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

1. GRANT/AGREEMENT NO.	2. MODIFICATION NO.	3. PERIOD OF PERFORMANCE	4. AUTHORITY
NRC-HQ-12-G-38-0013		FROM: 4/01/2012 TO: 3/31/2016	Pursuant to Section 31b and 141b of the Atomic Energy Act of 1954, as amended

5. TYPE OF AWARD	6. ORGANIZATION TYPE	7. RECIPIENT NAME, ADDRESS, and EMAIL ADDRESS
[X] GRANT [ ] COOPERATIVE AGREEMENT	Public State-Controlled Institution of Higher Education DUNS: 603503991 NAICS: 611310	The Research Foundation CUNY The City College 230 West 41st Street New York, NY 10036 AGreenberg@ccny.cuny.edu

8. PROJECT TITLE:
CCNY Nuclear Research Fellowship Program

9. PROJECT WILL BE CONDUCTED	10. TECHNICAL REPORTS ARE REQUIRED	11. PRINCIPAL INVESTIGATOR(S) NAME, ADDRESS and EMAIL ADDRESS
PER GOVERNMENT'S/RECIPIENT'S PROPOSAL(S) DATED See Program Description AND APPENDIX A-PROJECT GRANT PROVISIONS	[X] PROGRESS AND FINAL [ ] FINAL ONLY [ ] OTHER (Conference Proceedings)	Dr. Masahiro Kawaji The Research Foundation CUNY - The City College 230 West 41st Street New York, NY 10036 Email: kawaji@me.ccny.cuny.edu Phone: (212) 650-5728

12. NRC PROGRAM OFFICE (NAME and ADDRESS)	13. ACCOUNTING and APPROPRIATION DATA	14. METHOD OF PAYMENT
NRC ATTN: Nancy Hebron-Isreal Office of Human Resources MS: GW5E03 (301) 492-2231 11545 Rockville Pike Rockville, Maryland 20852 Nancy.Hebron-Isreal@nrc.gov	APPN. NO: 31X0200 B&R NO: 2012-84-51-K-164 JOB CODE: T8458 BOC NO: 4110 OFFICE ID NO: RFPA: HR-11-112 FAMIS/APP GR0149/12-7930	[ ] ADVANCE BY TREASURY CHECK [ ] REIMBURSEMENT BY TREASURY CHECK [ ] LETTER OF CREDIT [X] OTHER (SPECIFY) Electronic ASAP.gov (See Remarks in Item #20 "Payment Information")

15. NRC OBLIGATION FUNDS		16. TOTAL FUNDING AGREEMENT		
THIS ACTION	$400,000.00	NRC	$400,000.00	This action provides funds for Fiscal Year 2012 in the amount of $400,000.00
PREVIOUS OBLIGATION		RECIPIENT	$128,000.00	
TOTAL	$400,000.00	TOTAL	$528,000.00	

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.	19. NRC CONTRACTING OFFICER
Signature Not Required	Sheila Bumpass 4/1/2012 (Signature) (Date) NAME (TYPED) Sheila Bumpass TITLE Contracting Officer TELEPHONE NO. 301-492-3484

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

ADM002

ATTACHMENT A - SCHEDULE

A.1 PURPOSE OF GRANT

The purpose of this Grant is to provide support to the "CCNY Nuclear Research Fellowship Program" as described in Attachment B entitled "Program Description."

A.2 PERIOD OF GRANT

1. The effective date of this Grant is April 1, 2012. The estimated completion date of this Grant is March 31, 2016.

2. Funds obligated hereunder are available for program expenditures for the estimated period: April 1, 2012 – March 31, 2016.

