

**U.S. NUCLEAR REGULATORY COMMISSION
NOTICE OF GRANT/ASSISTANCE AWARD**

1. GRANT/AGREEMENT NO. NRC-27-10-513	2. MODIFICATION NO.	3. PERIOD OF PERFORMANCE FROM: 09/30/2010 TO: 9/30/2014	4. AUTHORITY Pursuant to Section 31b and 141b of the Atomic Energy Act of 1954, as amended
5. TYPE OF AWARD <input checked="" type="checkbox"/> GRANT <input type="checkbox"/> COOPERATIVE AGREEMENT	6. ORGANIZATION TYPE Public State-Controlled Institution of Higher ED DUNS: 074754805	7. RECIPIENT NAME, ADDRESS, and EMAIL ADDRESS Norfolk State University Office of Sponsored Programs 700 Park Avenue, MCAR, Suite 601 Norfolk, VA 23504	
8. PROJECT TITLE: Increasing the Recruitment and Retention of Underrepresented Students in STEM majors through Nuclear Safety Research			
9. PROJECT WILL BE CONDUCTED PER GOVERNMENT'S/RECIPIENT'S PROPOSAL(S) DATED See Program Description AND APPENDIX A-PROJECT GRANT PROVISIONS	10. TECHNICAL REPORTS ARE REQUIRED <input checked="" type="checkbox"/> PROGRESS AND FINAL <input type="checkbox"/> FINAL ONLY <input type="checkbox"/> OTHER (Conference Proceedings)	11. PRINCIPAL INVESTIGATOR(S) NAME, ADDRESS and EMAIL ADDRESS Norfolk State University Attn: Dr. Eleanor Hoy Email: elhoy@nsu.edu (757) 823-8579	
12. NRC PROGRAM OFFICE (NAME and ADDRESS) NRC Attn: Tuwanda Smith Office of Small Business & Civil Rights MS: O-3H8 (301) 415-7394 11545 Rockville Pike Rockville, Maryland 20852 tuwanda.smith@nrc.gov	13. ACCOUNTING and APPROPRIATION DATA APPN. NO: 31X0200 B&R NO: 07P-15-5C1-161 JOB CODE: L2284 BOC NO: 4110 OFFICE ID NO: REPA: SDB-27-10-513 FSS: SBC10334	14. METHOD OF PAYMENT <input type="checkbox"/> ADVANCE BY TREASURY CHECK <input type="checkbox"/> REIMBURSEMENT BY TREASURY CHECK <input type="checkbox"/> LETTER OF CREDIT <input checked="" type="checkbox"/> OTHER (SPECIFY) Electronic ASAP.gov (See Remarks in Item #20 "Payment Information")	
15. NRC OBLIGATION FUNDS THIS ACTION <u>\$90.000</u> PREVIOUS OBLIGATION _____ TOTAL <u>\$90.000</u>	16. TOTAL FUNDING AGREEMENT NRC <u>\$360.000</u> RECIPIENT _____ TOTAL <u>\$360.000</u> This action provides funds for Fiscal Year in the amount of <u>See Page Two</u>		
17. NRC ISSUING OFFICE (NAME, ADDRESS and EMAIL ADDRESS) U.S. Nuclear Regulatory Commission Div. of Contracts Attn: M'Lita Carr Mail Stop: TWB-01-B10M Rockville MD 20852 MLita.Carr@nrc.gov			
18. Signature Not Required	19. NRC CONTRACTING OFFICER <u>Sheila Bumpass</u> <u>9/30/2010</u> (Signature) _____ (Date) NAME (TYPED) <u>Sheila Bumpass</u> TITLE <u>Contracting Officer</u> TELEPHONE NO. <u>301-492-3484 Sheila.Bumpass@nrc.gov</u>		
20. PAYMENT INFORMATION Payment will be made through the Automated Standard Application for Payment (ASAP.gov) unless the recipient has failed to comply with the program objectives, award conditions, Federal reporting requirements or other conditions specified in 2 CFR 215 (OMB Circular A110).			
21. Attached is a copy of the "NRC General Provisions for Grants and Cooperative Agreements Awarded to Non-Government Recipients. Acceptance of these terms and conditions is acknowledged when Federal funds are used on this project.			
22. ORDER OF PRECEDENCE In the event of a conflict between the recipient's proposal and this award, the terms of the Award shall prevail.			
23. By this award, the Recipient certifies that payment of any audit-related debt will not reduce the level of performance of any Federal Program.			

