

# Grant and Cooperative Agreement

CHOOSE ONE:  
 COOPERATIVE AGREEMENT  
 GRANT

CHOOSE ONE:     EDUCATION     FACILITIES     RESEARCH     SDCR     TRAINING

1. GRANT/COOPERATIVE AGREEMENT NUMBER NRC-HQ-60-17-G-0022	2. SUPPLEMENT NUMBER	3. EFFECTIVE DATE 06/30/2017	4. COMPLETION DATE
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5. ISSUED TO NAME/ADDRESS OF RECIPIENT (No., Street, City/County, State, Zip) UNIVERSITY OF MARYLAND Attn: [REDACTED] OFFICE OF RESEARCH ADMINISTRATION 3112 LEE BUILDING COLLEGE PARK MD 207425141	6. ISSUED BY    U.S. NRC - HQ <b>Mailing Address:</b> Acquisition Management Division Mail Stop: TWFN-8E06M Washington DC 20555-0001
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7. TAXPAYER IDENTIFICATION NO. (TIN)	9. PRINCIPAL INVESTIGATOR/ORGANIZATION'S PROJECT OR PROGRAM MGR. (Name & Phone) [REDACTED]
8. COMMERCIAL & GOVERNMENT ENTITY (CAGE) NO.	

10. RESEARCH, PROJECT OR PROGRAM TITLE  
Faculty Development for Human Reliability and Performance Modeling and Experimentation

11. PURPOSE  
SEE SCHEDULE

12. PERIOD OF PERFORMANCE (Approximately)  
06/30/2017 through 06/29/2020

13A.	AWARD HISTORY	13B.	FUNDING HISTORY
PREVIOUS	\$0.00	PREVIOUS	\$0.00
THIS ACTION	\$300,000.00	THIS ACTION	\$300,000.00
CASH SHARE	\$0.00	<b>TOTAL</b>	\$300,000.00
NON-CASH SHARE	\$0.00		
RECIPIENT SHARE	\$0.00		
<b>TOTAL</b>	\$300,000.00		

14. ACCOUNTING AND APPROPRIATION DATA  
2017-X0200-IUPNSE-60-60D099-52-S-164-1148-4110

PURCHASE REQUEST NO.	JOB ORDER NO.	AMOUNT	STATUS
RES-17-0183			

15. POINTS OF CONTACT

	NAME	MAIL STOP	TELEPHONE	E-MAIL ADDRESS
TECHNICAL OFFICER	NANCY V. HEBRON-ISREAL	TWFN10B56	301-415-6996	Nancy.Hebron-Isreal@nrc.gov
NEGOTIATOR				
ADMINISTRATOR	M'LITA R. CARR		301-415-6869	MLita.Carr@nrc.gov
PAYMENTS				

16. THIS AWARD IS MADE UNDER THE AUTHORITY OF:  
PURSUANT TO SECTION 31B AND 141B OF THE ATOMIC ENERGY ACT OF 1954, AS AMENDED

17. APPLICABLE STATEMENT(S), IF CHECKED: <input type="checkbox"/> NO CHANGE IS MADE TO EXISTING PROVISIONS <input type="checkbox"/> FDP TERMS AND CONDITIONS AND THE AGENCY-SPECIFIC REQUIREMENTS APPLY TO THIS GRANT	18. APPLICABLE ENCLOSURE(S), IF CHECKED: <input type="checkbox"/> PROVISIONS <input type="checkbox"/> SPECIAL CONDITIONS <input type="checkbox"/> REQUIRED PUBLICATIONS AND REPORTS
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<b>UNITED STATES OF AMERICA</b>	<b>COOPERATIVE AGREEMENT RECIPIENT</b>
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CONTRACTING/GRANT OFFICER M'LITA R. CARR	DATE 06/29/2017	AUTHORIZED REPRESENTATIVE	DATE
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# 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)
	<p>CFDA Number: 77.006</p> <p>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.</p> <p>Payment:</p> <p style="padding-left: 40px;">ASAP GRANT FUNDS REIMBURSEMENT SYS US TREASURY</p> <p>Period of Performance: 06/30/2017 to 06/29/2020</p>				

## Attachment A - Schedule

### A.1 PURPOSE OF GRANT

The purpose of this Grant is to provide support to the "Faculty Development for Human Reliability and Performance Modeling and Experimentation" as described in Attachment B entitled "Program Description."

