



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

July 1, 2016

Dr. David Brenner
The Trustees of Columbia University in the City of New York
630 West 168th Street, Box 49
New York, NY 10032-3702

VIA Electronic Mail
djb3@columbia.edu

SUBJECT: GRANT NO: NRC-HQ-84-16-G-0013

Dear Dr. Brenner:

Pursuant to the authority contained in the Federal Grant and Cooperative Agreement Act of 1977, as amended, and the Atomic Energy Act of 1954, as amended, the Nuclear Regulatory Commission (NRC) hereby awards to The Trustees of Columbia University (hereinafter referred to as the "Recipient"), the sum of \$289,709.00 to provide support to the "Faculty Development Program in Probabilistic Low-Dose Radiation Risk Estimation, at the Columbia University Center for Radiological Research" as described in attachment B entitled "Program Description."

This award is effective July 1, 2016 and shall apply to expenditures made by the Recipient furtherance of program objectives during the period beginning with the effective date of July 1, 2016 and ending June 30, 2019.

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 \$115,883.00 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.

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

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

Please sign the enclosed grant to acknowledge your receipt of the award, and return as a pdf file to Ms. Shashi Malhotra by email at Shashi.Malhotra@nrc.gov.

Sincerely yours,

Erika Eam

Erika Eam

Grants Officer
Resources and Grants Team
Acquisition Management Division

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

TEMPLATE - ADM001

SUNSI REVIEW COMPLETE

ADM002

Grant and Cooperative Agreement

CHOOSE ONE:

- ☐ COOPERATIVE AGREEMENT
- ☒ GRANT

CHOOSE ONE:

☒ EDUCATION☐ FACILITIES☐ RESEARCH☐ SDCR☐ TRAINING

1. GRANT/COOPERATIVE AGREEMENT NUMBER

NRC-HQ-84-16-G-0013

2. SUPPLEMENT NUMBER

3. EFFECTIVE DATE

07/01/2016

4. COMPLETION DATE

06/30/2019

5. ISSUED TO

NAME/ADDRESS OF RECIPIENT (No., Street, City/County, State, Zip)
 TRUSTEES OF COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK
 630 W 168TH STREET
 BOX 49
 NEW YORK NY 10032-3702

6. ISSUED BY

US NRC - HQ

Mailing Address: ACQUISITION MANAGEMENT DIVISION

MAIL STOP TWFN-5E03

WASHINGTON DC 20555-0001

7. TAXPAYER IDENTIFICATION NO. (TIN)

8. COMMERCIAL & GOVERNMENT ENTITY (CAGE) NO.

9. PRINCIPAL INVESTIGATOR/ORGANIZATION'S PROJECT OR PROGRAM MGR. (Name & Phone)

Dr. David Brenner

Email: djb3@columbia.edu; Ph: (212) 305-5660

10. RESEARCH, PROJECT OR PROGRAM TITLE

Faculty Development Program in Probabilistic Low-Dose Radiation Risk Estimation, at the
 Columbia University Center for Radiological Research

11. PURPOSE

See Schedule

12. PERIOD OF PERFORMANCE (Approximately)

07/01/2016 through 06/30/2019

13A.	AWARD HISTORY	13B.	FUNDING HISTORY
PREVIOUS	\$0.00	PREVIOUS	\$0.00
THIS ACTION	\$289,709.00	THIS ACTION	\$289,709.00
CASH SHARE	\$0.00	TOTAL	\$289,709.00
NON-CASH SHARE	\$0.00		
RECIPIENT SHARE	\$115,883.00		
TOTAL	\$289,709.00		

14. ACCOUNTING AND APPROPRIATION DATA

2016-X0200-IUPNSE-84-84D002-52-S-164-T8459-4110

PURCHASE REQUEST NO.	JOB ORDER NO.	AMOUNT	STATUS
OCHCO-16-0200			

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	SHASHI MALHOTRA		301-415-7803	Shashi.Malhotra@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:

- ☐ NO CHANGE IS MADE TO EXISTING PROVISIONS
- ☐ FDP TERMS AND CONDITIONS AND THE AGENCY-SPECIFIC REQUIREMENTS APPLY TO THIS GRANT

