



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

July 1, 2016

Sean Agnew, Ph.D.
The Rector and Visitors of the
University of Virginia
P.O. Box 400195
Charlottesville, VA 22904

VIA Electronic Mail
agnew@virginia.edu

SUBJECT: GRANT NO: NRC-HQ-84-16-G-0037

Dear Dr. Agnew:

Pursuant to the authority contained in the Federal Grant and Cooperative Agreement Act of 1977, as amended, and the Atomic Energy Act of 1954, as amended, the Nuclear Regulatory Commission (NRC) hereby awards to The Rector and Visitors of the University of Virginia (hereinafter referred to as the "Grantee" or "Recipient"), the sum of \$400,000.00 to provide support for "Jump Start in Nuclear Materials Education and Research Fellowship Program at the University of Virginia" entitled "Program Description."

This award is effective July 1, 2016 and shall apply to expenditures made by the Recipient furtherance of program objectives during the period beginning with the effective date of July 1, 2016 and ending June 30, 2020.

This award is made to the Recipient on condition that the funds will be administered in accordance with the terms and conditions as set forth in Attachment A (the Schedule); Attachment B (the Program Description); and Attachment C (the Standard Terms & Conditions); all of which have been agreed to by your organization.

Based on the pre-award compliance review conducted by NRC's Small Business and Civil Rights Office (SBCR), your institution is placed in a periodic status pending resolution of concerns raised during the review. Within 60 days, SBCR will conduct a periodic review to ensure compliance with applicable Civil Rights statutes. Your cooperation with SBCR is essential. The continued eligibility of Federal financial assistance is conditioned upon compliance with anti-discrimination regulations.

Please ensure individuals selected as beneficiaries of support under this grant meet the legal requirements consistent with Supreme Court Decisions including *Fisher*, *Gratz*, and *Gutter*.

Please sign the enclosed grant to acknowledge your receipt of the award, and return as a pdf file to Ms. M'Lita Carr by email at MLita.Carr@nrc.gov.

Sincerely yours,

Erika Eam

Erika Eam
Grants Officer
Resources & Grants Team
Acquisition Management Division

Attachments:
Attachment A – Schedule
Attachment B – Program Description
Attachment C – Standard Terms and Condition

TEMPLATE - ADM001

SUNSI REVIEW COMPLETE

ADM002

Grant and Cooperative Agreement

CHOOSE ONE:

☐ COOPERATIVE AGREEMENT

☒ GRANT

 CHOOSE ONE: ☒ EDUCATION ☐ FACILITIES ☐ RESEARCH ☐ SDCR ☐ TRAINING

1. GRANT/COOPERATIVE AGREEMENT NUMBER NRC-HQ-84-16-G-0037		2. SUPPLEMENT NUMBER		3. EFFECTIVE DATE 07/01/2016		4. COMPLETION DATE	
5. ISSUED TO NAME/ADDRESS OF RECIPIENT (No., Street, City/County, State, Zip) RECTOR VISITOR OF THE UNIVERSITY OF VIRGINIA PO BOX 400195 CHARLOTTESVILLE VA 22904				6. ISSUED BY US NRC - HQ Mailing Address: ACQUISITION MANAGEMENT DIVISION MAIL STOP TWFN-5E03 WASHINGTON DC 20555-0001			
7. TAXPAYER IDENTIFICATION NO. (TIN)				9. PRINCIPAL INVESTIGATOR/ORGANIZATION'S PROJECT OR PROGRAM MGR. (Name & Phone) Dr. Sean Agnew agnew@virginia.edu; 434-924-0605			
8. COMMERCIAL & GOVERNMENT ENTITY (CAGE) NO.							
10. RESEARCH, PROJECT OR PROGRAM TITLE Jump Start in Nuclear Materials Education and Research Fellowship Program at the University of Virginia							
11. PURPOSE See Schedule							
12. PERIOD OF PERFORMANCE (Approximately) 07/01/2016 through 06/30/2020							
13A.		AWARD HISTORY		13B.		FUNDING HISTORY	
PREVIOUS		\$0.00		PREVIOUS		\$0.00	
THIS ACTION		\$400,000.00		THIS ACTION		\$400,000.00	
CASH SHARE		\$0.00		TOTAL		\$400,000.00	
NON-CASH SHARE		\$0.00					
RECIPIENT SHARE		\$0.00					
TOTAL		\$400,000.00					
14. ACCOUNTING AND APPROPRIATION DATA 2016-X0200-IUPMRU-84-84D002-52-S-164-T8458-4110							
PURCHASE REQUEST NO.		JOB ORDER NO.		AMOUNT		STATUS	
OCHCO-16-0186							
15. POINTS OF CONTACT							
	NAME		MAIL STOP	TELEPHONE	E-MAIL ADDRESS		
TECHNICAL OFFICER	NANCY V. HEBRON-ISREAL		3WFN/3AF12	301-287-0718	Nancy.Hebron-Isreal@nrc.gov		
NEGOTIATOR							
ADMINISTRATOR	M'LITA R. CARR			(301) 415-6869	MLITA.CARR@nrc.gov		
PAYMENTS							
16. THIS AWARD IS MADE UNDER THE AUTHORITY OF: Pursuant to Section 31b and 141b of the Atomic Energy Act of 1954, as amended.							
17. APPLICABLE STATEMENT(S), IF CHECKED: <input type="checkbox"/> NO CHANGE IS MADE TO EXISTING PROVISIONS <input type="checkbox"/> FDP TERMS AND CONDITIONS AND THE AGENCY-SPECIFIC REQUIREMENTS APPLY TO THIS GRANT				18. APPLICABLE ENCLOSURE(S), IF CHECKED: <input type="checkbox"/> PROVISIONS <input type="checkbox"/> SPECIAL CONDITIONS <input type="checkbox"/> REQUIRED PUBLICATIONS AND REPORTS			
UNITED STATES OF AMERICA				COOPERATIVE AGREEMENT RECIPIENT			
CONTRACTING/GRANT OFFICER M'LITA R. CARR		DATE 06/30/2016		AUTHORIZED REPRESENTATIVE		DATE	

Grant and Cooperative Agreement

ITEM NO. (A)	ITEM OR SERVICE (Include Specifications and Special Instructions) (B)	QUANTITY (C)	UNIT (D)	ESTIMATED COST	
				UNIT PRICE (E)	AMOUNT (F)
	CFDA Number: 77.008 DUNS Number: 065391526 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 200. Payment: ASAP GRANT FUNDS REIMBURSEMENT SYS US TREASURY Period of Performance: 07/01/2016 to 06/30/2020				

Attachment A - Schedule**A.1 PURPOSE OF GRANT**

The purpose of this Grant is to provide support to the "Jump Start in Nuclear Materials Education and Research Fellowship Program at the University of Virginia" as described in Attachment B entitled "Program Description."