A. GENERAL

1. Total Estimated NRC Amount:	$400,000.00
2. Total Obligated Amount:	$400,000.00
3. Cost-Sharing Amount:	$128,000.00
4. Activity Title:	CNY Nuclear Research Fellowship Program
5. NRC Project Officer:	Nancy Hebron-Isreal
6. DUNS No.:	603503991

B. SPECIFIC

RFPA No.:	HR-12-112
FAMIS:	GR0149
Job Code:	T8458
BOC:	4110
B&R Number:	2012-84-51-K-164
Appropriation #:	31X0200
Amount Obligated:	$400,000.00

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 Cost	$90,000.00	$90,000.00	$90,000.00	$90,000.00
Equipment	$ 2,760.00			
Travel	$ 0.00	$ 3,000.00	$ 3,000.00	$ 3,000.00
Supplies	$ 6,704.00	$ 6,259.00	$ 6,259.00	$ 6,259.00
Total Direct Cost	$99,464.00	$99,259.00	$99,259.00	$99,259.00
Indirect Cost	$ 536.00	$ 741.00	$ 741.00	$ 741.00
Total	$100,000.00	$100,000.00	$100,000.00	$100,000.00

All travel must be in accordance with The Research Foundation CUNY – The City College 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 $528,000.00 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 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

PROGRAM DESCRIPTION

Financial support is requested from the NRC Scholarship and Fellowship Education Grant program for the "**CCNY Nuclear Research Fellowship Program**" at the City College of New York (CCNY). As CCNY is a minority and a Hispanic Serving Institution, the proposed fellowship program will provide minority students with an opportunity to pursue graduate studies in nuclear engineering and gain the knowledge and skills needed to enter careers in the nuclear power industry.

Training of new nuclear engineers is urgently needed as recommended recently by the New York Governor's Task Force to the educational institutions in order to meet the imminent demand for skilled workforce necessary to build and operate new nuclear power plants. To this end, a total graduate fellowship funding of $400,000 over four years is requested to annually provide a $29,333 stipend to three Ph.D. students every year for four years. The Fellowship holders will be American citizens or permanent residents, and selected based on their past academic performance, interests in nuclear engineering and motivation to conduct research in the nuclear engineering field.

The Energy Institute of the City University of New York (CUNY) located in the Grove School of Engineering at CCNY is participating in the DOE Nuclear Simulation HUB project, *CASL: the Consortium for Advanced Simulation of Light Water Reactors*. In this 5-year national project, the Energy Institute will contribute to the Modeling and Numerical Methods focus area, and the Fellowship students will have an opportunity to conduct numerical and experimental investigations complementary to the HUB's efforts to develop a Virtual Light Water Reactor. The Fellowship students will conduct research in the Nuclear Thermal-hydraulics and Safety Research Laboratory at the Energy Institute guided by faculty members of the Energy Institute and Grove School of Engineering including Professors Sanjoy Banerjee, Masahiro Kawaji, Yiannis Andreopoulos and Taehun Lee.

The City University of New York, the largest urban university in the US with 220,000 full time students and 230,000 continuing education students, has selected the energy field as one of its major research and education thrust areas by establishing the Energy Institute at its flagship campus, the City College of New York, and investing a substantial amount of resources. The Energy Institute is located in the Grove School of Engineering and its founding Director, Distinguished Professor Sanjoy Banerjee, is a member of the Advisory Committee on Reactor Safeguards (ACRS) and chairs the Thermal hydraulics Sub-Committee.

The second member of the Energy Institute is Prof. Masahiro Kawaji who has been conducting multiphase flow and heat transfer research related to nuclear reactor thermal-hydraulics and safety for over thirty years. The third member of the Nuclear Thermal-hydraulics and Safety Research Laboratory is Prof. Taehun Lee who specializes in the area of multiphase/multiscale computational fluid dynamics. He has made significant contributions in applying the Lattice Boltzmann Model (LBM) to complex interfacial problems, pioneering the Finite Element/Spectral Element Methods-based LBM to study gas-liquid two-phase flows in complex geometry. His numerical simulation work is being applied to the Virtual Reactor development in the DOE Nuclear Simulation HUB project.