### A.2 PERIOD OF GRANT

1. The effective date of this Grant is June 30, 2017. The estimated completion date of this Grant is June 29, 2020.
2. Funds obligated hereunder are available for program expenditures for the estimated period: June 30, 2017 – June 29, 2020.

### A.3 GENERAL

- |                                |  |
|--------------------------------|--|
| 1. Total Estimated NRC Amount: | \$300,000.00   |
| 2. Total Obligated Amount:     | \$300,000.00   |
| 3. Cost-Sharing Amount:        | \$0.00   |
| 4. Activity Title:             | Faculty Development for Human Reliability<br>and Performance Modeling and<br>Experimentation |
| 5. NRC Project Officer:        | Nancy Hebron-Isreal  |
| 6. DUNS No.:                   | 790934285  |

### A.4 AMOUNT OF AWARD AND PAYMENT PROCEDURES

1. The total estimated amount of this Award is \$300,000.00 for the three year period.
2. NRC hereby obligates the amount of \$300,000.00 for program expenditures during the period set forth above and in support of the Budget above. 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 Recipient in accordance with procedures set forth in the Automated Standard Application for Payments (ASAP) Procedures set forth below.

### A.5 BUDGET

Revisions to the grant award budget shall be made in accordance with Revision of Grant Budget in accordance with [2 CFR § 200.308](#).

**SECTION B - BUDGET CATEGORIES**

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total (5)
	(1)	(2)	(3)	(4)	
	NRC-HQ-60-17- FOA-0001				
a. Personnel	\$ [REDACTED]	\$ [REDACTED]	\$ [REDACTED]	\$ [REDACTED]	\$ [REDACTED]
b. Fringe Benefits	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
c. Travel	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
d. Equipment					
e. Supplies					
f. Contractual					
g. Construction					
h. Other	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
i. Total Direct Charges (sum of 6a-6h)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	\$ [REDACTED]
j. Indirect Charges	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	\$ [REDACTED]
k. TOTALS (sum of 6i and 6j)	\$ 100,000.00	\$ 100,000.00	\$ 100,000.00	\$ 100,000.00	\$ 300,000.00
7. Program Income	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ [REDACTED]

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Standard Form 424A (Rev. 7-97)  
Prescribed by OMB (Circular A -102) Page 1A

## ATTACHMENT B - PROJECT DESCRIPTION

### Project Title: Faculty Development for Human Reliability and Performance Modeling and Experimentation

The Reliability Engineering (RE) Program, administered within the Department of Mechanical Engineering (ME) at the University of Maryland (UMD), College Park is one of the world's largest and most comprehensive concentration of education and research activities in risk, reliability, and safety of engineered systems and processes. There has been a strong emphasis on Nuclear Plant Safety in the RE program and many of its graduate students play key roles in the nuclear industry including the U.S. Nuclear Regulatory Commission (NRC). The RE program serves as the educational component of The Center for Risk and Reliability (CRR), which is the umbrella organization for many of the risk and reliability research and development activities at the A. James Clark School of Engineering.

We propose to create a RE Faculty Development Program to supplement the startup package of two tenure-track junior faculty. [REDACTED], who will be supported by this grant in years 1 and 2, was hired in 2012 to build the department's capabilities in human performance and reliability assessment, which is identified by the NRC as high priority for nuclear plant safety assessment activities. The program includes support for summary salary, graduate student training, and travel to conferences and other professional development activities. [REDACTED] will join the Department of Mechanical Engineering as an Assistant Professor starting June 2017. She has worked at Sandia National Laboratory for several years in the area of probabilistic risk assessment. She also has a research background and interest in human reliability analysis, which will serve as a foundation for her collaboration with [REDACTED] to perform the research proposed here.