A.2 PERIOD OF GRANT

1. The effective date of this Grant is 07/01/2016. The estimated completion date of this Grant is 06/30/2020.

2. Funds obligated hereunder are available for program expenditures for the estimated period: 07/01/2016 – 06/30/2020.

A. GENERAL

- | | |
|--------------------------------|---------------------------------------------------------------------------------------------------------------|
| 1. Total Estimated NRC Amount: | \$400,000.00 |
| 2. Total Obligated Amount: | \$400,000.00 |
| 3. Cost-Sharing Amount: | \$0.00 |
| 4. Activity Title: | Jump Start in Nuclear Materials
Education and Research Fellowship
Program at the University of Virginia |
| 5. NRC Project Officer: | Nancy Hebron-Isreal |
| 6. DUNS No.: | 065391526 |

A.3 BUDGET

Revisions to the budget shall be made in accordance with Revision of Grant Budget in accordance with 2 CFR 200.

	Year 1	Year 2	Year 3	Year 4
Personnel	\$43,680.00	\$45,427.00	\$47,244.00	\$49,134.00
Fringe Benefits	\$5,487.00	\$5,762.00	\$6,050.00	\$6,352.00
Other (stipend/tuition)	<u>\$16,087.00</u>	<u>\$16,885.00</u>	<u>\$17,724.00</u>	<u>\$18,604.00</u>
Total Direct Cost	\$65,254.00	\$68,074.00	\$71,018.00	\$74,090.00
Indirect Cost (58%)	<u>\$28,583.00</u>	<u>\$29,756.00</u>	<u>\$30,977.00</u>	<u>\$32,248.00</u>
Total Cost	\$93,837.00	\$97,830.00	\$101,995.00	\$106,338.00

A.4 AMOUNT OF AWARD AND PAYMENT PROCEDURES

1. The total estimated amount of this Award is \$400,000.00 for the four year period.
2. NRC hereby obligates the amount of \$400,000.00 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 Grants 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

1. Describe the proposed program.

The “Jump Start” program will award 2 graduate students on average for each of 4 years, \$50K toward their stipend, tuition and fees, from the \$400K total requested fellowship grant moneys. To make the fellowships more attractive to the graduate students themselves, the faculty advisors and/or departments will be able to “top off” the student’s stipend from other sources, increasing the stipend from the normal level of \$21-24K per year up to \$28-34K per year for fellowship recipients. The minimum stipend level of \$28K is intentional. In order for cost accounting at the university to permit a funding source to pay tuition dollars, they require at least \$7K of the student’s annual stipend be paid by that source. The budgeted “research-only” tuition amount will not be sufficient to cover all the student’s tuition, if they are taking classes. By permitting this cost-share on the part of the advising faculty member and/or department, we achieve multiple goals. First, we make this fellowship program financially attractive to the students. Second, we require the faculty advisors and/or department to leverage their funds, which helps to insure they are invested in directly in the program. Third, we insure that all tuition expenses incurred by the student are paid on their behalf.

2. Describe the recruitment activities.

The faculty participants in the program will make announcements in their undergraduate and graduate courses regarding this great opportunity. We hope this will encourage some undergraduate students to consider graduate education in this field. For current graduate students, we will be working to identify worthy candidates who are already involved in nuclear-related projects, or who may like to transition into such a project at a natural point in their graduate career. Finally, we will send post cards to faculty and departments around the country to let them know about the program and the opportunity, which exists at UVA for their undergraduate or M.S. students who want to pursue graduate research in nuclear materials.

In the context of graduate student recruiting, we will place announcements of the “Jump Start” fellowship program on the SEAS website, the websites of participating departments (so far they are Materials Science and Engineering and Mechanical and Aerospace Engineering, but we are presently reaching out to members of the Systems, Electrical and Computer, and Chemical Engineering departments), as well as individual faculty websites.

In the final stages of recruiting, we will target domestic and permanent resident applicants by making telephone and e-mail inquiries about their potential interest in nuclear-related research topics. For excellent candidates, the departments will work with the faculty participants to make special “Jump Start” fellowship offers to incoming graduate students. We think this may be particularly attractive to top Masters of Science applicants, who may not be assured of financial support otherwise. At this stage, we believe the internet will be the most potent avenue through which we will be able to reach potential students. However, we will survey the student fellows to find out how they learned about the “Jump Start” program, in order to refine future recruitment.

3. Describe the selection process and state the management structure.

There will be two parallel processes. The most important is designed for recruitment of new graduate students, since a goal of the program is to enlarge the graduate student pool working in nuclear materials, but there is a parallel process for funding current graduate students. Both processes will ultimately involve a short (1-2 page) proposal submitted by the advising faculty member to the fellowship application review panel

comprised of the PI, the Co-PI, and 1-3 other faculty members who will rotate from year to year. Most of these panel members will be selected from the faculty listed below, though other members may be recruited. The panel will evaluate the proposals received. The evaluation criteria will be:

- A. **Quality of the student applicant identified** – For new students, it will be based upon their application materials including the statement of purpose to determine if they are well-aligned with the goals of the program. For current students, in addition to their original application materials, they will be evaluated on their performance in research and courses to date.
- B. **Scientific quality of the proposal** – akin to “technical merit” criterion of the NSF proposal review familiar to most of us in academic science and engineering research. For new applicants, the faculty mentor will draft the proposal. For current students, they will be required to write the proposal with guidance from a faculty mentor as a means of mentoring them in this critical part of research & development (i.e. selling our ideas to sponsors, whether they are clients, capital investors, corporate leaders, foundations, government agencies, or academic institutions).
- C. **“Top off” strategy** – The advisor is responsible for securing the funds necessary to “top-off” student stipends (minimum of \$7K to bring stipend to \$28K) plus additional tuition required. The funds may come from research grants, local discretionary funds, or dept. sources.
- D. **Panel assessment of prospects** – of great results during the term of the fellowship and/or prospects of the advisor obtaining additional research funding in the technical space proposed, such as identification of solicitations and other follow-on proposal plans. A demonstrated need for preliminary results could strengthen the case.
- E. **Past performance** – This criterion will be added to the above 4, if the student and/or advisor has received a fellowship in previous years.