TEMPLATE - ADM001

SUNSI REVIEW COMPLETE

OCT 04 2010

ADM001

ACKNOWLEDGED:
Norfolk State University

By: _____

Title: _____

Date: _____

ATTACHMENT A - SCHEDULE

A.1 PURPOSE OF GRANT

The purpose of this Grant is to provide support to the "Increasing the Recruitment and Retention of Underrepresented Students in STEM majors through Nuclear Safety Research."

A.2 PERIOD OF GRANT

1. The effective date of this Grant is September 30, 2010. The estimated completion date of this Grant is September 30, 2014.

2. Funds obligated hereunder are available for program expenditures for the estimated period: September 30, 2010 – September 30, 2014.

A. GENERAL

1. Total Estimated NRC Amount: \$360,000.00
2. Total Obligated Amount: \$ 90,000.00
3. Cost-Sharing Amount: \$0
4. Activity Title: Increasing the Recruitment and Retention of Underrepresented Students in STEM majors through Nuclear Safety Research
5. NRC Project Officer: Tuwanda Smith, Esq.
6. DUNS No.: 074754805

B. SPECIFIC

- RFPA No.: SDB-27-10-513
FFS: SBC10334
Job Code: L2284
BOC: 4110
B&R Number: 07-15-5C1-161
Appropriation #: 31X0200
Amount Obligated: \$90,000.00

A.3 BUDGET

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

	Year 1	Year 2	Year 3	Year 4
Personnel	\$22,055.00	\$22,055.00	\$22,055.00	\$22,055.00
Fringe Benefits	\$ 1,688.00	\$ 1,688.00	\$ 1,688.00	\$ 1,688.00
Travel	\$ 1,000.00	\$ 1,000.00	\$ 1,000.00	\$ 1,000.00
Equipment	\$ 9,100.00	\$ 9,100.00	\$ 9,100.00	\$ 9,100.00
Supplies	\$ 2,463.00	\$ 2,463.00	\$ 2,463.00	\$ 2,463.00
Contractual	\$ 4,000.00	\$ 4,000.00	\$ 4,000.00	\$ 4,000.00
Other(Fellowships)	\$34,300.00	\$34,300.00	\$34,300.00	\$34,300.00
Total Direct Cost	\$74,606.00	\$74,606.00	\$74,606.00	\$74,606.00
Indirect	\$ 15,394.00	\$ 15,394.00	\$ 15,394.00	\$ 15,394.00
Yearly Total	\$90,000.00	\$90,000.00	\$90,000.00	\$90,000.00

All travel must be in accordance with the Norfolk State 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 \$360,000.00 for the four year period.

2. NRC hereby obligates the amount of \$360,000.00 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

Increasing the Recruitment and Retention of Underrepresented Students in STEM Majors Through Nuclear Safety Research

PROJECT DESCRIPTION

Norfolk State University (NSU) is a Historically Black University that serves approximately 6993 students. Of this number, 2,045 are currently enrolled in programs in the departments of Biology, Chemistry, Computer Science, Engineering, Mathematics, Technology and Physics. These departments are in the College of Science, Engineering and Technology. The university recognizes the absolute necessity to prepare students to be scientific researchers who will impact the technology of the future. Additionally, the university is in agreement with the Nuclear Regulatory Commission (NRC) and recognizes that there is an underrepresentation of minorities in the fields of Science, Technology, Engineering, and Mathematics (STEM).