The funding will partially support the Graduate Research Assistantship for one PhD student in human reliability research with applications to nuclear plant probabilistic risk assessments for three years, who will be advised by [REDACTED] in years 1 and 2 and collaborates under the supervision of [REDACTED] in year 3. In addition, travel support is requested for research dissemination at conferences, including the Human Factors and Ergonomics Society Annual Meeting, Probabilistic Safety Assessment and Management Topical Meetings, and the American Nuclear Society's PSA meetings.

The Program will be evaluated through an existing yearly review mechanism with the ME Department Chair, and an advisory panel of internal and external experts. The Faculty Development Program will serve to strengthen the ability of the RE Program to retain high-quality faculty in the area of human performance and reliability assessment through investment in mentoring and research activities. In addition, this proposed program will enhance the faculty's support network within and outside of the University, and provide a stronger foundation for her research activities to flourish.

## APPLICANTS

[REDACTED] research focuses on 1) measuring and modeling human performance in safety-critical domains, and 2) using human performance data to inform operator-centered design. This research is primarily applied to advanced highly digital nuclear power plant control room settings where high-risk hybrid (hardware and software) technologies require human interaction to maintain safe system operation. [REDACTED] prior research at Sandia National

Labs focused on probabilistic graphical models, Bayesian analysis, probabilistic risk assessment, and its application to human reliability analysis. After joining UMD, Dr. Groth will continue her work in an interdisciplinary collaborative manner with [REDACTED]. Both faculty members will utilize the existing human performance experimentation facilities that have been built by [REDACTED].

### **Relevance to NRC**

NRC advocates integrated system validation in their guidelines for design in nuclear power plants (NRC, 2012). This includes using performance based tests to determine whether a human-system interface (HSI) meets human performance requirements and supports the plant's safe operation. Human performance requirements can be obtained through: 1) A decomposition of critical HSI tasks; 2) The identification of human error behavioral manifestations for each task; and 3) The identification of performance shaping factors for each human error event (NRC, 2011). In addition, human factors design guidance (auditory and visual signals, task support, feedback, etc.) is specified for control rooms and digital HSIs (NRC, 2002). However, there is currently a gap empirically linking the human factors control room design guidance to human performance requirements. [REDACTED] research aims to address this gap through empirical studies to evaluate the impact of design elements on the operator while interacting with safety-critical hardware and software interfaces in simulated control room environments. Her interdisciplinary background in Industrial and Systems Engineering and Human Factors Engineering places her in a unique position to contribute to research at the intersection of human performance and design.

### **Existing Work in Support of the Program**

Infrastructure. Over the past three years, as Director of the Hybrid-System Integration and Simulation Lab, [REDACTED] has devoted significant effort to build a unique experimental infrastructure with simulation environments to collect HSI interaction performance data. Since field data collection in safety-critical domains is typically inflexible and limited due to the potential for operator distraction, simulating these environments in a laboratory setting is ideal. A key component of the experimental setup is the ability to simulate HSI interaction in standard (2D) and immersive (3D) environments. Two major infrastructure goals achieved in 2013 were: 1) the development of a 2D simulation environment to test fundamental HSI design concepts related to cognitive load and stress; and 2) The development of a 3D simulation environment which included extensive upgrades of an existing virtual reality (VR) CAVE computational system, surround sound, and human input capabilities to enable more powerful and immersive simulations. The UMD VR CAVE is currently the only existing 3D system being utilized for human performance related research that is configured to accept multiple human inputs (glove, mouse, joystick). This is a critical functionality to simulate HSI interaction in VR for a variety of multi-modal input controls that are relevant to advanced nuclear power plant control room design (touchscreens, buttons, etc.). The integration of these controls in the simulation is necessary to generate human performance data. The use of VR simulation is aligned with NRC recommendations to utilize simulators and control room mockups to verify that requirements for human performance can be met and investigate factors such as workload and fatigue in simulator environments (NRC, 2012).

