a review committee consisting of a minimum of three persons.

d. Pending resolution of the request for review, the NRC may withhold or defer payments under the award during the review proceedings.

e. The review committee will request the Grants Officer who issued the notice of termination or adverse action to provide copies of all relevant background materials and documents. The committee may, at its discretion, invite representatives of the Grantee and the NRC program office to discuss pertinent issues and to submit such additional information as it deems appropriate. The chairman of the review committee will insure that all review activities or proceedings are adequately documented.

f. Based on its review, the committee will prepare its recommendation to the Director, Office of Administration, who will advise the parties concerned of his/her decision.

Termination and Enforcement. Termination of this award by default or by mutual consent shall follow provisions as established in 2 CFR 215.60.

Monitoring and Reporting § 215.51

a. Grantee Financial Management systems must comply with the established provisions in 2 CFR 215.21

- Payment – 2 CFR 215.22
- Cost Share – 2 CFR 215.23
- Program Income – 2 CFR 215.24
 - Earned program income, if any, shall be added to funds committed to the project by the NRC and Grantee and used to further eligible project or program objectives.
- Budget Revision – 2 CFR 215.25
 - In accordance with 2 CFR 215.25(e), the NRC waives the prior approval requirement for items identified in sub-part (e)(1-4).
 - The Grantee is not authorized to rebudget between direct costs and indirect costs without written approval of the Grants Officer.
 - Allowable Costs – 2 CFR 215.27

b. Federal Financial Reports

Effective October 1, 2008, NRC transitioned from the SF-269, SF-269A, SF-272, and SF-272A to the Federal Financial Report (SF-425) as required by OMB:

http://www.whitehouse.gov/omb/fedreg/2008/081308_ffr.pdf

http://www.whitehouse.gov/omb/grants/standard_forms/ffr.pdf

http://www.whitehouse.gov/omb/grants/standard_forms/ffr_instructions.pdf

The Grantee shall submit a "Federal Financial Report" (SF-425) on a quarterly basis, for the periods ending 3/31, 6/30, 9/30 and 12/31, or any portion thereof, unless otherwise specified in a special award condition. Reports are due no later than 30 days following the end of each reporting period. A final SF-425 shall be submitted within 90 days after expiration of the award.

Period of Availability of Funds 2 CFR § 215.28

- a. Where a funding period is specified, a Grantee may charge to the grant only allowable costs resulting from obligations incurred during the funding period and any pre-award costs authorized by the NRC.
- b. Unless otherwise authorized in 2 CFR 215.25(e)(2) or a special award condition, any extension of the award period can only be authorized by the Grants Officer in writing. Verbal or written assurances of funding from other than the Grants Officer shall not constitute authority to obligate funds for programmatic activities beyond the expiration date.
- c. The NRC has no obligation to provide any additional prospective or incremental funding. Any modification of the award to increase funding and to extend the period of performance is at the sole discretion of the NRC.
- d. Requests for extensions to the period of performance shall be sent to the Grants Officer at least 30 days prior to the grant/cooperative agreement expiration date. Any request for extension after the expiration date shall not be honored.

Automated Standard Application For Payments (ASAP) Procedures

Unless otherwise provided for in the award document, payments under this award will be made using the Department of Treasury's Automated Standard Application for Payment (ASAP) system < <http://www.fms.treas.gov/asap/> >. Under the ASAP system, payments are made through preauthorized electronic funds transfers, in accordance with the requirements of the Debt Collection Improvement Act of 1996. In order to receive payments under ASAP, Grantees are required to enroll with the Department of Treasury, Financial Management Service, and Regional Financial Centers, which allows them to use the on-line method of withdrawing funds from their ASAP established accounts. The following information will be required to make withdrawals under ASAP: (1) ASAP account number – the award number found on the cover sheet of the award; (2) Agency Location Code (ALC) – 31000001; and Region Code. Grantees enrolled in the ASAP system do not need to submit a "Request for Advance or Reimbursement" (SF-270), for payments relating to their award.

Audit Requirements

Organization-wide or program-specific audits shall be performed in accordance with the Single Audit Act Amendments of 1996, as implemented by OMB Circular A-133, "Audits of States, Local Governments, and Non-Profit Organizations." <http://www.whitehouse.gov/omb/circulars/a133/a133.html> Grantees are subject to the provisions of OMB Circular A-133 if they expend \$500,000 or more in a year in Federal awards.

The Form SF-SAC and the Single Audit Reporting packages for fiscal periods ending on or after January 1, 2008 must be submitted online.

1. Create your online report ID at <http://harvester.census.gov/fac/collect/ddeindex.html>
2. Complete the Form SF-SAC
3. Upload the Single Audit
4. Certify the Submission
5. Click "Submit."

Organizations expending less than \$500,000 a year are not required to have an annual audit for that year but must make their grant-related records available to NRC or other designated officials for review or audit.

III. Programmatic Requirements

Performance (Technical) Reports

a. The Grantee shall submit performance (technical) reports electronically to the NRC Project Officer and Grants Officer as specified in the special award conditions in the same frequency as the Federal Financial Report unless otherwise authorized by the Grants Officer.

b. Unless otherwise specified in the award provisions, performance (technical) reports shall contain brief information as prescribed in the applicable uniform administrative requirements 2 CFR §215.51 which are incorporated in the award.

Unsatisfactory Performance

Failure to perform the work in accordance with the terms of the award and maintain at least a satisfactory performance rating or equivalent evaluation may result in designation of the Grantee as high risk and assignment of special award conditions or other further action as specified in the standard term and condition entitled "Termination".