In 2009, Prof. Andreopoulos of Mechanical Engineering Department received a Nuclear Engineering Education Grant from NRC to start the Nuclear Engineering (NE) Concentration Program for undergraduate students at CCNY. In support of nuclear engineering research, the City University of New York has also contributed over 1 million dollars to renovate the existing laboratory space to house the Nuclear Thermal-hydraulics Laboratory in the Steinman Hall at City College as indicated in a previous letter from the Vice Chancellor of CUNY attached.

The Nuclear Research Fellowship holders will be expected to take nuclear engineering courses and acquire knowledge of the reactor physics, thermal hydraulics, nuclear safety, and numerical simulation principles before graduation in order to pursue professional careers in the nuclear field.

The NE Concentration program has attracted over 35 undergraduate students into the Reactor Physics and Thermal Hydraulics courses. Fifteen of those students have been awarded NRC-sponsored Nuclear Engineering Undergraduate Scholarships. Many of them have GPA's above 3.5 and are interested in pursuing a graduate degree program in nuclear engineering at City College or other graduate schools. The proposed Nuclear Research Fellowship Program will enable City College to recruit four Ph.D. students from among these outstanding students as well as from other institutions. The Fellowship students will also have an opportunity to interact with other graduate students engaged in energy-related research at the Energy Institute.

2. OBJECTIVES

The **CCNY Nuclear Research Fellowship Program** will be used to recruit and train at least four Ph.D. students from under-represented minority groups at the City College of New York in nuclear engineering, particularly in the area of Nuclear Thermal-hydraulics and Safety Research. The students will be supervised by experienced researchers in the Nuclear Thermal-hydraulics and Safety Research Laboratory at the Energy Institute. The Laboratory has acquired latest equipment for experimental and numerical research with the funds provided by CCNY, City University of New York, NRC and DOE. The Fellowship students will be able to participate in a 5-year DOE Nuclear Simulation HUB project and acquire skills needed in the design, regulation, construction and operation of advanced nuclear power plants in the future.

3. INVOLVEMENT OF UNDER-REPRESENTED MINORITY STUDENTS

With the undergraduate scholarships and graduate fellowships made available from the NRC Grants, City College of New York will be able to attract, recruit and train under-represented minority students for professional careers in the nuclear industry. The City College has a vast experience in educating women and under-represented minority students, and is the premier

minority institution in the U.S., located in the Harlem area of the New York City. The Grove School of Engineering enrolls the largest number of under-represented minority students amongst New York State's public engineering schools. Prof. Lee has been supervising three female students and two under-represented minority students for Ph.D. degrees in the field of interfacial dynamics. He also participates in the NSF sponsored PREM: Dynamics of Particulate and Heterogeneous Materials which provides support for graduate studies and research opportunities to minority students in science and engineering. Prof. Kawaji has previously supervised two female Ph.D. students and eight female Masters students at the University of Toronto in Canada and at CCNY.

The City College of New York is America's oldest public university, predating the land grant colleges by two decades. It has for 160 years been the primary route to advancement for generations of native and newly immigrated New Yorkers. CCNY is first in NY State and 10th nationally in graduating minority engineers, 5th nationally in conferring graduate degrees on minority students and a top producer of African-American engineering PhDs. City College is 9th in the US in the number of its graduates that have gone onto earn PhD degrees; 9 of its alumni have received the Nobel Prize.

4. PROPOSED FELLOWSHIP PROGRAM

Three Ph.D. students will be selected to receive Nuclear Research Fellowships with an average annual stipend of $29,333 each. The Grove School of Engineering at City College will provide every Fellowship student with tuition fees and health insurance worth approximately $11,000 in Year 1 and $7,000 per year in subsequent years. The Fellowship holders will pursue a graduate education program and conduct experimental and/or numerical investigations in the Nuclear Thermal-hydraulics and Safety Research Laboratory supervised by the faculty members of the Energy Institute and Grove School of Engineering at CCNY.