Experimentation and Computation. The simulation environments serve as the foundation to measure and model human response to stressful and emotion-evoking stimuli. A combination of neurophysiological (heart rate, breathing rate, core temperature, heart rate variability, EEG, pupil dilation), emotion (face emotion detection), and perceived usability (surveys) measures are used for these purposes. A research shortcoming for human performance evaluation (cognitive

load and stress) in safety-critical environments is the reliance on subjective forms (surveys, expert elicitation) of HSI evaluation. Although subjective input provides valuable information for the design process, more objective forms of data collection (i.e., neurophysiological sensing) can be used to supplement subjective data to develop a more robust and reliable method to evaluate the impact of a HSI interaction on human performance. Descriptive and predictive modeling approaches are applied to the analysis of neurophysiological, emotion, and usability data.

## UMD INVESTMENT

Infrastructure development and research received significant support from the CRR, Department of Mechanical Engineering, and the A. James Clark School of Engineering through startup funds and dedicated VR CAVE renovation funds. The startup funds, totaling [REDACTED] includes support for graduate student assistantships and postdocs, travel, simulation and computing, and summer salary. In addition to startup funds, the A. James Clark School of Engineering has invested [REDACTED] over the past three years to upgrade Dr. Vaughn-Cooke's laboratory facilities. Due to funds transfer restrictions for [REDACTED] startup accounts, the NRC cost-share option is not feasible. However, she will continue to leverage her remaining startup and lab upgrade funds to build upon past work to accomplish the proposed future work.

In addition, [REDACTED] has received significant startup funds to support her research area. However, the cost sharing option will not be pursued for year 3. It is expected that [REDACTED] startup fund will leverage her research under that falls under this NRC faculty development fund.

A strong foundation has been built for the proposed work by investing in the following activities over the past three years:

1. Built 3D simulations that are transferrable to many control room environments, including: auditory and visual alerts for varying levels of cognitive load; surround sound integration for signals; and multi-screen control panel 3D models.
2. Developed multi-signal (neurophysiological and emotion) pre-processing tools and descriptive and predictive computational algorithms to analyze human performance data.
3. Developed and tested experimental study protocols to explore cognitive load and stress in VR control room environments using non-operators, with future extension to operators.
4. Performed comparative effectiveness studies to assess control room design elements (layout, use of color, acoustic features) through the use of the neurophysiological and emotion measures in small pilot studies.
5. Trained an interdisciplinary research team of undergraduate and graduate students from (Engineering, Computer Science, Neuroscience and Cognitive Science).
6. Integrated human performance and reliability methods into the graduate Reliability Engineering Program curriculum by development a Human Reliability Analysis course.
7. Integrated human factors design concepts into the undergraduate Mechanical Engineering curriculum through the development of a specialized human factors lab in the Senior Design Capstone Course. The lab includes semester-long projects related to HSI prototyping and usability testing.

The proposed faculty development grant will be used to further the aforementioned research activities, including performing larger human performance studies with using the UMD’s research reactor operators who are licensed by the NRC to validate design elements.

**UNIVERSITY**

The University of Maryland, College Park, located just outside Washington, D.C., was founded in 1856 as a private agricultural college and now is the flagship of the state’s higher education system. It is home to 12 colleges and schools offering more than 200 academic degrees to 37,000 undergraduate and graduate students.

**The UMD A. James Clark College of Engineering** has approximately 4500 students and 200 tenured and tenure-track faculty members. The Clark School operates in 14 buildings (more than 750,000 square feet of space). The newest facility is the Jeong H. Kim Engineering Building, where the proposed research activities will take place in the Hybrid-System Integration and Simulation Lab. The Clark School’s graduate programs collectively rank 23<sup>rd</sup> in the nation according to the U.S. News & World Report "America's Best Graduate Schools 2016." The Clark School is ranked 12<sup>th</sup> in the nation among public universities. In 2011 the Institute of Higher Education and Center for World-Class Universities ranked the Clark School 11<sup>th</sup> in the world among all engineering programs. The Clark School’s research grants totaled \$171 million in 2015.