The proposals will be graded on a GPA-style 4.0 scale, in each of the criteria above (double weight placed on the first criterion, **A**, to ensure the most qualified students are selected), and a composite score determined for each panel member. The average composite score will be employed to rank applications, and final award decisions must be ratified by a majority vote of the panel members.

4. Identify an evaluation plan that will provide information on the effectiveness of the project in attracting, preparing and retaining individuals in nuclear careers.

A database will be created and maintained with information on each student receiving awards through the “Jump Start” fellowship grant. The information will include both course study and research plans with follow through to the thesis or dissertation. Upon graduation, the students will be tracked to follow their career paths and to ascertain the impact on the nuclear field. We propose the student study and research plans be presented by the PI or Co-PI each year to the VNEC Board to provide external advice and recommendations for improvement. This will also provide students with access to possible job opportunities in the nuclear field.

5. Provide a schedule of tuition fees and other pertinent costs for students who would be participating in this program.

Please see the attached budget and justification for the overall annual expenses of the students in the program. In detail, the tuition and fees that are charged to grants such as this are charged at the beginning of each semester and summer, in August, January, and June, respectively. Similarly, the annual health insurance benefits of the students are paid annually, in August. Each department in SEAS has a graduate student records

administrator who insures the pay sources for the expenses of each graduate student are identified and expenses are being paid on-time. The standard grant management system, managed by the Office of Sponsored Programs (OSP), at the University of Virginia will be in charge of disbursing funds from the "Jump start" fellowship grant to the various channels required to pay tuition, health insurance, and stipend (e.g., to the Bursar and payroll systems – from which automatic deposits are made to student recipients' bank accounts each month).

6. State whether or not these scholarships or fellowships are contemplated as an integrated element of a State or regional strategic plan including innovative approaches covering such arrangements as consortia.

We do not have formal agreements with outside organizations in association with this fellowship program, at this time. However, the University of Virginia is a member of the Virginia Nuclear Energy Consortium (VNEC), see attached letter of support. VNEC is a non-profit organization that is seeking to advance the interests of the nuclear power sector by building effective collaborative relationships between government, industry, and academia. Other university members include Virginia Tech and Virginia Commonwealth University, and industrial members are AREVA, BWX Technologies Inc., Dominion, Flowserve Inc., GE-Hitachi Nuclear Energy, and Newport News Shipbuilding (a division of Huntington Ingalls Industries). We will be working with VNEC to identify avenues for collaboration and sustainable funding to build upon the Jump Start fellowship program.

In addition, we are founding university partners with the Center for Advanced Engineering and Research (CAER), in the New London Technology Park located in Bedford County, Virginia. An extensive list of the university, industry and government partners can be found here: <http://caer.us/partners/>. Prof. Barry W. Johnson of the Department of Electrical and Computer Engineering here at UVA was part of the founding team, which developed the vision behind CAER, we are intimately familiar with the unique research facilities and capabilities housed at the CAER, including the Integrated System Test (IST) facility and the Integrated Control Room and Operator Performance Laboratory (INCONTROL). Pending funding decisions outside of our immediate control, the CAER will soon open as a research facility open to industry, government, and academic entities.

Given that it is only 80 miles from the UVA campus, we are excited to potentially use this facility to perform tests of new sensor technologies on the fully-functioning thermohydraulic loop represented by the IST facility. Computational fluid mechanics modelers may also like to verify their calculations with data from the already instrumented IST facility. Systems, electrical, and computer engineers, along with computer scientists who may like to perform simulations on the IST and INCONTROL are welcome to propose fellowship concepts to the panel. These collaborations would be favorably reviewed, as synergy with these fields is critical to many aspects of the nuclear and nuclear materials industries.

7. State any arrangements with other non-Federal entities that provide additional support, typically in the form of cost sharing or matching, to the goals of this grant.

Cost-sharing is taking place in two ways. **First**, as described above, individual advisors (or departments) of fellowship recipients are required to provide additional funds to raise the recipient stipend from the normal rate to an elevated rate commensurate with the honor of receiving the award and commensurate with the service agreement terms

outlined in the FOA. A list of faculty from the Materials Science and Engineering (MSE) and Mechanical and Aerospace Engineering (MAE) who have expressed interest in participating in the program are listed below, along with their background and interest in nuclear materials research. The **second** form of cost-sharing pertains to a curriculum development effort in the area of nuclear materials, in order to enhance the experience of the "Jump Start" fellows and to build a robust nuclear materials education and research program.

1. **PI, S.R. Agnew (MSE)** – PhD MSE, Northwestern ('98), BS MechE ('94), Cornell U. Physical and mechanical metallurgy of nuclear materials. Has analyzed Ni-base superalloys employed in reactor construction, including welds subject to stress corrosion cracking. Sponsored by the Y-12 National Security Complex (NSC) to explore the effects of thermal residual stresses and hydrogen on the mechanical behavior of α -U. Now under contract to develop experimentally validated models of processing α -U foil and U – Mo bulk castings.
2. **J.M. Fitz-Gerald (MSE)** – PhD ('98), MS ('95) MSE, U Florida ('98), BS MechE, Lowell ('93). Laser processing of materials, including welding, surface modification, and pulsed laser deposition of thin-films and coatings. Recently proposed exploration of novel coating alloys and strategies to overcome fuel cladding chemical interaction (FCCI) in fast reactor fuel.
3. **P. Hopkins (MAE)** – PhD, MechE, UVA ('08), B.S. MechE & Physics ('04) Research includes experimental and theoretical efforts focusing on short-pulsed interactions with solids and resulting electron, photon, and phonon interactions in nanosystems, emphasis on nanoscale energy transport. The overarching goal of our research group is to study thermal transport processes on the nanoscale, and how they affect performance and reliability on the device scale. Current ambitions include development of sensor materials for in-reactor non-destructive evaluation of thermal conductivity for "health monitoring" of various systems.
4. **J.R. Scully (MSE)** – PhD ('87), MS ('83), BS (80), MSE, Johns Hopkins U, Active researcher in the areas of corrosion, stress corrosion cracking, and physical metallurgy of nuclear materials, including current consulting projects on long term dry storage of spent fuel and past experience with the Yucca Mountain project. Has served on numerous national and international panels: Review of Corrosion Issues for Radioactive Waste Management Organization of UK (RWMO) ('14); of Copper Corrosion for Swedish Nuclear Radiation Safety Authority (SSM) ('11-'12) and for RWMO of Canada ('12-'13); DOE Advisory Committee for Nuclear Facilities Safety: - Structural Integrity of Defense Nuclear Reactors at Savannah River, SC, and Hanford, WA. ('89); DOE International Waste Package Degradation Elicitation Expert Panel Member: Yucca Mountain (TSPA-97 Waste Package Expert Elicitation Project) ('97-'98); Advisor to U.S. Nuclear Waste Technical Review Board ('97); DOE Nuclear Energy Research Initiative- Review Panel and Consultant on Corrosion of Spent Nuclear Fuels in the Interim Fuel Storage Facility ('99).
5. **H.N.G. Wadley (MSE)** - PhD Physics ('79) & BS Chemical Physics ('74) U of Reading, UK. Has served on NRC Panel on Materials Process Control and NRC National Materials and Manufacturing Board. Broad research interests in the design/discovery of advanced materials for extreme environments and the development of innovative processes for making them. (cellular materials, multilayered thin films, high temperature coatings, etc.)
6. **Co-PI, H.G. Wood (MAE)** – PhD Applied Math, UVA ('78), MS ('67) & BS ('65) Math, Miss. State U Mathematical modeling of fluid flows in gas centrifuges for uranium enrichment, modeling of uranium enrichment cascades, and both technical and policy issues pertaining to non-proliferation of nuclear weapons.

