



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

September 30, 2016

Fengxiang Han, Ph.D.
Jackson State University
1400 J.R. Lynch Street
Jackson, MS 39217

VIA Electronic Mail
Fengxiang.han@jsums.edu

SUBJECT: GRANT NO: NRC-HQ-84-16-G-0040

Dear Dr. Han:

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 Jackson State University (hereinafter referred to as the "Grantee" or "Recipient"), the sum of \$400,000.00 to provide support for "Training of a Diverse Radiochemistry Professionals at Jackson State University" entitled "Program Description."

This award is effective September 30, 2016 and shall apply to expenditures made by the Recipient furtherance of program objectives during the period beginning with the effective date of September 30, 2016 and ending September 29, 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. In addition your grant application proposes \$40,000.00 in cost share. Please ensure your cost share conforms to the provisions in 2 CFR 200, and is reported on the semi-annual Federal Financial Report.

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

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,

M'Lita Carr

M'Lita Carr
Grants Officer
Resources & Grants Team
Acquisition Management Division

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

TEMPLATE - ADMIN

SUNSI REVIEW COMPLETE

OCT - 6 2016

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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-0040		2. SUPPLEMENT NUMBER		3. EFFECTIVE DATE 09/30/2016		4. COMPLETION DATE	
5. ISSUED TO NAME/ADDRESS OF RECIPIENT (No., Street, City/County, State, Zip) JSU 1400 J R LYNCH ST JACKSON MS 392170002				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. Fengxiang Han Fengxiang.han@jsums.edu; 601-979-3674			
8. COMMERCIAL & GOVERNMENT ENTITY (CAGE) NO.							
10. RESEARCH, PROJECT OR PROGRAM TITLE Training of a Diverse Radiochemistry Professionals at Jackson State University							
11. PURPOSE See Schedule							
12. PERIOD OF PERFORMANCE (Approximately) 09/30/2016 through 09/29/2020							
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		\$40,000.00					
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-16-0211							
15. POINTS OF CONTACT							
	NAME		MAIL STOP	TELEPHONE		E-MAIL ADDRESS	
TECHNICAL OFFICER	NANCY V. HEBRON-ISREAL			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 ENGERGY ACT OF 1954, AS AMENDED.							
17. APPLICABLE STATEMENT(S), IF CHECKED:				18. APPLICABLE ENCLOSURE(S), IF CHECKED:			
<input type="checkbox"/> NO CHANGE IS MADE TO EXISTING PROVISIONS				<input type="checkbox"/> PROVISIONS <input type="checkbox"/> SPECIAL CONDITIONS			
<input type="checkbox"/> FDP TERMS AND CONDITIONS AND THE AGENCY-SPECIFIC REQUIREMENTS APPLY TO THIS GRANT				<input type="checkbox"/> REQUIRED PUBLICATIONS AND REPORTS			
UNITED STATES OF AMERICA				COOPERATIVE AGREEMENT RECIPIENT			
CONTRACTING/GRANT OFFICER M'LITA R. CARR		DATE 09/21/2016		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: 044507085 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: 09/30/2016 to 09/29/2020				

Attachment A - Schedule

A.1 PURPOSE OF GRANT

The purpose of this Grant is to provide support to the "Training of a Diverse Radiochemistry Professionals at Jackson State University" as described in Attachment B entitled "Program Description."

A.2 PERIOD OF GRANT

1. The effective date of this Grant is 09/30/2016. The estimated completion date of this Grant is 09/29/2020.
2. Funds obligated hereunder are available for program expenditures for the estimated period: 09/30/2016 – 09/29/2020.

A. GENERAL

1. Total Estimated NRC Amount: \$400,000.00
2. Total Obligated Amount: \$400,000.00
3. Cost-Sharing Amount: \$40,000.00
4. Activity Title: Training of a Diverse Radiochemistry Professionals at Jackson State University
5. NRC Project Officer: Nancy Hebron-Isreal
6. DUNS No.: 044507085