Failure to comply with any or all of the provisions of the award may have a negative impact on future funding by NRC and may be considered grounds for any or all of the following actions: establishment of an accounts receivable, withholding of payments under any NRC award, changing the method of payment from advance to reimbursement only, or the imposition of other special award conditions, suspension of any NRC active awards, and termination of any NRC award.

Other Federal Awards With Similar Programmatic Activities

The Grantee shall immediately provide written notification to the NRC Project Officer and the Grants Officer in the event that, subsequent to receipt of the NRC award, other financial assistance is received to support or fund any portion of the program description incorporated into the NRC award. NRC will not pay for costs that are funded by other sources.

Prohibition Against Assignment By The Grantee

The Grantee shall not transfer, pledge, mortgage, or otherwise assign the award, or any interest therein, or any claim arising thereunder, to any party or parties, banks, trust companies, or other financing or financial institutions without the express written approval of the Grants Officer.

Site Visits

The NRC, through authorized representatives, has the right, at all reasonable times, to make site visits to review project accomplishments and management control systems and to provide such technical assistance as may be required. If any site visit is made by the NRC on the premises of the Grantee or contractor under an award, the Grantee shall provide and shall require his/her contractors to provide all reasonable facilities and assistance for the safety and convenience of the Government representative in the performance of their duties. All site visits and evaluations shall be performed in such a manner as will not unduly delay the work.

IV. Miscellaneous Requirements

Criminal and Prohibited Activities

- c. The Program Fraud Civil Remedies Act (31 USC §§ 3801-3812), provides for the imposition of civil penalties against persons who make false, fictitious, or fraudulent claims to the Federal government for money (including money representing grant/cooperative agreements, loans, or other benefits.)
- d. False statements (18 USC § 287), provides that whoever makes or presents any false, fictitious, or fraudulent statements, representations, or claims against the United States shall be subject to imprisonment of not more than five years and shall be subject to a fine in the amount provided by 18 USC § 287.
- e. False Claims Act (31 USC 3729 et seq), provides that suits under this Act can be brought by the government, or a person on behalf of the government, for false claims under federal assistance programs.
- f. Copeland "Anti-Kickback" Act (18 USC § 874), prohibits a person or organization engaged in a federally supported project from enticing an employee working on the project from giving up a part of his compensation under an employment contract.

American-Made Equipment And Products

Grantees are hereby notified that they are encouraged, to the greatest extent practicable, to purchase American-made equipment and products with funding provided under this award.

Increasing Seat Belt Use in the United States

Pursuant to EO 13043, Grantees should encourage employees and contractors to enforce on-the-job seat belt policies and programs when operating company-owned, rented or personally-owned vehicle.

Federal Employee Expenses

Federal agencies are generally barred from accepting funds from a Grantee to pay transportation, travel, or other expenses for any Federal employee unless specifically approved in the terms of the award. Use of award funds (Federal or non-Federal) or the Grantee's provision of in-kind goods or services, for the purposes of transportation, travel, or any other expenses for any Federal employee may raise appropriation augmentation issues. In addition, NRC policy prohibits the acceptance of gifts, including travel payments for Federal employees, from Grantees or applicants regardless of the source.

Minority Serving Institutions (MSIs) Initiative

Pursuant to EOs 13256, 13230, and 13270, NRC is strongly committed to broadening the participation of MSIs in its financial assistance program. NRC's goals include achieving full participation of MSIs in order to advance the development of human potential, strengthen the Nation's capacity to provide high-quality education, and increase opportunities for MSIs to participate in and benefit from Federal financial assistance programs. NRC encourages all applicants and Grantees to include meaningful participations of MSIs. Institutions eligible to be considered MSIs are listed on the Department of Education website:

<http://www.ed.gov/about/offices/list/ocr/edlite-minorityinst.html>

Research Misconduct

Scientific or research misconduct refers to the fabrication, falsification, or plagiarism in proposing, performing, or reviewing research, or in reporting research results. It does not

include honest errors or differences of opinions. The Grantee organization has the primary responsibility to investigate allegations and provide reports to the Federal Government. Funds expended on an activity that is determined to be invalid or unreliable because of scientific misconduct may result in a disallowance of costs for which the institution may be liable for repayment to the awarding agency. The Office of Science and Technology Policy at the White House published in the Federal Register on December 6, 2000, a final policy that addressed research misconduct. The policy was developed by the National Science and Technology Council (65 FR 76260). The NRC requires that any allegation be submitted to the Grants Officer, who will also notify the OIG of such allegation. Generally, the Grantee organization shall investigate the allegation and submit its findings to the Grants Officer. The NRC may accept the Grantee's findings or proceed with its own investigation. The Grants Officer shall inform the Grantee of the NRC's final determination.

Publications, Videos, and Acknowledgment of Sponsorship

Publication of the results or findings of a research project in appropriate professional journals and production of video or other media is encouraged as an important method of recording and reporting scientific information. It is also a constructive means to expand access to federally funded research. The Grantee is required to submit a copy to the NRC and when releasing information related to a funded project include a statement that the project or effort undertaken was or is sponsored by the NRC. The Grantee is also responsible for assuring that every publication of material (including Internet sites and videos) based on or developed under an award, except scientific articles or papers appearing in scientific, technical or professional journals, contains the following disclaimer:

"This [report/video] was prepared by [Grantee name] under award [number] from [name of operating unit], Nuclear Regulatory Commission. The statements, findings, conclusions, and recommendations are those of the author(s) and do not necessarily reflect the view of the [name of operating unit] or the US Nuclear Regulatory Commission."