7. **G. Zangari (MSE)** – PhD, Metallurgy, Polytechnical School of Torino, Italy ('95), MS equivalent, Nuclear Engineering, Polytechnical School of Milano, Italy, ('91) Previous studies include statistical mechanics calculations of defects in UO_2 under irradiation and studies of corrosion rates due to liquid metal coolant. Current aspirations include exploring the compatibility of structural materials with liquid metals and alloys for gen IV reactors; coating development for structural materials to enhance the resistance to neutron irradiation; and alternative fuel cycles.

The graduate research fellowships will augment existing nuclear research programs and enable faculty to develop preliminary data necessary to establish credibility of new ideas they are planning to propose to industrial and government sponsors.

The second cost-sharing mechanism relates to a new UVA-SEAS strategy to incentivize the faculty to develop new initiatives. The current fellowship program is a part of a larger initiative being proposed by Profs. Agnew and Wood, to invigorate both research AND education in the area of nuclear materials. Although it is not fully developed, the program will be announced by SEAS administration within 2 weeks, and preliminary discussions with the Senior Assoc. Dean of Research and Graduate Studies, Pamela Norris, has confirmed that our curriculum development proposal is exactly the type of education and research program the school would like to support at a level of 5% of the faculty member(s) annual salary. If successful in securing this local support, we will send a follow-up letter to the NRC grants coordinator, M'Lita Carr.

We propose the revision of a collection of courses and addition of new courses at the undergraduate/early graduate level. If students elect to take a prescribed number of them, it would constitute a "minor" or "concentration" (details to be determined) in nuclear materials.

1. MSE 4XXX/6XXX "Materials for energy production" with a focus on nuclear materials: fuel, cladding, pressure vessels, steam turbine materials, etc. It could also have photovoltaics, materials for gas turbines, etc. to broaden interest and exposure. Potential instructors include Profs. Scully and Wadley.
2. ENGR 4XXX/6XXX "Nuclear material handling, detection, non-proliferation," Prof. Wood.
3. MSE 3050 "Thermodynamics, Phase Diagrams, and Kinetics" would benefit from a thermodynamic analysis of nuclear fuel cycles. Instructors include Prof. Zangari.
4. MAE 3140 "Heat and mass transfer" includes numerous examples relevant to nuclear energy (e.g., several analyses of heat transfer in fuel rods); guest lectures by John Jones (AREVA & Adjunct Prof. of MAE, UVA) on heat transfer processes in nuclear reactor facilities, including physical component demonstrations. Prof. Hopkins
5. MAE 3130/6120 "Nanoscale heat transfer" includes treatment of atomistic energy transfer processes in materials, a topic which has been the focus of several recent nuclear-related research proposal solicitations including DOE-NEUP. Prof. Hopkins.
6. MSE 3080 "Corrosion, Fuel Cells, and Batteries" updated with a specific segment devoted to nuclear applications of electrochemistry, including stress corrosion cracking. Prof. Scully.
7. MSE 4120 "Advanced Processing of Materials" with segments relevant to producing reactor fuel (oxide or novel metallic), claddings, and reactor components. Prof. Fitzgerald
8. MSE 4320/6320 "Origins of Mechanical Behavior" will receive a similar insertion of a section on stress corrosion cracking and liquid metal embrittlement in addition to relevant examples of creep of nuclear materials. Profs. Burns and Agnew
9. MSE 6020 "Crystal Defects", including a specific segment of radiation damage. Prof. Agnew

It will be natural for many MAE, ChE, and Engineering Science students to obtain the proposed "minor" or "concentration" in nuclear materials. This curriculum development will be of particular benefit to students in an on-line program known as "PRODUCED in Virginia." This program has been produced local engineering talent with degrees in Engineering Science which straddle Mechanical and Electrical or Mechanical and Materials Science, and many have found employment with local nuclear industry: BWX Technologies, AREVA, and Flowserve.

Although it will not be required, it is hoped that many of the Jump Start fellowship students will take the graduate courses offered and participate as TA's for the undergraduate courses at times during their student tenure when they are not on fellowship, as way of providing teaching experience and deepening their own understanding of the course material.

8. Institutions must require individual scholarship and fellowship students to accept the service agreement terms as defined in this FOA.

All faculty involved will be informed of the stipulations and will be required to carefully communicate this in the form of official documentation from the NRC. Students will be required to sign an agreement stating their acceptance of the terms prior to receiving the fellowship funds.

Attachment C - Standard Terms and Conditions

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

Preface

This award is based on the application submitted to, and as approved by, the Nuclear Regulatory Commission (NRC) under the authorization 42 U.S.C. § 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 grant or cooperative agreement. The following also apply:

- 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 Part 200 Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards.

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 (E.O.), Office of Management and Budget (OMB) Circulars, the NRC's Mandatory Standard Provisions, special award conditions, and standard award conditions.

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 200

All provisions of 2 CFR Part 200 and all Standard Provisions attached to this grant/cooperative agreement are applicable to the Recipient and to sub-recipients which meet the definition of "Recipient" in 2 Part §200.86, unless a section specifically excludes a sub-recipient from coverage. The Recipient 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 D of 2 CFR Part 200 and include this term in lower-tier (sub-award) covered transactions.