**The UMD Department of Mechanical Engineering**, where the Reliability Engineering Program is housed, also administers the minor in Nuclear Engineering and has the most students of the eight academic departments within the A. James Clark School of Engineering: 842 undergraduate, 312 graduate and approximately 17 BS/MS students. The Department features 5 major interdisciplinary research centers and 36 laboratories in which faculty and students conduct cutting-edge research projects with corporate and governmental partners. Last year, the Department achieved \$25 million in research expenditures. Among its 44 faculty and 31 research faculty and lecturers, the Department has 8 National Academy of Engineering members.

**The UMD Reliability Engineering Program**, offers Masters (M.S.), Ph.D. degrees, and certification in Risk and Reliability Engineering: 84 graduate and advanced education students. The RE Program, initiated in 1989, has the distinction of being the only Reliability Engineering Ph.D. granting Program in the world. The Program includes 6 tenured and tenure-track core faculty and 6 affiliate faculty. The faculty’s research spans to 8 laboratories covering a wide range of subjects involving systems and processes, including: probabilistic risk assessment, nuclear safety research, physics of failure, software reliability, human reliability analysis, and system-level health monitoring and prognostics.

**The impact of nuclear engineering at UMD** can be seen throughout the academic programs and research activities.

<p><b>UMD Academic Programs Related to Nuclear Engineering</b></p>	<ul style="list-style-type: none"> <li>• <u>NRC Graduate Fellows</u>: UMD has hosted numerous NRC fellows over the history of the fellowship program. [REDACTED] have graduated from UMD over past ten years and two Fellows are currently enroll in the Program.</li> <li>• <u>Nuclear Engineering Undergraduate Minor</u>: The minor program includes courses in Fundamentals of Nuclear Reactor Engineering, Nuclear Reactor</li> </ul>
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	<p>Systems and Safety, Reactor and Radiation Measurements Laboratory, Radiation Engineering, Nuclear Reactor Design, Fundamentals of Reliability Engineering, and Capstone Design (Nuclear Topic). In addition to the hundreds of students who have taken these courses as electives in their major, 25 students have graduated with the undergraduate minor in the last five years.</p> <ul style="list-style-type: none"> <li>• <u>UMD Alumni Employed at NRC</u>: Over 150 graduates from the James A. Clark School of Engineering have been employed through various divisions of NRC over the past ten years, with over [REDACTED].</li> <li>• <u>UMD Alumni Employed at Federal Labs</u>: Many graduates from the James A. Clark School of Engineering have been employed at the national labs performing work related to nuclear engineering: Los Alamos National Lab (68), Sandia National Laboratories (34), Brookhaven (36), Idaho National Laboratory (9). In addition, Constellation Energy has employed over 120 engineering graduates.</li> </ul>
<p><b>UMD Nuclear Engineering Research</b></p>	<ul style="list-style-type: none"> <li>• <u>Nuclear Engineering Journal Publications</u>: Over 1000 papers have been published by RE faculty in journals related to nuclear technology (Nuclear Science and Engineering, Nuclear Engineering and Design, Nuclear Technology, etc.)</li> <li>• <u>Nuclear Engineering Facilities</u>: The UMD Training Reactor [REDACTED]. UMD has a Co-60 gamma irradiator and two electron linear accelerators.</li> </ul>

**MANAGEMENT STRUCTURE AND PROGRAM ADMINISTRATION**

The grant will be administered by [REDACTED]. He has served as a consultant to several governmental agencies [REDACTED], private organizations and national laboratories in areas related to probabilistic risk assessment and reliability engineering. He has over 400 papers in archival journals and proceedings of conferences including textbooks in various areas of risk and reliability engineering. As the reliability engineering program director, [REDACTED] will continue his current role as one of two departmental mentors to [REDACTED]. This interaction includes monthly meetings to address the following topics that are vital to their continued success:

1. Existing research project progress
2. The selection of strategic federal and private funding opportunities
3. The selection, retention and training of graduate students
4. Dissemination of research to high-impact journals and conferences

**EVALUATION PLAN**

The effectiveness of the program in training and retaining highly qualified individuals in educational careers will be assessed through two mechanisms: 1) Yearly evaluation the faculty by the ME Department Chair, [REDACTED] (see letter of support); and 2) Evaluation of the program by an Advisory Board.