18. APPLICABLE ENCLOSURE(S), IF CHECKED:

- ☐ PROVISIONS ☐ SPECIAL CONDITIONS
- ☐ REQUIRED PUBLICATIONS AND REPORTS

UNITED STATES OF AMERICA

COOPERATIVE AGREEMENT RECIPIENT

CONTRACTING/GRANT OFFICER

ERIKA EAM

DATE

06/29/2016

AUTHORIZED REPRESENTATIVE

DATE

JUL 10 2016 12:40

JUL 10 2016 12:40

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: 77.008</p> <p>DUNS Number: 621889815</p> <p>FOA:NRC-HQ-84-16-FOA-0001</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 (OMB Circular A110).</p> <p>Payment:</p> <p style="padding-left: 40px;">ASAP GRANT FUNDS REIMBURSEMENT SYS</p> <p style="padding-left: 40px;">US TREASURY</p> <p>Period of Performance: 07/01/2016 to 06/30/2019</p>				

ATTACHMENT A - SCHEDULE

A.1 PURPOSE OF GRANT

The purpose of this grant is to provide support to the "Faculty Development Program in Probabilistic Low-Dose Radiation Risk Estimation, at the Columbia University Center for Radiological Research" as described in Attachment B entitled "Program Description."

A.2 PERIOD OF GRANT

1. The effective date of this Grant is July 1, 2016. The estimated completion date of this Grant is June 30, 2019.
2. Funds obligated hereunder are available for program expenditures for the estimated period: July 1, 2016 – June 30, 2019.

A. GENERAL

1. Total Estimated NRC Amount: \$289,709.00
2. Total Obligated Amount: \$289,709.00
3. Cost-Sharing Amount: \$115,883.00
4. Activity Title: Faculty Development Program in Probabilistic Low-Dose Radiation Risk Estimation, at the Columbia University Center for Radiological Research
5. NRC Project Officer: Nancy Hebron-Israel
6. DUNS No.: 621889815

A.3 BUDGET

Revisions to the budget shall be made in accordance with Revision of Budget and Program Plans in accordance with 2 CFR 200.308.

	Year 1	Year 2	Year 3
Personnel	\$0.00	\$67,460.00	\$67,460.00
Fringe	\$0.00	\$18,282.00	\$18,282.00
Other	\$4,584.00	\$ 2,500.00	\$ 2,500.00
Total Direct Costs	<u>\$4,584.00</u>	<u>\$88,242.00</u>	<u>\$88,242.00</u>
Indirect Cost -60% (MDC)	<u>\$2,750.00</u>	<u>\$52,945.00</u>	<u>\$52,945.00</u>
Yearly Total	\$7,334.00	\$141,187.00	\$141,187.00

A.4 AMOUNT OF AWARD AND PAYMENT PROCEDURES

1. The total estimated amount of this Award is \$405,592.00 for the three year period, inclusive of \$115,883.00 in cost share.
2. NRC hereby obligates the amount of \$289,709.00 for program expenditures during the period set forth above and in support of the Budget above. NRC is not obligated to reimburse the Recipient for the expenditure of amounts in excess of the total obligated amount.
3. Payment shall be made to the Grantee in accordance with procedures set forth in the Automated Standard Application For Payments (ASAP) Procedures set forth below.

Attachment B – Program Description

1. Introduction and Background

Faculty Development Program at Columbia University Center for Radiological Research

Our goal is to recruit a tenure-track Assistant Professor to expand and complement the ongoing low-dose radiation risk assessment program at the Center for Radiological Research (CRR) at Columbia University Medical Center (CUMC). The focus will be on Level 3 Probabilistic Risk Analysis relating to human health consequences after low-dose radiation exposure.

We propose a new Faculty Development Program that will have five central components, Training, Mentoring, Evaluation, Management and Sustainability. It will build on:

- 1) The existing experience and expertise at the Center for Radiological Research - which is in its centenary year - in low-dose radiation risk estimation;
- 2) Already in-place Junior Faculty Development and Mentorship Programs at CUMC and CRR;
- 3) A new Masters program at CUMC/CRR in Radiological Sciences, commencing in 2016;
- 4) Matching funds from the Dean of the Columbia University Medical School.

Overall Background and Motivation

The Fukushima accident in 2011 emphasized major gaps in our understanding of the health effects of low doses of ionizing radiation. These gaps seriously impact our ability to make optimal science-driven decisions in response to a major nuclear event in the United States, accidental or otherwise. It follows that there is a critical need to enhance research on low-dose health effects and to ensure that the nation maintains a sufficient pool of relevant expertise.