Recipients must comply with monitoring procedures and audit requirements in accordance with 2 CFR Part 200, Subpart F—AUDIT REQUIREMENTS.

2. Award Package

The Recipient is obligated to conduct project oversight as may be appropriate, to manage the funds with prudence, and to comply with the provisions outlined in 2 CFR Part 200. Within this framework, the Principal Investigator (PI) named on the award face page, 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, and is subject to a refund of unexpended grant funds to the NRC.

The non-Federal entity alone must be responsible, in accordance with good administrative practice and sound business judgment, for the settlement of all contractual and administrative issues arising out of procurements related to its grant award. These issues include, but are not limited to, source evaluation, protests, disputes, and claims. These standards do not relieve the non-Federal entity of any financial or fiduciary responsibilities or obligations arising under its grant, including sub-contracts and sub-awards, or any other contractual or financial obligation. The Federal awarding agency will not substitute its judgment for that of the non-Federal entity unless the matter is primarily a Federal concern. Violations of law will be referred to the local, State, or Federal authority having proper jurisdiction. See 2 CFR § 200.318(k), General Procurement Standards.

Subawards

Appendix II to Part 200 Contract Provisions for Non-Federal Entity Contracts Under Federal Awards

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 Recipient to NRC. See 2 CFR § 200.318.

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.

The Recipient agrees to comply with the non-discrimination requirements below:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. §§ 2000d et seq.), which prohibits discrimination on the grounds of race, color, or national origin in any program or activity receiving federal financial assistance.

- Title IX of the Education Amendments of 1972 (20 U.S.C. §§ 1681 et seq.), which prohibits discrimination on the basis of sex in any education program or activity receiving federal financial assistance.
- Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. § 794), which prohibits discrimination on the basis of disability in any program or activity receiving federal financial assistance.
- The Age Discrimination Act of 1975, as amended (42 U.S.C. §§ 6101 et seq.), which prohibits discrimination on the basis of age in any program receiving federal financial assistance.
- The Americans with Disabilities Act of 1990 (42 U.S.C. §§ 12101 et seq.), which prohibits recipients from discriminating on the basis of disability in employment (Title I); State and local government services (Title II); and places of public accommodation and commercial facilities (Title III).
- Parts II and III of E.O. 11246, as amended by E.O. 11375, 11478, 12086, 12107, 13279, 13665, and 13672, which prohibits federal contractors and federally assisted construction contractors and subcontractors, who do over \$10,000 in Government business in one year, from discriminating in employment decisions on the basis of race, color, religion, sex, or national origin and requires that government contractors take affirmative action to ensure that equal opportunity is provided in all aspects of their employment.
- E.O. 13166, "Improving Access to Services for Persons with Limited English Proficiency," which clarifies that national origin discrimination under Title VI includes discrimination on the basis of limited English proficiency (LEP) and requires that the recipient take reasonable steps to ensure that LEP persons have meaningful access to programs and activities.
- Any other applicable non-discrimination law(s).

Generally, Title VII of the Civil Rights Act of 1964, 42 U.S.C. § 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 U.S.C. § 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's prior written approval may be required before a Recipient 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 and obtained from the NRC Grants Officer in advance of the change or obligation of funds. All requests for NRC prior approval, including requests for extensions to the period of performance, must be made, in writing (which includes submission by e-mail), to the designated Grants Officer at least 30 days before the proposed change. The request must be signed by the authorized organizational official. Failure to obtain prior approval, when required, from the NRC Grants Officer, may result in the disallowance of costs, or other enforcement action within NRC's authority.

Lobbying Restrictions

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

The Recipient will comply with provisions of 31 U.S.C § 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 Recipient shall submit a completed "Certification Regarding Lobbying" form, regardless of dollar value.

If applicable, the Recipient receiving in excess of \$100,000.00 in Federal funding shall submit a completed Standard Form (SF-LLL), "Disclosure of Lobbying Activities" for any persons engaged in lobbying activities, as discussed at 31 U.S. Code § 1352 – Limitation on use of appropriated funds to influence certain Federal contracting and financial transactions. The form concerns 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. If the Recipient must submit the SF-LLL, including those received from sub-recipients, contractors, and subcontractors, to the Grants Officer.

Debarment And Suspension – (See 2 CFR Part 180; 2 CFR § 200.205; 2 CFR § 200.113; and 2 CFR Part 200, Appendix II.)

The Recipient 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 the recipient's 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); or
- (4) Have had one or more public transactions (Federal, State, or local) terminated for cause or default within the preceding three years.
- (5) The Recipient agrees that, unless authorized by the Grants Officer, it will not knowingly enter into any subaward or contracts under this grant/cooperative agreement

with a person or entity that is not included on the System for Award Management (SAM) (<https://www.sam.gov>).

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

Debarment, Suspension, Ineligibility, and Voluntary Exclusion

The Recipient 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 2 CFR Part 180 and 2 CFR Part 200.

Drug-Free Workplace

The Recipient 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 U.S.C. §§ 8101-8106.

Implementation of E.O.13224 – Executive Order on Terrorist Financing

The Recipient 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 Recipient 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.

The Recipient must comply with E.O. 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:

Implementation of Executive Order 13224 Blocking Property and Prohibiting Transactions With Persons Who Commit, Threaten To Commit, or Support Terrorism amended by E.O. 13268, 13284, and 13372.

Procurement Standards - 2 CFR §§ 200.318-200.326

Sections 200.318 - 200.326 set forth standards for use by Recipients 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 will be imposed by the Federal awarding agencies upon Recipients, unless specifically required by Federal statute, executive order, or approved by OMB.

Travel and Transportation

Travel must be in accordance with the Recipient's Travel Regulations or the U.S. Government Travel Policy and Regulations at: <http://www.gsa.gov/portal/category/21222> and the per diem rates set forth at: <http://www.gsa.gov/portal/content/104877>, absent Recipient's travel regulations. Travel and transportation costs for the grant must be consistent with provisions as established in 2 CFR § 200.473-474.

All other travel, domestic or international, must not increase the total estimated award amount for the grant.

Domestic Travel:

Domestic travel is an appropriate charge to this award and prior authorization for specific trips are not required, if the trip is identified in the Recipient's approved program description and approved budget. Domestic trips not stated in the approved budget require the written prior approval of the Grants Officer, and must not increase the total estimated award amount for the grant.

All common carrier travel reimbursable hereunder shall be via the least expensive class rates consistent with achieving the objective of the travel and in accordance with the Recipient's policies and practices. Travel by first-class travel is not authorized unless prior approval is obtained, in writing, from the Grants Officer.