4.1 Educational Program and Graduation Curriculum

All Fellowship students will complete their doctoral programs in three stages: course work, qualifying exams, and candidacy. Within two to three years, the basic course requirements in Mechanical or Chemical Engineering will be met by completing at least 60 credits of approved graduate work. After the completion of 45 credits, the students must pass a written qualifying examination. A second examination is taken in the form of an oral examination, usually upon completion of the course requirements. The students are then certified as doctoral candidates and enter the last stage of doctoral study, the completion of a dissertation embodying original research and its defense in an oral final examination. Whenever possible, candidates whose objective is academic teaching will be given the opportunity to gain classroom experience.

The Fellowship students will have an opportunity to study nuclear engineering subjects by taking the following courses and using PC-based nuclear power plant simulators to gain in-depth knowledge of nuclear reactor design and operation.

- **Reactor Physics and Engineering**: This course covers the basic principles of nuclear reactors including fission reaction, neutron diffusion theory, reactor criticality, reactivity effects, reactor types, and nuclear fuels.
- **Reactor Thermal Hydraulics**: thermal aspects of nuclear power plants are covered including heat generation and thermal analysis of fuel elements, single and two-phase fluid mechanics and heat transfer in fuel bundles, and boiling and condensation heat transfer involved in heat transport loops of various reactor types.

- **Nuclear Power Plant Safety**: Principles of nuclear reactor safety are covered including different types of accidents such as reactivity accidents and loss-of-coolant accidents, radiation protection, and regulatory aspects such as the licensing process, the concept of defence in depth, accident analysis, and probabilistic risk assessment.
- **Nuclear Power Plant Design and Operation**: This course integrates the principles of reactor physics, thermal-hydraulics, reactor safety, instrumentation, materials, environmental impact, and economic optimization. Topics include material issues in plant design and operations, aspects of thermal design, fuel depletion and reactivity control.

The graduate curriculum will include advanced courses in Numerical Methods, Computational Fluid Mechanics, Finite/Spectral Element Analysis, Interfacial Flows & Transport Phenomena, and Two-Phase Flow & Heat Transfer. These courses will provide our students with the necessary knowledge, experience and skills in nuclear engineering to pursue professional careers in the nuclear industry and will satisfy a national need.

4.2 Research Projects

The Fellowship students will conduct research using the facilities available at the Nuclear Thermal-Hydraulics and Safety Research Laboratory of the Energy Institute described below. They will select research topics from the experimental and numerical investigations directly relevant to the nuclear industry with an aim to improve the design, operation and safety of current LWRs. Their research projects will focus on two-phase flow and heat transfer in a reactor core and fuel channels, and be complementary to the research executed under the DOE Nuclear Simulation HUB project. As such, these projects will enable Fellowship students to participate in a major national project from 2012 to 2014. They will also be able to interact with researchers at National Labs such as Oak Ridge, Idaho and Los Alamos National Laboratories, as well as industry researchers from Westinghouse, TVA and EPRI.

Nuclear Thermal-hydraulics and Safety Research Laboratory

The City University of New York is investing in excess of $1,000,000 into the renovation of the Nuclear Thermal-hydraulics and Safety Laboratory in the Grove School of Engineering as stated in a letter from the Vice Chancellor of Research at CUNY attached. The existing laboratory space is being renovated to provide 1,600 sqft of well designed laboratory space equipped with water and compressed air supply systems and high voltage (e.g., 220V 3-phase) AC lines to be used for an Air-Water Two-phase Flow Loop, Flow Boiling Loop, Pool Boiling Apparatus, and Forced Convection Heat Transfer Loop. All the flow loops will allow different test sections to be used to investigate thermal-hydraulics problems of interest to the nuclear industry.

Advanced instruments have also been purchased with the funds provided by CCNY, CUNY, NRC and DOE. A high-speed imaging system for flow visualization, Particle Image Velocimetry (PIV) hardware and software for velocity field measurements, a liquid film thickness sensor, and Optical Void Probe system have been acquired. Additionally, an infrared imager, a nanosensor that can profile surfaces with a nanometer resolution, and a Mach-Zehnder interferometer for two-dimensional temperature profile measurements are available. This well-equipped research laboratory will enable Fellowship students to acquire advanced skills in conducting thermal-hydraulics experiments.