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	\$7,324.00	\$7,324.00	\$7,324.00	\$7,324.00
Fringe Benefits	\$2,344.00	\$2,344.00	\$2,344.00	\$2,344.00
Travel	\$6,000.00	\$6,000.00	\$6,000.00	\$6,000.00
Supplies	\$9,498.00	\$9,498.00	\$9,498.00	\$9,498.00
Other (Fellowship)	<u>\$62,000.00</u>	<u>\$62,000.00</u>	<u>\$62,000.00</u>	<u>\$62,000.00</u>
Total Direct Cost	\$87,166.00	\$87,166.00	\$87,166.00	\$87,166.00
Indirect Cost	<u>\$12,834.00</u>	<u>\$12,834.00</u>	<u>\$12,834.00</u>	<u>\$12,834.00</u>
Total Cost	\$100,000.00	\$100,000.00	\$100,000.00	\$100,000.00

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

A.4 AMOUNT OF AWARD AND PAYMENT PROCEDURES

1. The total estimated amount of this Award is \$440,000.00, inclusive of \$40,000.00 in cost share, 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

Introduction. Global warming has become an issue in many areas. It is assumed that increasing greenhouse gas emission from fuel energy production is one of the causes. Therefore, nuclear energy has become an important consideration in meeting the needs of sustainable energy supply and mitigating of greenhouse effects. Nuclear energy is a promising emission-free clean energy. Currently, fossil fuel energy is the major source of global energy consumption (Manahan, 2010) while nuclear energy accounts for 6% and 8% of the total energy consumption in the world and the U.S., respectively (Manahan, 2010). However, the safety of nuclear power plants has become a public concern and it is a limiting factor for further development. There have been 99 nuclear power plant accidents worldwide with four major accidents including the most recent Fukushima Daiichi nuclear disaster (2011), Chernobyl disaster (1986), Three Mile Island accident (1979), and the SL-1 accident (1961) (Sovacool, 2010).

The most serious pollutants related to nuclear power plant accidents are Cs, Sr, Co, I and some actinides. ^{137}Cs is a radioactive pollutant of great concern. It has a half life of 30.2 years. It is highly bioavailable and both chemically and biologically similar to potassium, an essential element in living organisms. Cs is uniformly distributed among living organisms. Sr behaves similarly to Ca in terrestrial ecosystems and animals, and is mostly deposited in bone systems. Thus, Cs and Sr can be rapidly integrated into the biological cycles of human beings and accumulate in various organisms (Gommers et al., 2005). Chernobyl accident released a huge amount of ^{137}Cs , ^{90}Sr , ^{238}Pu and ^{241}Am into the surrounding soils (Belarus, Ukraine and Russia) and spread through the entire Northern hemisphere (Gommers et al., 2005; Kashparov et al., 2005). Similarly, radionuclides, ^{134}Cs , ^{137}Cs , ^{60}Co and ^{131}I , were released during the Fukushima Daiichi nuclear power plant accident in 2011 (Yoshida and Kanda, 2012; Yoshida and Takahashi, 2012. Yasunari et al., 2012). On the other hand, radionuclides have been reported to be present and be transported in colloids of groundwater of nuclear ground detonation sites such as the Nevada Test Site (Kersting et al., 1999).

Problem Statement. With potential “high” risks from nuclear power plant accidents, safe production and safe use of nuclear energy is an important societal and scientific issue. It is important to inform the society with better understanding of environmental fates of these radionuclides, their interactions with major minerals, and potential food chain contamination, especially in the coastal ecosystems. One of the key issues is the transfer of these pollutants into plants and finally food chains (Kashparov et al., 2005). Therefore, environmental fates and fingerprints of these pollutants in coastal ecosystems and transfer into aquatic plants are important topics for risk assessment, nuclear detonation detection, nuclear forensics, anti-terrorism, and better prevention/remediation of possible contaminated sites. With recent Japanese nuclear power plant accident and increasing awareness of safe disposal of nuclear wastes, there are great needs in training and educating the next generation radiochemists, especially environmental radiochemists and nuclear waste safety specialists. However, over the past decades,

there has been a significant decrease in radiochemistry graduate students globally. It is especially alarming due to underrepresentation from minority students including African, Hispanic, and Native Americans in STEM. Jackson State University (JSU), one of the leading HBCU's on STEM education in the country with a Carnegie classification of "Research University with High Research Activities", is ideally positioned to fill this gap by training radiochemists and nuclear safety scientists through the newly established first-of-its-kind radiochemistry program in the state of Mississippi. We develop the novel team approach: Faculty-Graduate Student-National Lab Research Scientist in a small group for maximally and mutually training graduate students in radiochemistry at JSU. The proposed activity will also strengthen the current chemistry Ph.D. program in the Department of Chemistry and Biochemistry as well as the interdisciplinary Environmental Ph. D. program.