Investigators of this proposal have developed a program designed to address this issue. In an effort to cultivate and expose the bright, often untapped minds of STEM majors enrolled at Norfolk State University to real scientific research, this proposal will merge mentorship, recruiting initiatives, and scholarly activities with a by-product that positively impacts nuclear safety. Long term benefits will be improved recruitment, retention, and graduation rates among minority STEM majors.

The Proposed Project

The project will proceed in four phases of twelve months each. Each of the phases will incorporate extensive research conducted by graduate students, investigators, other faculty, and the content subject matter expert. Each phase will also seek to bring new students into Norfolk State University STEM programs through extensive outreach. The research team, under the guidance of the research leadership will initially develop a computer supported video motion analysis tool and then begin implementation and employment of the instrument. A summer seminar will present STEM curricula and this project to scholarship recipients, largely comprised of underrepresented minorities in STEM disciplines.

From a technical standpoint, two currently available research instruments; Conditioned Head Turn Technique and Video Motion Detection will be used. Conditioned Head Turn Technique is used by researchers to analyze infant response to auditory stimulus. Video Motion Detection makes use of digital video detection algorithms to analyze movement in video images. This latter technology has been employed in a wide range of applications including security, traffic safety, and medicine. The focus of the proposed project is to merge these two methodologies into one field of inquiry which is peculiarly appropriate in gauging the health of those persons engaged in work in the nuclear industry. The nuclear industry will gain by use of the tool in that the effect of long term exposure to low level radiation will be better understood.

Discussion of Head Turn

Conditioned Head Turn Technique (CHTT) originally referred to simply as "Head turn" was developed for use in detecting the ability of infants to recognize and react to subtle phonetic changes in language. Researchers postulated that children who develop in environments that embody rich phonetic dynamics will develop language at a different rate and to a different extent from those infants whose language environment does not include such phonetic dynamics. The research team developed a measurement tool described by B. and E. Hoy (2009). The research identified a connection between phonetic dynamic richness of the language peculiar to the adult members of the nurturing environment and the pace with which the participant developed language skills.

Use of this tool has expanded but the character of the tool remains largely unchanged from its initial configuration which is now some six years old. This author suggested enhancements to the tool based upon implementation of laser technology. The suggested enhancement might be referred to as Second Generation Head Turn. Even that enhancement has benefitted from the march of technology and a third generation enhancement is now contemplated. With this present project, the researchers will take the tool to a new level in making use of the Video Movement Detection regime discussed later. The third generation technology will provide all of the improvements of generation two (Hoy & Hoy, 2009) and in addition will reduce the discomfort and distraction inherent in first and second generation Head Turn.

Discussion of Video Motion Detection

The process of Video Motion Detection (VMD) involves the capturing of a video image or sequence using a digital video camera, presenting that image or sequence to a computer upon which special video processing software has been installed and then using that software to analyze the video sequence in a way that announces to the user that motion has occurred. In most applications, the process involves a frame to frame comparison in which motion is detected as a change in the video from one frame to the next. Numerous algorithms already exist which will detect motion. The process has been applied to detecting changes in participant posture, motion studies, shifting of structures in mineral mines, facility security and many other tasks.

In the initial iteration of CHTT, motion of the participant was detected by the human who was viewing the participant during the test. This meant that the test administrator was required to maintain close scrutiny of the participant at all times and declare whether or not the head turn event had occurred based solely upon their judgment of the observation. The second generation head turn relieved the test administrator of these requirements because movement was captured and analyzed automatically by the test instrument.

The ability to turn these functions over to test instrument control is still present in generation three. The rich data provided in generation two is also still available in generation three.

Possible outcomes from the merging of the technologies

There are several desirable outcomes from the research that seeks to merge the technologies. The over-riding gain from the research is to expand the utility of CHTT through the employment of Video Motion Detection. The resulting instrument will provide more data at much higher levels of accuracy than existing models. This additional richness will permit the testing of motion phenomena not presently measurable. Not the least of these applies to the psycho-physiological health of persons working in the nuclear field.