A computational facility will be made available by the Energy Institute including a 200-

node computer cluster to enable Fellowship students to run advanced simulation models based on our own source codes (3-D LBM model), commercial CFD packages (e.g., FLUENT, CFX, STAR-CD), reactor safety analysis codes (e.g., RELAP5 and TRACE). A Nuclear Education Grant from NRC has been used to acquire the reactor simulation software, PCTRAN.

Ph.D. Research Topics

The research projects available for the Fellowship students include experimental and numerical investigations of subcooled flow boiling, Departure from Nucleate Boiling, and long term cooling of debris beds in a partially degraded core, all of which are important for enhancing reactor safety, uprating the reactor power and better understanding of long term cooling in severe accidents. In conjunction, advanced numerical simulations of two-phase flows will be undertaken, to contribute to the improvements in reactor safety analysis codes.

Advances in computer technology have made direct numerical simulations (DNS) involving gas-liquid two-phase flows possible. The motion of gas-liquid interfaces can be modeled by using the interface tracking or capturing techniques developed in the past twenty to thirty years. The adoption of the DNS approach is, however, unrealistic for full system analyses since the reactor systems are too complex and large. Thus, the Fellowship students will investigate ways to improve the accuracy of a two-fluid modeling approach and to use the DNS approach for detailed analyses of complex thermal-hydraulic phenomena involved in the projects described below.

Subcooled Flow Boiling in PWR Fuel Assemblies

In PWRs, the primary coolant flowing through fuel assemblies undergoes subcooled boiling forming a low-quality two-phase flow of steam bubbles and water in subchannels between fuel rods. The vapor bubbles are partially condensed and sheared by a high-speed subcooled liquid flow and may detach from the fuel rod surface especially near the mixing vanes of spacer grids. The subcooled boiling involves thermal non-equilibrium and heat transfer involves energy partition between sensible heat and latent heat. The resulting vapor bubble nucleation, growth, detachment and sliding motion are still not fully understood and the measurement and prediction of the bubble behavior remain as important challenges. In the DOE Nuclear Simulation HUB, an accurate numerical simulation of subcooled flow boiling in PWR fuel assemblies is one of the important goals. Thus, Lattice Boltzmann Model (LBM) simulations will be conducted and the predictions will be validated using detailed thermal and flow data that will be obtained by conducting subcooled flow boiling experiments in our Laboratory using advanced instrumentation.

Departure from Nucleate Boiling (DNB) Phenomena

If the reactor power is too high, the vapor bubbles form faster than they are removed by the flow and a Critical Heat Flux (CHF) condition due to DNB is reached which would cause a hot spot to form resulting in a rapid excursion of the local fuel rod temperature. To investigate the DNB phenomena on a heated fuel rod surface, a highly sensitive liquid film thickness sensor with a resolution of 10 nanometers will be used. This advanced sensor will be used to study the microlayer dryout below the growing vapor bubble on a heater rod simulating a nuclear fuel rod. The DNB phenomena will also be investigated numerically using a thermal LBM simulation code to understand the underlying physics, and the experimental data obtained will be used to validate the simulation results.

Long Term Cooling of Debris

This project will be aimed at the experimental investigation of long term cooling of debris beds in a partially degraded reactor core and the development of advanced modeling and simulation tools for predicting the phenomena based on diffuse and sharp interface methods (Phase field, lattice Boltzmann and VOF methods) coupled to a multi-field two-fluid model.