Current Radiochemistry Program at JSU. With the support from the NRC through previous grant NRC-HQ-12-G-38-0038 (April, 2012-March, 2015), a radiochemistry teaching and research program has been established at JSU. The radiochemistry program had a total of 11 graduate students and 11 undergraduate students working in this research group. We developed two courses during this period: "Radiochemistry" and "Nuclear Waste Chemistry and Safety" on both graduate and undergraduate levels. Radiochemistry course was offered in Fall 2013 with 7 students enrolled (6 graduate and 1 undergraduate students, with 5 of them African Americans and five were females) and in Spring 2016 with 15 graduate students enrolled (13 African Students and 10 female students). Nuclear Waste Chemistry and Safety course was offered in Fall 2014 with 7 students enrolled. In regard to radiochemistry research, we had been conducting the following projects: 1) Environmental assessment of a local nuclear power plant – Grand Gulf Nuclear Power Plant, MS (Billa et al., 2015, 2016). 2) Distribution, speciation, and transformation of Cs, Co and Sr in the U. S. coastal ecosystem (Lawson et al., 2016). 3) Adsorption characterization of Cs, Co, Sr on iron and manganese oxides under various biogeochemical conditions. 4) Development of novel nano-mesoporous silica and nanocarbon for remediation of contaminated water and soil with Cs, Co and Sr (Gao et al., 2015; Mao et al., 2015). Dr. Han spent 2014 summer in the Ames National Laboratory on this study. During this grant period, six graduate students (1 MS and 5 Ph.D.) in Chemistry: Leondra Lawson, Jeremiah Billa, Ruiping Dong and Kai Gao, and five Ph.D. students in Environmental program, Shelton Clerk, Turquoise Alexander, Jacqueline McComb, Taimei Harris, and Eric Gullledge, have been involved in radiochemistry related research. In addition, a total of eleven undergraduate students had worked on the project. In addition, we initiated collaborations with LANL, Ames National Lab, MSU, and ASU. Drs. Cheslan Simpson and Wolfgang Runde, research scientists from the LANL, visited JSU and gave talks to our students. We visited the Health Physics program at ASU for recruiting. ASU, an HBCU, is located in the rural area of the State of Mississippi and hosts the State's only Health Physics program.

Current NRC Faculty Development program (NRC-HQ-84-15-G-0042, Oct., 2015 – Sept., 2018) continues to strength and expand Radiochemistry Program at JSU. The primary objective is to develop a Radiochemistry Concentration in chemistry on all levels of chemistry: BS, MS and Ph.D. The program will recruit and develop a new assistant professor, to expand the current radiochemistry program by further developing two new courses, submission for curriculum review for the radiochemistry concentration, research training, and a vigorous research program in radiochemistry. Two new courses, "Actinide Chemistry" and "Radiation Detection and Measurement" will be developed to provide students with up-to-date knowledge and techniques on radiation detection .We propose

five core courses for the BS radiochemistry concentration: 1) Introductory Radiochemistry, 2). Radiation Detection and Measurement, 3) Advanced Radiochemistry, 4) Actinide Chemistry, and 5) Nuclear Waste Chemistry and Safety. The PI (Han) will continue to expand his current radiochemistry research program at JSU. The research program will focus on both environmental radiochemistry and separation chemistry of actinides. Biogeochemistry of Cs, Sr and Co in the US coasts will be continued. Unfortunately, current Faculty program lacks a strong student support.

Objectives of this Proposed Fellowship Program. The objective of this Fellowship program is to train underrepresented minority students on radiochemistry through formal course work, laboratory research, internship, and career development. It will enhance the newly established radiochemistry program at JSU by requesting fellowship support from the NRC for graduate students. These students will be recruited and trained with the proposed fellowship program, jointly by JSU and the Pacific Northwest National Laboratory.