International Travel:

International travel requires **PRIOR** written approval by the Project Officer and the Grants Officer, even if the international travel is stated in the approved program description and the approved budget.

The Recipient will comply with the provisions of the Fly America Act (49 U.S.C 40118), as implemented at 41 CFR §§ 301-10.131 through 301-10.143.

Property Standards

Property standards of this award shall follow provisions as established 2 CFR §§ 200.310-200.316.

Intangible Property

Intangible and intellectual property of this award shall generally follow provisions established in 2 CFR § 200.315.

Inventions Report - The Bayh-Dole Act (P.L. 96-517) affords Recipients the right to elect and retain title to inventions they develop with funding under an NRC grant award ("subject inventions"). In accepting an award, the Recipient 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 Recipient report all subject inventions to the awarding agency (NRC) as well as include an acknowledgement of federal support in any patents.

Patent Notification Procedures - If the NRC or its Recipients, 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, E.O. 12889 requires NRC to notify the owner. If the Recipient uses or has used patented technology under this award without license or permission from the owner, the Recipient must notify the Grants Officer. This notice does not imply 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, such as data, databases or software are determined by Subpart D of 2 CFR Part 200. The Recipient 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 Recipient 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 Recipient employees may be copyrighted, but only the part authored by the Recipient is protected because, under 17 U.S.C. § 105, works produced by Government employees are not copyrightable in the United States. On occasion, NRC may ask the Recipient 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 U.S.C. § 105.

Record Retention and Access

Recipient shall follow established provisions in 2 CFR §§ 200.333-337.

Conflict Of Interest

Conflict of Interest standards for this award will follow the Organizational Conflict of Interest (OCOI) requirements set forth in Section 170A of the Atomic Energy Act of 1954, as amended; and provisions set forth at 2 CFR § 200.112, Conflict of Interest.

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 Recipient'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 Acquisition Management Division, unless otherwise delegated, who shall appoint an intra-agency Appeal Board to review a recipient appeal of an agency action, if required, which will consist of the program office director, the Deputy Director of Office of Administration, and the Office of General Counsel.
- 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 Recipient 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.

Remedies for Noncompliance

Termination of this award will follow provisions as established and described above in "Dispute Review Process" in 2 CFR §§ 200.338-342.

Performance and Financial Monitoring and Reporting - 2 CFR §§ 200.327-329

Recipient Financial Management systems must comply with the provisions in 2 CFR § 200.302.

- Payment – 2 CFR § 200.305
- Cost Share or Matching – 2 CFR § 200.306
 - Recipients are to be careful with providing excessive cost share or match since at the end of the grant, if the identified match has not been provided, then a portion of the federal share may be required to be returned to the Government.
- Program Income – 2 CFR § 200.307
 - Earned program income, if any, will be added to funds committed to the project by the NRC and Recipient and used to further eligible project or program objectives or be deducted from the total project cost for the grant, as directed by the Grants Officer or indicated in the terms and conditions of the award.
- Revision of Budget and Program Plans – 2 CFR § 200.308
 - The Recipient is required to report deviations from the approved budget and program descriptions in accordance with – 2 CFR § 200.308(b) and request prior written approval from the Project Officer and the Grants Officer.
 - The Recipient is not authorized to re-budget between direct costs and indirect costs without written prior approval of the Grants Officer.
 - The Recipient is authorized to transfer funds among direct cost categories up to a cumulative 10 percent of the total approved budget. The Recipient is not allowed to transfer funds if the transfer would cause any Federal appropriation to be used for purposes other than those consistent with the original intent of the appropriation.
 - Allowable Costs – 2 CFR §§ 200.403
- See section 2 CFR §§ 200.330-332 for Subrecipient Monitoring and Management.

FEDERAL FINANCIAL REPORTS

Federal Financial Reports (SF-425) are semi-annually, for the periods ending March 31 and September 30. Reports are due within 30 calendar days following the end of the reporting period and must be emailed to the Project Officer at the email addressed indicated in the Notice of Award, and to the Grants Officer at: Grants_FFR.Resource@nrc.gov. (NOTE: There is an underscore between Grants and FFR in the email address.) The SF-425 form and instructions are available at the following URL: http://www.whitehouse.gov/omb/grants_forms/.

PERFORMANCE PROGRESS REPORTS

The performance (technical) reports indicated below are subject to 2 CFR §200.328.

Scholarship and Fellowship Programs

Performance Progress reports must be submitted annually, for the period ending September 30, or any portion thereof, regardless of the award date. Reports are due within 30 days following the end of each reporting period and must be emailed to the Project Officer at the email addressed indicated in the Notice of Award, and to the Grants Officer at: Grants_PPR.Resource@nrc.gov. (NOTE: *There is an underscore between Grants and PPR in the email address.*)

Final Reports - The Recipient is required to submit final reports, both Financial (SF-425) and Performance (SF-PPR, SF-PPR-B, SF-PPR-E) within 90 days of the grant expiration. In addition to these reports, a final SF-428, Tangible property report, is also required, if applicable. The final PPR (for Scholarship, Fellowship, and Trade School and Community College Scholarship awards) must include the names of all students with up to date contact information (mailing address, telephone/cell phone, email address). The reports must be emailed to the Project Officer at the email addressed indicated in the Notice of Award, and to the Grants Officer at: Grants_FFR.Resource@nrc.gov and Grants_PPR.Resource@nrc.gov. (NOTE: *There is an underscore between Grants and FFR and Grants and PPR in the email addresses.*)

Period of Performance – 2 CFR § 200.309

The recipient may charge to the Federal award only allowable costs incurred during the period of performance and any costs incurred before the NRC or pass-through entity made the Federal award that was authorized by the NRC or pass through entity.

Unless otherwise authorized in 2 CFR Part 200 or by special award condition, any extension of the award period can only be authorized by the Grants Officer in writing. Assurances of funding from other than the Grants Officer shall not constitute authority to obligate funds for programmatic activities beyond the expiration date.

The NRC Grant Officer may authorize a no cost extension of the period of performance. The recipient must submit a no cost extension request no less than 30 days prior to the award end date. Any request for a no cost extension after the grant has expired will not be approved. However, the NRC has no obligation to provide any additional prospective or incremental funding. Any modification of the award to increase funding and/or to extend the period of performance is at the sole discretion of the NRC.