Of equal importance is the provision of opportunities for undergraduate, graduate, and high school scholars. At the graduate level, research team members will gain in their ability to perform scientific inquiry. Conducting research in their chosen field will add not only to their own personal development but also to the development of new knowledge in the field of nuclear health. Financial remuneration for their work will be helpful in defraying the cost of their education.

Undergraduate scholarship recipients will be introduced to the project at least once each semester and be kept abreast of the continuing process of this research project. They will gain an appreciation for the rigors of scholarly inquiry and will experience the professionalism exhibited by the research team guided by the research leaders. They will witness the behaviors of those undergraduate students who are now filling the positions to which they aspire.

Long Term Goals

An increase in the number of under-represented students and faculty exposed to research in the field of Nuclear Safety.

Development of critical thinking and problem solving skills in students through nuclear safety research.

The development of a measurement instrument and test procedure for analyzing the effects of long term exposure to low level radiation.

Greater recruitment and retention of underrepresented students and faculty in STEM majors.

Wide dissemination in the national and international research community of the capabilities of a VMD Instrument Lab.

Project Objectives

To provide scholarships for academically talented students.

To provide access to student support programs that have been proven to increase and retain students entering STEM disciplines.

To reach out to high schools and other sources of potential students in a way to target the under-represented population.

To develop, implement and provide for continued support of the measurement instrument

To add to the body of knowledge associated with the effects of long term exposure to low levels of gamma radiation.

To suggest other disciplines in which the instrument can be employed.

Phases of the Project

Phase I (October 1, 2010 - September 30, 2011)

Phase I will commence with the announcement of the award and the availability of start-up funding. The fall semester will be spent planning and organizing events for the spring semester. Equipment will be purchased after consultations with the PI, Co-PI and subject matter expert. The PI and Co-PI will formulate a strategy by which a Computer Science graduate student will assist in the establishment of the Head Turn Lab. The administrative assistant will be selected at this time. The research team will continue their studies throughout the academic year.

Scholarship recipients will be selected in the Spring 2010 semester, with scholarships being awarded for the Fall, 2011 semester. A page on the Norfolk State University website will be established introducing and highlighting this project. Educational materials will be purchased. Background research relative to Head Turn and radiation safety will be ongoing throughout this phase.

Outcomes from Phase I:

A comprehensive understanding of the research project, completion of background research, and a thorough literature review by all involved which will be a point of departure for Phase II research;

Fully functioning graduate student and faculty research team;

Identification and approval of physical space on the campus of the Norfolk State University which will be dedicated to the project;

Purchase of equipment for lab;

Complete lab prototype;

Submission of an article for publication in a peer review journal;

Awarding of the first scholarships to qualified STEM scholars for the fall, 2011 academic year;

Selection and hiring of a part time administrative assistant; and

Travel to a selected conference (to be determined) for the purpose of presenting research and ascertaining possible avenues for publication of research findings.

Phase II (October 1, 2011 - September 30, 2012)

Phase II will kick off with a review and reporting of progress achieved in Phase I and the planning of research activities for Phase II. At this point in the project it will be appropriate to introduce the project to members of the Psychology structure within Norfolk State University. A functioning lab will be commissioned during this phase, requiring significant effort from the PI, Co-PI, senior faculty, and content subject matter experts. Scholarship recipients will be involved in the lab throughout the academic year. The psychology subject matter expert will strategize the formulation of baseline head turn parameters in the population.

Outcomes from Phase II:

Reporting of results from Phase I;

Addition of a consultant from the field of psychology to the research leadership;

Strategizing of Head Turn Test;

Commencement and continuous refinement of the VMD lab and the test instrument;

Continuing but unfixed involvement in research project for all undergraduate scholarship recipients;

Awarding of the second round of scholarships to qualified STEM scholars for the fall, 2012 academic year. These scholars will be required to attend all associated meetings of the research teams throughout the academic year; and

Travel to a selected conference (to be determined) for the purpose of presenting research and ascertaining possible avenues for publication of research findings.

Phase III (October 1, 2012 - September 30, 2013)

Phase III will kick off with a review and reporting of progress achieved to date. In Phase III, the results of the research completed to this point will find their effect in the actual development of the measurement instrument.