Recruitment and Selection. The PI has actively recruited and mentored African American graduate students. Currently, the PI advises five African American Ph.D. students, one African American MS student, and two undergraduate students. Five of them are females. A strong effort is planned to support two graduate students. The two new graduate students will be recruited from admitted graduate student pool in the Chemistry (total 55) or the Environmental Science Ph.D. (total 40) programs. In addition, the PI will visit local HBCUs and smaller liberal art colleges to recruit: Alcorn State University, Mississippi Valley State University, Rust College, Milsaps College, Mississippi College, Tougaloo College, and William Carey College, all in Mississippi; and Dillard University, Grambling State University, and Southern University in Louisiana; and others like Alabama A&M University, Tennessee State University, etc. Flyers and online posting will be distributed through these departments' websites. Especially, we will focus on Alcorn State University (ASU), another HBCU in Mississippi, who hosts the only Health Physics program in the State. We have developed formal collaboration with Alcorn State University through visitation, seminar, and collaborative research projects. The director of the Health Physics program at ASU, Dr. Billa Jermiah, has strongly supported the radiochemistry program at JSU by encouraging potential highly qualified African American students in his program to apply for graduate study. In addition, potential students will be invited to visit JSU and the Chemistry Department. The PI will send flyers to local high schools at local Science Fairs and lecture there.

Two selected graduate students will meet the following criteria: 1) must be US citizens or permanent residents; 2) must be a full time student; 3) must show high interest in nuclear relevant sciences, and have a strong desire to work in nuclear relevant national laboratories. Student must sign the NRC service agreement prior to the student receiving financial support that they serve six (6) months in nuclear-related employment for each full or partial year of academic support; 4) Must have an average GPA 3.3 or above (on a 4.0 scale) overall and within major; and 5) Must be willing to have summer internships at Pacific Northwest National Laboratory.

According to NRC service requirement, service agreements will be arranged and to be signed by the students (including contact information) and by the NRC Program Manager, prior to the student receiving financial support. We shall facilitate the distribution of the service agreement to the students and submitting the signed copies to the NRC Program Manager. Students will serve six (6) months in nuclear-related employment for each full or partial year of academic support. The employment may be

with NRC, other Federal agencies, State agencies, Department of Energy laboratories, nuclear-related industry, or academia in the students sponsored fields of study. The service obligation begins after the student has completed their degree program according to NRC Fellowship Program requirement.

Team-Mentoring and Training. We develop a strong Faculty-Graduate Student-National Lab Research Scientist team approach: in a small group for maximal engagement and mutual training of graduate students in radiochemistry at JSU. Graduate students will be teamed with the Dept. supported undergraduate students work on this program. Graduate students will gain valuable structured mentoring experiences under the supervision of the PI and Co-PIs. Faculty member directly supervises the graduate research project and course work. National Lab Research Scientist will actively involve in student research project, attend semester conference call and supervise the summer research at the national lab.

Students are required to maintain a GPA of 3.3 or above in chemistry, mathematics and other science courses. The PI will develop individually designed plan of study based on their individual background and training. This includes course work, laboratory practices, and field works such as laboratory analytical skills, literature search and understanding, and writing of reviews and thesis. The PI will teach them scientific writing of manuscripts for publication in refereed journals. The PI will require both students to attend at least one regional or national/international professional conference per year to present their research and participate in student competition. Currently, five African American Ph.D. students have had a total of 37 senior authorships in conference proceedings with the PI. Ph.D. student Jacqueline McComb won the first place in graduate research competition in the 10th International Symposium on Recent Advances in Environmental Health, Jackson, MS (2013). Graduate Students are required to work as a full-time student conducting laboratory research and/or course work. Graduate students will be encouraged to read a wide range of radiochemistry literature. After discussing with the PI, they can select a specific topic for their dissertation. A literature review on the specific topic will be conducted in the first semester. If possible, the review should be considered for possible publication either as a peer-reviewed journal paper or a book chapter. A 5-member graduate committee should be formed in the second semester. Students can start their preliminary study in the first/second semester. A research proposal should be written and submitted for the committee for approval. After the approval, the student can proceed with the proposed study. The focus of the radiochemistry at JSU is environmental radiochemistry. Both students will visit the Pacific Northwest National Laboratory and will participate in summer research on nuclear chemistry related projects. This will significantly enhance their experience on nuclear relevant research and increase the desire to work in nuclear relevant career in DOE laboratories. Integration of education and research program will be the focus of this proposed fellowship program. Students will participate in the proposed lecture courses and research work and present their results at national and international conferences.