Our limited understanding of low-dose health risks seriously impairs our decision-making capabilities, both in the short and the long term, after a large-scale radiological event. For example, differing strategies for evacuation after the Fukushima incident ultimately relate to our limited quantitative knowledge of low-dose radiation risks. But it is also true of our understanding of the long-term health consequences of a radiological event involving large populations: while the regulatory agencies assume that there is no radiation dose below which the health risk is zero, we do not have sufficient data or understanding to know whether this is really the case, or whether, as some assert, low doses may even be beneficial. Setting permissible standards too stringently will result in a major and unnecessary economic burden to the nation, whereas setting standards too low would present an unacceptable cancer burden for the population.

While large-scale radiological events such as in Fukushima and Chernobyl are obvious issues of concern, other issues such as the need for science-based policies regarding the potential expansion of nuclear power, cleanup of radioactively contaminated sites and the potential for radiological terrorism, require a level of research and scientific expertise that the US is rapidly losing. In particular there is concern about a critical decrease in the number of low dose risk estimation experts who will be available to assist in high-level policy and decision making.

Background: The Columbia University Center for Radiological Research

The Center for Radiological Research (CRR) was founded in 1916 by Gioacchino Failla, a graduate student of Marie Curie. In the intervening century, through its Directors, Gioacchino Failla, Harald Rossi, Eric Hall, and now David Brenner, the CRR has focused much of its research on the stochastic health effects of low doses of ionizing radiation, from biophysical, experimental, modeling and regulatory perspectives.¹⁻²² The Current Director, and PI of this application, Dr. Brenner has a research focus over many years on low-dose radiation risk estimation^{9, 10, 12-18, 20, 22-29}, and is a past winner of the NCRP Moseley Award, the Radiation Research Society Failla Medal, and the Oxford University Weldon Medal. In addition to Dr. Brenner, Dr. Igor Shuryak focuses on modeling of radiation carcinogenesis mechanisms^{13-18, 30}.

A key component of the CRR is its Radiological Research Accelerator Facility (RARAF), a neutron and charged particle accelerator-based radiation source dedicated to facilitating low dose biomedical radiation research.³¹⁻⁴⁰ RARAF is an NIH-funded Biomedical Technology Resource Center (P-41 BTRC, PI David Brenner).

Background: Our New (2016) Master's Degree Program in Radiological Sciences

There is a growing need for professionals with expertise in understanding potential environmental and human health risks of radiation exposure arising from industrial use, accidents, nuclear disaster, or terrorism. Graduates with an MS degree in Radiological Sciences will be well prepared for positions in organizations with interests in radiation regulation and policy, universities or companies within the nuclear power industry, as well as the military.

Our MS degree program, accredited to begin in the Fall of 2016, has a track in Radiological Sciences, with a focus in either Health Physics or Radiobiology. The unique focus of this track is on the intersection of the environmental and human health risks of radiation exposure.

Through rigorous coursework in radiation biology, dosimetry, environmental contamination, waste management and historical accidents and incidents, students will gain expertise and training in the environmental health sciences of radiation exposure, conceptual and methodological foundations in biostatistics and epidemiology, as well as critical thinking and practical skills through hands-on experiences. In addition to full time academic faculty with globally recognized expertise and research, our faculty includes instructors with real-world experience, enhancing the practical, career-oriented aspects of the curriculum.

The 40 credit MS degree program includes coursework in, among others: nuclear science, radiation health policy, radiological physics and dosimetry, and laboratory training in radiation instrumentation and measurements. Students will gain conceptual and methodological foundations in biostatistics and epidemiology and develop critical thinking and practical skills through hands-on experience, in addition to obtaining the necessary competencies required to begin the American Board of Health Physics certification process. CRR faculty teaching responsibilities and training, including that of the new CRR faculty member, will be essential to ensure the success of the MS program and the competency of our graduates.