Outcomes from Phase III:

Reporting of results from Phase II;

Continued refinement of the Head Turn Test;

Continuous refinement of the VMD lab and the test instrument;

Continuing but unfixed involvement in research project for all undergraduate scholarship recipients;

Awarding of the third round of scholarships to qualified STEM scholars for the fall, 2013 academic year. These scholars will be required to attend all associated meetings of the research teams throughout the academic year; and

Travel to a selected conference (to be determined) for the purpose of presenting research and ascertaining possible avenues for publication of research findings.

Phase IV (October 1, 2013 - September 30, 2014)

Phase IV is the final phase of the project in its inaugural iteration. During this phase, researchers will become intimately familiar with the techniques and modalities application to the VMD Instrument Lab. A clear picture may emerge of the parameters which may be anticipated when testing a control group sample and a test group sample. Indeed a solid database of results gleaned from a demographically segmented population may be assembled to suggest the normative performance. This normal data could be used as a point of departure for comparison with the test group.

Outcomes from Phase IV:

Reporting of results from Phase III;

Continued administration of the Head Turn Test;

Continuous refinement of the VMD lab and the test instrument;

Continuing but unfixed involvement in research project for all undergraduate scholarship recipients;

Awarding of the fourth round of scholarships to qualified STEM scholars for the fall, 2014 academic year. These scholars will be required to attend all associated meetings of the research teams throughout the academic year; and

Travel to a selected conference (to be determined) for the purpose of presenting research and ascertaining possible avenues for publication of research findings.

Applications in Technology

The project will require that students explore engineering and technology methodologies that will allow for the accurate and precise measurement of head positions populations that range in age from roughly six months to mortality. Such measurement methodologies have not yet been developed. In addition, computer science researchers will examine the features of an optimal graphic user interface for controlling and managing the instrument.

Applications in Psychophysiology

Researchers in this field have tested a connection between sensitivity to subtle phonetic changes and the development of language. To this point little is known about the manner in which human sensitivity to such phonetic changes is affected by factors other than the phonetic dynamic richness of the host language. The project will open an entirely new field of inquiry in an attempt to measure any change in this human sensitivity of an individual who has been exposed to long term, low level, radiation.

Opportunities for Future Research

The initial testing will involve a control group of workers at a nuclear facility who never have access to areas in which low level radiation is known to be present. The test group will include only those individuals who are exposed to gamma radiation.

Relative to future research, this project can be expanded such that the control and test groups are segmented demographically. This will increase the resolution and precision of predictions which flow from the implementation of the test instrument. Additional future research will expand to include not only the radiation workers, but worker's offspring.

Scholarly Impact on the Host Institution

Graduate students, along with faculty members and subject matter experts, will comprise the research team. This team comprises a learning community that promotes academic excellence. One major focus of this research will be the activities associated with the VMD Measurement Instrument. Graduate students will be required to associate knowledge gained in the VMD lab with theory and practical applications taught in the classroom. Subsequently, lessons learned in the classroom will be transferred and documented throughout the research period. Much value is to be gained from the fact that the research is cross disciplinary. It will involve the computer science, psychology, and electronics disciplines.

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 2 CFR 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 scholarships and fellowships as well as other 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 SBCR grant awards, in addition to the customary performance progress report requested on the SF-PPR, SF-PPR-B, and SF-PPR-E forms, SBCR requires the following metrics to be reported on by the awardees as follows:

Fellowship Awards

1. The number and percentage of STEM graduates who take a job in a STEM or STEM-related field;
2. The number and percentage of students who participate in scientific activities or research experiences in industry, government, or the not-for-profit sector;
3. The number and percentage of students who present research findings at scientific meetings or student science exchange events;
4. The number of students who participate in interdisciplinary research or educational experiences;
5. The number of students who engage in research experiences in an academic, government, or non-for-profit industry;
6. The number and percentage of graduate and postdoctoral fellowships who complete a STEM graduate or postdoctoral program;
7. The number and percentage of program completers who are employed in a STEM or STEM-related field;
8. The number and percentage of students who participate in scientific activities or research experiences in industry, government, or the not-for-profit sector. This metric will include internships;
9. The number and percentage of students who present research findings at scientific meetings or student science exchange events.