Automated Standard Application For Payments (ASAP) Procedures

Unless otherwise stated, Recipient payments are made using the Department of Treasury's Automated Standard Application for Payment (ASAP) system, ASAP.gov, through preauthorized electronic funds transfers. To receive payments, Recipients 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 is required to make ASAP withdrawals: (1) ASAP account number – the award number found on the cover sheet of the award; (2) Agency Location Code (ALC) – 31000001; and Region Code. Recipients enrolled in the ASAP system do not need to submit a "Request for Advance or Reimbursement" (SF-270).

II. Audit Requirements**Audits**

Organization-wide or program-specific audits are performed in accordance with the Single Audit Act of 1996, as amended, and as implemented by 2 CFR Part 200, Subpart F—AUDIT REQUIREMENTS. Recipients are subject to the provisions of this subpart if they expend \$750,000 or more in a year in Federal awards. See 2 CFR 200.501.

The Form SF-SAC and the Single Audit Reporting packages for fiscal periods ending on or after January 1, 2008 are submitted online, as follows:

1. Create the recipient's 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; and
5. Click "Submit."

Organizations expending less than \$750,000 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

The recipient is responsible for providing documentation to the NRC that tracks each student's progress in achievement of the academic program for which federal funds were provided. This includes: (1) ensuring the service agreement is signed by the student prior to providing support; (2) providing the NRC with student contact information upon student entry into the program, upon completion or withdrawal from the program, and upon request by the NRC; and (3) monitoring the student's fulfillment of the service agreement for the duration of the award. The NRC shall be notified immediately if a student is not fulfilling the academic program or the service agreement.

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 OMB requirements indicated above (for metric reporting), the recipient shall address the following questions and submit responses with the required progress reports:

Fellowship Metrics:

1. How many graduate students have been sponsored by NRC funding?
 - a. Response is the number of students, for this reporting period and cumulative to the grant.
2. How many students, supported by NRC funding, have received M.S. or equivalent degrees?
 - a. Response is the number of students, for this reporting period and cumulative to the grant.

3. How many students, supported by NRC funding, have received Ph.D. or equivalent degrees?
 - a. Response is the number of students, for this reporting period and cumulative to the grant.
4. How many students, supported by NRC funding, have accepted a job and are employed in the nuclear industry?
 - a. Response is the number of students, for this reporting period and cumulative to the grant.
5. How many items have students produced, for example, Professional Journal articles, publications, patents, or conference reports?
 - a. Response is the type and number of items, for this reporting period and cumulative to the grant.

As part of the PPR, include the following information for each student support under this award:

1. Student Name
2. Years of Support
3. Cumulative Support in Dollars
4. Estimated Graduation Date
5. Status
6. Up to date student contact information (mailing address, telephone/cell phone, email address) for students no longer participating in the program, i.e. transferred programs, graduated, withdrew, etc.
7. Up to date student contract information, for all students at time of grant expiration, i.e. Final PPR.

Examples of status could be:

"Employed in Nuclear Industry", if so, where;
 "Looking for employment", if so, how long;
 "Deferred due to continuing education", if so, what degree;
 "Employed by Non-Nuclear", if so, where; and
 "Dropped out of program"

Unsatisfactory Performance

Failure to perform the work in accordance with the terms of the award and maintain at least a satisfactory performance rating may result in designation of the Recipient as high risk and the assignment of special award conditions. Further action may be required as specified in the standard term and condition entitled "Remedies for Noncompliance."

Failure to comply with the award provisions may result in a negative impact on future NRC funding. In addition, the Grants Officer may withhold payments; change the method of payment from advance to reimbursement; impose special award conditions; suspend or terminate the grant.

Other Federal Awards With Similar Programmatic Activities

The Recipient will immediately notify the Project Officer and the Grants Officer in writing if after award, other financial assistance is received to support or fund any portion of the program description stated in the NRC award. NRC will not pay for costs that are funded by other sources.

Prohibition Against Assignment By The Recipient

The Recipient will not transfer, pledge, mortgage, or otherwise assign the award, or any interest to the award, or any claim arising under the award, to any party, banks, trust companies, or other financing or financial institutions without the written approval of the Grants Officer.

Site Visits

The NRC, through authorized representatives, has the right to make site visits to review project accomplishments and management control systems and to provide technical assistance as required. If any site visit is made by the NRC on the premises of the Recipient or contractor under an award, the Recipient shall provide and shall require his/her contractors to provide reasonable access to all facilities and provide necessary assistance for the safety and convenience of the Government representative in the performance of his/her official duties.

IV. Additional Requirements**Criminal and Prohibited Activities**

The Program Fraud Civil Remedies Act (31 U.S.C. §§ 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).

False statements (18 U.S.C. § 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.

False Claims Act (31 U.S.C. § 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.

Copeland "Anti-Kickback" Act (18 U.S.C. § 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

Recipients are encouraged to purchase American-made equipment and products with funding provided under this award.

Increasing Seat Belt Use in the United States

E.O. 13043, amended by E.O. 13652, requires Recipients to encourage employees and contractors to enforce on-the-job seat belt policies and programs when operating company-owned, rented or personally-owned vehicle.

Federal Leadership of Reducing Text Messaging While Driving

E.O. 13513 requires Recipients to encourage employees, sub-awardees, and contractors to adopt and enforce policies that ban text messaging while driving company-owned, rented vehicles or privately owned vehicles when on official Government business or when performing any work for or on behalf of the Federal Government.

Federal Employee Expenses

Federal agencies are barred from accepting funds from a Recipient 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 Recipient'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 Recipients or applicants regardless of the source.

Minority Serving Institutions (MSIs) Initiative

Pursuant to E.O.s 13230 and 13270, amended by E.O. 13316 and 13385, 13532, 13592, 13555, 13515, and 13621, 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 Recipients 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 Recipient 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 Recipient organization shall investigate the allegation and submit its findings to the Grants Officer. The NRC may accept the Recipient's findings or proceed with its own investigation. The Grants Officer shall inform the Recipient 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 Recipient 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 Recipient 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 [Recipient 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."

Trafficking In Victims Protection Act Of 2000 (as amended by the Trafficking Victims Protection Reauthorization Act of 2003)

Section 106(g) of the Trafficking In Victims Protection Act Of 2000 (as amended as amended, directs on a government-wide basis that:

"...any grant, contract, or cooperative agreement provided or entered into by a Federal department or agency under which funds are to be provided to a private entity, in whole or in part, shall include a condition that authorizes the department or agency to terminate the grant, contract, or cooperative agreement, without penalty, if the recipient or any subrecipient, or the contractor or any subcontractor (i) engages in severe forms of trafficking in persons or has procured a commercial sex act during the period of time that the grant, contract, or cooperative agreement is in effect, or (ii) uses forced labor in the performance of the grant, contract, or cooperative agreement." (See 22 U.S.C. §7104(g).)