1. The Structure of the CRR Faculty Development Program

The five keystones of our proposed CRR Faculty Development Program are 1) *Training*, 2) *Mentoring*, 3) *Evaluation*, 4) *Management*, and 5) *Sustainability* - as we now describe:

1.1 Training

Our Faculty Development program will leverage off, and be part of, the current faculty development Program at CUMC, known as TRANSFORM (Training And Nurturing Scientists For Research that is Multidisciplinary). Its primary goal is to recruit, train, support and nurture the next generation of academics in multidisciplinary and interdisciplinary, team-oriented environments. The training and career development activities that comprise TRANSFORM are designed to produce translational scientists and educators familiar with interdisciplinary teamwork, comfortable with leadership roles, trained to integrate research from other disciplines and methodologies, and prepared to direct the next generation of multi- and inter-disciplinary research. Key training components of the Faculty Development Program include:

Junior Faculty Program Series: This seven part series is designed to provide an opportunity for Junior Faculty to build their skills and strategically plan their career development efforts. The session themes are *Session 1: Orientation – Creating Your Career Plan. Session 2: Facilitating Mentoring. Session 3: Managing Your Time Effectively. Session 4: Crafting a Curriculum Vita. Session 5: Developing a Career Focus. Session 6: Leadership as a Career Option. Session 7: Managing Work and Life Demands for Optimal Career Development.*

Funding and Grantsmanship: This seven part series is designed to enable junior faculty to best take advantage of the various government and non-government funding opportunities. The session themes are 1. Government sources 2. Non-Government Sources 3. Planning / organizing a grant proposal. 4. Planning / organizing a fellowship / career development proposal. 5. Writing an effective application. 6. Experiences of a Peer Reviewer. 7. Hands on session.

Reach for the First R01 Course: The *Reach for the First R01* course is available twice a year to all promising junior faculty, and focused on developing skills for preparing a first NIH R01 proposal. Participants receive 5 hrs of biostatistical consulting, 2 expert pre-reviews on an early draft of their R01 application, and bi-monthly, closely-monitored meetings to ensure structure and timeliness in completing the tasks required to successfully submit a first NIH R01 application.

Columbia Summer Research Institute (CSRI): In an intensive 5-week format, the CSRI offers junior faculty the opportunity to learn and apply theory and methods behind the design and conduct of biomedical research studies, covering core knowledge in epidemiology, biostatistics, randomized trial

design, health disparities research, decision analysis and cost effectiveness analysis. Participants gain essential skills in designing effective translational research studies, and significantly enhance their competitive edge in the pursuit of independent grant funding.

Department of Epidemiology Summer Institute: This intensive, week-long, summer course focuses on advanced skills in statistical software and analysis, data visualization, modeling, and focused epidemiological topics. The course is developed and taught by faculty from the Department of Epidemiology and others across the Columbia University Medical Center.

Building Interdisciplinary Research Models: This course⁴¹ allows participants to build skills in interdisciplinary research by collaborating with scholars from various disciplines.

Programs for Women Faculty and for Diverse Faculty: A series of programs are in place specifically for women faculty, sponsored by the Virginia Kneeland Frantz Society for Women Faculty, and for diverse faculty, sponsored by the Kenneth A. Forde Diversity Alliance. Importantly, an internal grants program is available at Columbia for women and underrepresented junior faculty working towards tenure; 10 such grants were awarded last year.

In addition to these programs, TRANSFORM offers a two-year *KL2 Mentored Career Development Program* for CUMC Assistant Professors, funded by a CUMC NIH CTSA (Clinical and Translational Science Award)⁴². This competitive program combines didactic training, significant mentoring, exposure to interdisciplinary research and on-going evaluation to prepare young investigators for careers in biomedical translational research. It offers 2 years of support (with a possibility of extension) including 75% of salary and funds for travel, supplies and tuition. At any one time, 10 or more Assistant Professors hold these KL2 Career Development awards and to date 9 have gone on to capture independent funding.

1.2 Mentoring

CUMC and the CRR are committed to helping all faculty fully develop their skills and capabilities. We view mentoring as foundational to creating an inclusive and supportive scholarly community in which faculty succeed. The CRR mentoring program is especially designed to enhance the career success of our junior faculty.

Advisors with expertise and experience help junior faculty in setting and accomplishing career goals. Junior faculty benefit from access to expanded networks and opportunities for collaboration, access to honest criticism and feedback, advice on responsibilities and priorities, insight into the formal and informal "rules of the road" of academia, and help in developing skills and accessing resources needed to succeed. While mentoring may be formal or informal, formal programs have been shown to be especially valuable for increasing the career success of faculty members from traditionally underrepresented groups.

Our own mentoring program is designed to enhance faculty performance through:

1. Goal setting;
2. Regular assessment of progress against defined goals;
3. Effective feedback in the context of a constructive mentoring relationship.

Each junior faculty has a structured mentoring relationship with at least one senior scientist. While every interaction is different, our mentors are tasked with providing career guidance and support in understanding the academic world in general, and the world of CUMC/CRR in particular. Our mentors act as advocate, coach, and career guide, providing active feedback, encouragement, support, and constructive (yet supportive) criticism and facilitation.