**Yearly Evaluation**

The ME Department requires that all probationary faculty receive a yearly review by the Department Chair, prior to the submission of their tenure package at the start of the fifth year.

This review is guided by the APT criteria of the Department, School of Engineering, and University. The purpose of these reviews are to supplement individual mentoring with more formal feedback on short-term and long-term goals. The two faculty will be asked to provide her yearly self-assessment that describes the support of graduate students and postdoctoral researchers, research activities, publications and presentations, and service to the University and research community. This yearly self-assessment will be discussed with the faculty's mentors and the Chair, and assist in preparing for merit, mid-career, and tenure reviews.

### **Advisory Board**

A panel of RE Program, nuclear industry, and national laboratory representatives will be assembled to provide yearly feedback on the faculty's progress on metrics previously described in the yearly evaluation. The advisory board evaluation will occur prior to the departmental yearly evaluation and will inform additional feedback from mentors and the Department Chair. A formal APT package will be submitted to advisory board members to assess progress. Written feedback will be provided to [REDACTED].

## **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.

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

### **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, at the time of application, 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, 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.

Federal funds may not be used to travel to countries identified as “Foreign Policy Restricted Countries”, as identified by the U.S. Department of State or the U.S. Agency for International Development.

### **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, or their designees.

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

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

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

### **Remedies for Noncompliance**

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

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

Recipient Financial Management systems must comply with the provisions in [2 CFR § 200.302](#).

- Payment – [2 CFR § 200.305](#)
- Cost Share or Matching – [2 CFR § 200.306](#)



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

### **FEDERAL FINANCIAL REPORTS**

Federal Financial Reports (SF-425) are semi-annually, for the periods ending March 31 and September 30. Reports are due within 30 calendar days following the end of the reporting period and must be emailed to the Project Officer at the email addressed indicated in the Notice of Award, and to the Grants Officer at: [Grants\\_FFR.Resource@nrc.gov](mailto: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/](http://www.whitehouse.gov/omb/grants_forms/).

### **PERFORMANCE PROGRESS REPORTS**

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

#### **Faculty Development**

Performance reports must be submitted semi-annually, for the periods ending March 31 and September 30, or any portion thereof, regardless of the award date. Reports are due within 30 days following the end of each reporting period and must be emailed to the Project Officer at the email addressed indicated in the Notice of Award, and to the Grants Officer at: [Grants\\_PPR.Resource@nrc.gov](mailto: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](mailto:Grants_FFR.Resource@nrc.gov) and [Grants\\_PPR.Resource@nrc.gov](mailto:Grants_PPR.Resource@nrc.gov). (NOTE: There is an underscore between Grants and FFR and Grants and PPR in the email addresses.)

For grant awards that are modified to add additional Program Descriptions, the recipient is required to address the applicable grant performance metrics associated with all programs. Further, these metrics should be broken out by individual program (e.g. Program A and Program B). This can be done utilizing Block 10, Performance Narrative, of the SF-PPR form. If this block does not have sufficient space, additional pages will be accepted. Sf-PPR-B and SF-PPR-E should be used to address both programs as well.

### **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 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:

#### **Faculty Development Metrics:**

1. How many Faculty have been sponsored by NRC funding?
  - a. Response is the number of faculty sponsored, for this reporting period and cumulative to the grant.
2. How many items have the sponsored faculty produced, for example, Professional Journal articles, publications, patents, or conference reports?
  - a. Response is the type and number of items (not a bibliography), 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 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.fsr.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.