EXECUTIVE COMPENSATION REPORTING

2 CFR § 170.220 directs agencies to include the following text to each grant award to a non-federal entity if the total funding is \$25,000 or more in Federal funding.

Reporting Subawards and Executive Compensation.

a. Reporting of first-tier subawards.

1. *Applicability.* Unless you are exempt as provided in paragraph d. of this award term, you must report each action that obligates \$25,000.00 or more in Federal funds that does not include Recovery funds (as defined in section 1512(a)(2) of the American Recovery and Reinvestment Act of 2009, Pub. L. 111-5) for a subaward to an entity (see definitions in paragraph e. of this award term).

2. *Where and when to report.*

i. You must report each obligating action described in paragraph a.1. of this award term to <http://www.fsrs.gov>.

ii. For subaward information, report no later than the end of the month following the month in which the obligation was made. (For example, if the obligation was made on November 7, 2010, the obligation must be reported by no later than December 31, 2010.)

3. *What to report.* You must report the information about each obligating action that the submission instructions posted at <http://www.fsrs.gov> specify.

b. Reporting Total Compensation of Recipient Executives.

1. *Applicability and what to report.* You must report total compensation for each of your five most highly compensated executives for the preceding completed fiscal year, if—

i. the total Federal funding authorized to date under this award is \$25,000.00 or more;

ii. in the preceding fiscal year, you received—

(A) 80 percent or more of your annual gross revenues from Federal procurement contracts (and subcontracts) and Federal financial assistance subject to the Transparency Act, as defined at 2 CFR § 170.320 (and subawards); and

(B) \$25,000,000 or more in annual gross revenues from Federal procurement contracts (and subcontracts) and Federal financial assistance subject to the Transparency Act, as defined at 2 CFR § 170.320 (and subawards); and

iii. The public does not have access to information about the compensation of the executives through periodic reports filed under section 13(a) or 15(d) of the Securities Exchange Act of 1934 (15 U.S.C. 78m(a), 78o(d)) or section 6104 of the Internal Revenue Code of 1986. (To determine if the public has access to the compensation information, see the U.S. Security and Exchange Commission total compensation filings at <http://www.sec.gov/answers/execomp.htm>.)

2. *Where and when to report.* You must report executive total compensation described in paragraph b.1. of this award term:

i. As part of your registration profile at <http://www.sam.gov>.

ii. By the end of the month following the month in which this award is made, and annually thereafter.

c. Reporting of Total Compensation of Subrecipient Executives.

1. *Applicability and what to report.* Unless you are exempt as provided in paragraph d. of this award term, for each first-tier subrecipient under this award, you shall report the names and total compensation of each of the subrecipient's five most highly compensated executives for the subrecipient's preceding completed fiscal year, if—

i. in the subrecipient's preceding fiscal year, the subrecipient received—

(A) 80 percent or more of its annual gross revenues from Federal procurement contracts (and subcontracts) and Federal financial assistance subject to the Transparency Act, as defined at 2 CFR § 170.320 (and subawards); and

(B) \$25,000,000 or more in annual gross revenues from Federal procurement contracts (and subcontracts), and Federal financial assistance subject to the Transparency Act (and subawards); and

ii. The public does not have access to information about the compensation of the executives through periodic reports filed under section 13(a) or 15(d) of the Securities Exchange Act of 1934 (15 U.S.C. 78m(a), 78o(d)) or section 6104 of the Internal Revenue Code of 1986. (To determine if the public has access to the compensation

information, see the U.S. Security and Exchange Commission total compensation filings at <http://www.sec.gov/answers/execomp.htm>.)

2. *Where and when to report.* You must report subrecipient executive total compensation described in paragraph c.1. of this award term:

i. To the recipient.

ii. By the end of the month following the month during which you make the subaward. For example, if a subaward is obligated on any date during the month of October of a given year (*i.e.*, between October 1 and 31), you must report any required compensation information of the subrecipient by November 30 of that year.

d. *Exemptions*

If, in the previous tax year, you had gross income, from all sources, under \$300,000.00, you are exempt from the requirements to report:

i. Subawards,

and

ii. The total compensation of the five most highly compensated executives of any subrecipient.

e. *Definitions.* For purposes of this award term:

1. *Entity* means all of the following, as defined in 2 CFR Part 25:

i. A Governmental organization, which is a State, local government, or Indian tribe;

ii. A foreign public entity;

iii. A domestic or foreign nonprofit organization;

iv. A domestic or foreign for-profit organization;

v. A Federal agency, but only as a subrecipient under an award or subaward to a non-Federal entity.

2. *Executive* means officers, managing partners, or any other employees in management positions.

3. *Subaward:*

i. This term means a legal instrument to provide support for the performance of any portion of the substantive project or program for which you received this award and that you as the recipient award to an eligible subrecipient.

ii. The term does not include your procurement of property and services needed to carry out the project or program (for further explanation, see Sec. __ .210 of the attachment to OMB Circular A-133, "Audits of States, Local Governments, and Non-Profit Organizations)

iii. A subaward may be provided through any legal agreement, including an agreement that you or a subrecipient considers a contract.

4. *Subrecipient* means an entity that:

i. Receives a subaward from you (the recipient) under this award; and

ii. Is accountable to you for the use of the Federal funds provided by the subaward.

5. *Total compensation* means the cash and noncash dollar value earned by the executive during the recipient's or subrecipient's preceding fiscal year and includes the following (for more information see 17 CFR § 229.402(c)(2)):

i. *Salary and bonus.*

ii. *Awards of stock, stock options, and stock appreciation rights.* Use the dollar amount recognized for financial statement reporting purposes with respect to the fiscal year in accordance with the Statement of Financial Accounting Standards No. 123 (Revised 2004) (FAS 123R), Shared Based Payments.

iii. *Earnings for services under non-equity incentive plans.* This does not include group life, health, hospitalization or medical reimbursement plans that do not discriminate in favor of executives, and are available generally to all salaried employees.

iv. *Change in pension value.* This is the change in present value of defined benefit and actuarial pension plans.

v. *Above-market earnings on deferred compensation which is not tax-qualified.*

vi. Other compensation, if the aggregate value of all such other compensation (e.g., severance, termination payments, value of life insurance paid on behalf of the employee, perquisites or property) for the executive exceeds \$10,000.00.