Both PWR and BWR reactor cores consist of fuel assemblies that contain spacer grids. During a LOCA, debris particles resulting from erosion of insulation and other materials in the containment could flow through sump filters and partially clog the flow channels in the fuel assemblies, especially at the grid spacers. In addition, when a reactor core is degraded as a result of partial melting of fuel rods during a Fukushima-type accident, the flow channel geometry would become complex as molten fuels would flow and solidify in different parts of the core. In the proposed project, experiments will be conducted to obtain new data on two-phase steam-water flow in particle beds, and quenching/cooling of hot debris beds. Advanced models will be developed and used to predict the coolant flow and heat transfer phenomena, and validated against the experimental data.

5. RECRUITMENT ACTIVITIES AND MARKETING STRATEGIES

An announcement of the CCNY Nuclear Engineering Research Fellowships will be made early in the Spring semesters of 2012-2015. The fellowship opportunities will be advertised through the Energy Institute website, by sending flyers to Nuclear, Chemical and Mechanical Engineering Departments at other colleges and universities, and distributing flyers at ANS, AIChE and ASME meetings. To attract the interests of a wide spectrum of students at City College and other institutions, a series of information sessions will be held before the application deadline to discuss the Nuclear Research Fellowship Program. In particular, students from under-represented minority groups, women and persons with disabilities will be strongly encouraged to apply.

Prospective students will be asked to apply before a deadline of May 15, 2012. To be eligible for the fellowship, applicants need to meet the admission requirements for a Ph.D. study and have a minimum GPA of 3.3 overall and in the major field of study.

6. STUDENT SELECTION

A Selection Committee consisting of the Director of the Energy Institute as well as the faculty members from the Mechanical and Chemical Engineering Departments will evaluate the applications for the Ph.D. fellowships. Interviews with each candidate on a short list will be conducted by the Selection Committee. The fellowship winners will be announced through the Grove School of Engineering Newsletter, and Nuclear Engineering Concentration and the Energy Institute websites at CCNY and CUNY.

As long as the fellowship holders maintain a GPA higher than 3.3 and make satisfactory progress in research by passing qualifying exams, they will be eligible to continue receiving this fellowship for a minimum of two years and up to four years. However, efforts will be made by their research advisors to obtain other sources of financial support, e.g., the DOE Nuclear Energy University Program, for the third and later years of their doctoral program so that as many new graduate students as possible would be supported by the Nuclear Research

Fellowship Program over the four year grant period.

7. OUTREACH AND DEVELOPMENT ACTIVITIES

Special seminars will be organized for the Nuclear Research Fellowship students and other students in our nuclear engineering program. The seminar speakers will be invited from National Labs, nuclear industry, and government agencies to talk about their research work or job opportunities in the nuclear field. The Energy Institute has developed collaborative relationships with Argonne and Brookhaven National Laboratories, and will develop closer relationships with Oak Ridge, Idaho and Los Alamos National Laboratories in connection with the DOE Nuclear Simulation HUB project.

Every summer, one Fellowship student will be sent to Argonne or Idaho National Laboratory to gain experience in conducting large-scale research not available on university campuses. The Energy Institute will partially cover their travel and living expenses. Letters of support from ANL and INL expressing their willingness to host the student are attached.

The Energy Institute will also sponsor Fellowship students to present their research work at international conferences. They will be able to meet with researchers from around the world to gain an international perspective in the nuclear field. In addition, efforts are being made to build fruitful relationships with the nuclear industry, including the local utilities which operate nuclear power plants (e.g., Entergy Corporation), or are planning to construct new nuclear power plants (e.g., PSE&G in New Jersey). They will be approached to provide internship and job opportunities for our students in the future.

8. MANAGEMENT STRUCTURE

The Nuclear Research Fellowship Program at CCNY will be administered by the Energy Institute and managed by a Steering Committee composed of the Director of the Energy Institute and faculty members from the Mechanical and Chemical Engineering Departments of CCNY. The Steering Committee will be fully responsible for reviewing the fellowship applications, selecting the fellowship winners, subsequently advising the fellowship holders and evaluating the effectiveness of the Fellowship Program. Secretarial help for the Steering Committee will be obtained as needed from the Energy Institute. The Steering Committee will regularly monitor the progress of the fellowship winners by examining their course work and research. The students will be required to present their progress in research to the Committee at least once a year. The Committee members will in turn provide the students with constructive advice on the current and future directions of their research. The fellowship holders will also be encouraged to approach the Committee members for guidance related to their study and research as needed.