For the research training of this program, environmental radiochemistry, environmental chemistry and biogeochemistry of radionuclides such as Cs, I, Sr, and Co in the US costal ecosystems will be investigated. The purpose of this study is to better understand the biogeochemical processes governing the transport, fates, bioavailability and ecotoxicology of these radionuclides derived from nuclear power plant accidents in the U. S. coastal ecosystems. These are possible topics for their dissertation depending on their interests and previous training: 1) Fates and transport of Cs, I, Sr and Co in both surface and subsurface coastal environment; 2) Interaction of Cs, I, Sr and Co with

major minerals in seawater, soil and sediments; 3) Transformation pathways and kinetics of Cs, I, Sr and Co in aquatic and terrestrial ecosystems (soils/sediments); 4) Uptake and bioaccumulation of Cs, I, Sr and Co by both local aquatic and upland plants under various climatic and biogeochemical conditions such as temperature, moisture regime, soil mineral type, soil pH, and dissolved organic carbon; and 5) Development of novel cost-effective nanomaterials for remediation of Cs, Co, Sr and I from water, seawater and soil/sediments.

Management Structure and Capability. The PI, Dr. Han, Associate Professor, will be responsible for recruiting, selecting, advising and training the students. The Co-PI, Dr. Hongtao Yu, Chair and Professor, Department of Chemistry and Biochemistry at JSU, will serve as a mentor for both teaching and research and provide any needed resources for the program. Dr. Yu is an experienced environmental toxicologist and has managed many research programs from NSF, NIH and DoD. Dr. Simpson from the Pacific Northwest National Laboratory will help facilitate and host students' visits and summer internships at National Laboratory and the summer course at University of Missouri. Dr. Han will also be responsible to advise students' on carrying out the proposed research, training for course work, internships, and workshop for career development. There will be a regular weekly meeting between the PI and all students to report weekly progress and present problems and seek solutions. There will also be a quarterly meeting with the PI and three Co-PIs/mentors to discuss progress and solve problems encountered for their course study and research. There will be an internal semi-annual progress report circulated among all partners. There will be a formal annual progress report and final project report to the funding agency or otherwise required. The research results will be presented at national and international conferences and will be published in the international journals by the PI, Co-PIs and graduate students. Dr. Han is an associate professor in Department of Chemistry and Biochemistry at JSU. He obtained his Ph.D. in biogeochemistry/ environmental chemistry from the Hebrew University of Jerusalem, Israel. Dr Han is teaching environmental chemistry, general chemistry, radiochemistry, and nuclear waste chemistry and safety. He has extensive research experience in studying biogeochemistry of trace elements/heavy metals as well as Cs, Co and Sr in soil and water and their remediation as well as global heavy metal and trace element budget and pollution. Dr. Han has been on the editorial boards of two international environmental science journals: *Water Air and Soil Pollution* (Springer), *Soil and Sediment Contamination* (Taylor & Francis) and Editor-in-Chief of *Journal of Bioremediation & Biodegradation*. He has published more than 80 referred papers, 10 book chapters, 100 proceedings/ conference presentations, and has obtained one U.S. provisional patent on remediation of heavy metals. In 2007, Dr. Han published a book entitled *Biogeochemistry of Trace Elements in Arid Environments* by Springer.

Assessment and Evaluation Plan. We will conduct both a formative and a summative assessment on the proposed activities annually. The effectiveness of the program in attracting, preparing and retaining students in educational careers will be evaluated. Assessment of effectiveness of attracting and recruiting students: A series of outreach activities including workshops, seminars, websites, brochures, and personal contacts etc. will be conducted and evaluated at the beginning of each academy year, university career day, and other university and department meeting days. Assessment of effectiveness of student preparation: Students' learning the principles of course work will be assessed by pre-class-survey and post-class-survey, quizzes, tests, student class presentation, and final standardized tests. A summer internship at National Laboratory will be evaluated by students' personal experience with radiation detection and measurement instrumentation and the state-of-the-art research programs they have

involved in. The overall outcomes of students' research will be assessed by presentations in national and international conferences, peer-reviewed publications, career choices at DOE labs, and book chapters. Assessment of effectiveness of retaining students: Students who attended the courses and research training through this program will be tracked and evaluated as their course grades, GPA, the number of MS/Ph.D. degrees granted.

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.

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 address 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 address 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 address 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.