Service Agreement

A signed service agreement and resume are required for all student recipients of scholarships or fellowships funded by the US Nuclear Regulatory Commission. The Service Agreement is attached to the Terms and Conditions.

§ 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.

c. The Office of Human Resources requires the submission of the semi-annual progress report on the SF-PPR, SF-PPR-B, and the SF-PPR-E forms. The submission for the six month period ending March 31st is due by April 30th. The submission for the six month period ending September 30th is due by October 31st.

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

a. 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.)

- b. 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.
- c. 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.
- d. 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."

**2010 Trade School Scholarship Program
Service Agreement**

1. This service agreement is required for all student recipients of scholarships (hereinafter referred to as the "recipient") funded by the U.S. Nuclear Regulatory Commission (NRC) through the _____ (name of institution).
2. This agreement confirms the recipient's obligations to maintain satisfactory academic progress and serve 6 months in nuclear-related employment for each full year of academic support. The employment may be with nuclear-related industry, State agencies, Department of Energy laboratories, the NRC or other Federal agencies, or academia in the recipients' sponsored fields of study.
3. The scholarship recipient must:
 - a. remain matriculated in the degree program for the field of study for which the scholarship was approved,
 - b. maintain satisfactory academic progress in the recipient's field of study, and
 - c. maintain a course load of at least 12 credit hours per semester as a full-time student in good standing.
4. If a recipient fails to maintain satisfactory academic progress, the scholarship will be terminated and the recipient could be obligated to repay the NRC the full amount of the scholarship/fellowship.
5. If a recipient receives any subsequent scholarship(s) through this program, the service obligation periods will be consecutive.
6. At the discretion of the NRC, the service obligation period may be delayed to allow the recipient to continue a subsequent degree program immediately following that sponsored under this program. For example, if a recipient receives a scholarship to earn a baccalaureate degree, he/she may request and be permitted to delay fulfilling their service obligation until after they complete a subsequent terminal degree program. Any such requests must be made to the NRC before a student enrolls in a subsequent degree program. If a student enrolls in a subsequent degree program before or without NRC approval, and the NRC does not subsequently approve the request, the NRC will not be held liable for any expenses incurred to dis-enroll, or for failure to otherwise meet the terms of this service obligation. Recipients only incur a service obligation to NRC for funded periods of study.
7. If the student receives no employment offers or does not accept any of the offers received, the student is not relieved of the service obligation, unless, pursuant to this service agreement, the student applies for and receives a waiver from the NRC. Implicit in the waiver request is data or explanation by the student that efforts to secure employment in a nuclear-related field were undertaken. This can be in the form of job searches, referrals, etc. Absent a waiver from the NRC, rejection of one or more job offers could trigger the service agreement obligation.

8. If a recipient voluntarily leaves the employment of an approved employer in a field related to nuclear power during the period of obligated post-academic service, the recipient may immediately become liable to the U.S. Government for repayment of the entire amount of the assistance provided under the scholarship for which the service obligation has not been fulfilled.
9. By accepting this scholarship/fellowship, I agree to provide the NRC with current contact information (address, telephone, email), and employment information, subject to the provisions of the Privacy Act, for as long as I remain under obligated service. This information will be used solely for the purposes of verifying appropriate nuclear related employment in compliance with the service obligation requirements of this service agreement. In accordance with the Privacy Act, providing this information is voluntary; however, failure to do so may result in removal from the scholarship/fellowship program and/or repayment of all scholarship/grant money received. Contact information should be reported to: eduscholar@nrc.gov.
10. By signing this agreement, the recipient certifies that he or she has read this agreement and agrees to all of the obligations it entails.

Scholarship Recipient

Date

Institution Program Coordinator

Date

NRC Office of Human Resources

Date