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 CRF 220, 2 CFR 225, and 2 CFR 230 this URL to the Office of Management and Budget Cost Circulars is included for reference to:
A-21 (now 2 CFR 220)
A-87 (now 2 CFR 225)
A-122 (now 2 CFR 230
A-102:

http://www.whitehouse.gov/omb/circulars_index-ffm

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.

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 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/a133.html http://www.whitehouse.gov/omb/circulars/a133_compliance/08/08toc.aspx >

2. Award Package
§ 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 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 VI 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 VI, 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's 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 should 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, 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, § 215.40-48
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 must be in accordance with the Grantee's Travel Regulations or the US Government Travel Policy and Regulations at: www.gsa.gov/federaltravelregulation and the per diem rates set forth at: www.gsa.gov/perdiem, absent Grantee's travel regulation. Travel costs for the grant must be consistent with provisions as established in Appendix A to 2 CFR 220 (J.53). All other travel, domestic or international, must not increase the total estimated award amount.

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 Grantee'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.

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 Grantee's policies and practices. Travel by first-class travel is not authorized unless prior approval is obtained 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 Grantee shall comply with the provisions of the Fly American Act (49 USC 40118) as implemented through 41 CFR 301-10.131 through 301-10.143.

Property and Equipment Management Standards
Property and equipment standards of this award shall follow provisions as established in 2 CFR 215.30-37.

Procurement Standards
Procurement standards of this award shall follow provisions as established in 2 CFR 215.40-48

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 and retain title 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

For this award shall follow OCOI requirements set forth in Section 170A of the Atomic Energy Act of 1954, as amended, and provisions set forth at 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 an intra-agency Appeal Board to review a grantee 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 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 215.60-62.

Monitoring and Reporting § 215.50-53
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 or deducted from the total project cost allowable cost as directed by the Grants Officer or the terms and conditions of award.
- Budget Revision – 2 CFR 215.25
    - The Grantee is required to report deviations from the approved budget and program descriptions in accordance with 2 CFR 215.25 and request prior written approval from the Program Officer and the Grants Officer.
    - The Grantee is not authorized to rebudget between direct costs and indirect costs without written approval of the Grants Officer.
    - The Grantee is authorized to transfer funds among direct cost categories up to a cumulative 10 percent of the total approved budget. The Grantee 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 215.27

b. **Federal Financial Reports**

The Grantee shall submit a "Federal Financial Report" (SF-425) on a semi-annual basis for the periods ending March 31 and September 30, 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 is due within 90 days after expiration of the

award. The report should be submitted electronically to: Grants_FFR@NRC.GOV. ***(NOTE: There is an underscore between Grants and FFR.)***

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 should 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 may 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 on a semi-annual basis unless otherwise authorized by the Grants Officer. Performance reports should be sent to the Program Officer at the email address indicated in Block 12 of the Notice of Award, and to Grants Officer at: Grants_PPR.Resource@NRC.GOV. ***(NOTE: There is an underscore between Grants and PPR).***

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 or any portion thereof. The submission for the six month period ending September 30th is due by October 31st or any portion thereof.

d. 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 HR grant awards, in addition to the customary performance progress report requested on the SF-PPR, SF-PPR-B, and SF-PPR-E forms, HR requires the following metrics to be reported on by the awardees as follows:

Fellowship Awards

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.

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 there under, 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 Leadership of Reducing Text Messaging While Driving
Pursuant to EO 13513, Grantees should 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 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."

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, 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 grantee or any subgrantee, 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." (22 U.S.C. § 7104(g)).

Award Term

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 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 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.ccr.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, 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.