1.3 Evaluation

Our overall approach to faculty tracking and evaluation utilizes a key CUMC resource, the Center for Education Research and Evaluation (CERE) which, with its staff of six evaluation specialists, is specifically dedicated to performance assessment and program evaluation. For the past 25 years, CERE has successfully guided evaluations of a wide range of grants and accreditation reviews at CUMC (e.g. Ref. 43). Under the direction of CERE, the evaluation component of the CRR Faculty Development Program will regularly evaluate program processes to promote continuous improvement of program effectiveness, efficiency, and appeal. This evaluation will also focus on the mentor-mentee relationship, with a progress evaluation every six months, in order to maintain forward progress and to forestall any developing issues.

The CRR Faculty Development Program will also evaluate the following program outcomes, using both quantitative and qualitative methods:

- Submission of research grant(s); achievement of grant funding, time to grant funding;

- Papers published; citation number; impact factor; h-factor; page ranks; download statistics;
- Teaching competency;
- Success in mentoring students, trainees;
- Participation and publications as part of multidisciplinary research teams;
- Achievement of promotion, time to promotion;
- Other professional benchmarks of academic and research success such as membership in review panels, demonstration of administrative skill-sets, lectures and awards.

In addition, we will monitor ongoing self-efficacy (confidence in one's own ability to perform research tasks).⁴⁴⁻⁴⁶ Social Cognitive Career Theory⁴⁷ suggests that self efficacy among young scientists significantly mediates research career decisions and research productivity.⁴⁸

A letter of collaboration from Dr. Boyd Richards, the director of CERE, is included.

1.4 Management Structure

- David Brenner Ph.D., D.Sc., (PI and CRR Director), will provide overall oversight for the program, will have responsibility for the Search Committee activities, and will provide scientific support to the faculty member recruited as a result of this award.
- Boyd Richards Ph.D., head of the CUMC Center for Education Research and Evaluation (CERE), will have overall responsibility for Program Evaluation.
- Howard Lieberman Ph.D., current Director of the CRR mentorship program, will fold the new faculty member into our established mentoring program and ensure participation in CRR-centered and external career development programs and opportunities.
- Norman Kleiman Ph.D., Director of our new Radiological Sciences Masters Program, will act as educational liaison, engaging the new faculty member in teaching and other pedagogical activities related to the new graduate program.
- Igor Shuryak M.D., Ph.D., Associate Research Scientist at the CRR focusing on low-dose risk estimation, will be the immediate scientific liaison for the new faculty member.
- Margaret Zhu M.A., CRR Department Administrator, will administer the Program, having responsibility for scheduling, tracking career development activities, addressing bureaucratic issues, and providing administrative support for grant application submissions.

This Management Team, together with relevant mentors, will initially meet every month and subsequently, every two months, to track progress and assess program development.

1.5 Sustainability

Our goal is to develop a long-term sustainable program. The attached commitment letter documents a funding commitment of \$60K per year from the Dean's Office that will continue after the 3 year NRC funding is completed. Likewise, ongoing tuition support for a PhD student to work with the new junior faculty member will be provided by the Department of Environmental Health Sciences, who administers the MS Degree program in Radiological Sciences; a letter of commitment is also attached. During the last two years of the NRC funded program, the recipient will apply to the CUMC KL2 Mentored Career Development Program (see Section 1.1 above), as well as to the NIH for an R21 grant to support work related to our low dose radiation risk estimation program. Should these or other funding opportunities be unsuccessful, the remaining ~\$40K in salary support required to continue the program is anticipated to come from either our ongoing P41 Biomedical Technology Resource Center grant (5P41EB002033-20, PI: David Brenner, total costs: \$6,241,298 for 5 years) or from our ongoing NIAID U19 radiation biodosimetry grant (2U19AI067773-11, PI: David Brenner, total costs: \$33,015,531 for 5 years).

2. Our Selection Process

Our goal is to ensure that the best possible qualified applicant is selected, based on his/her potential to progress to become a tenured or research Professor. We will be especially interested in candidates who, through their research, teaching, or service, can also contribute to the diversity and excellence of our academic community. In our selection process, we will:

- Create a diverse, academically strong search committee, including other underrepresented groups, specifically including a diversity advocate on the committee to help ensure the application of best practices in the search and hiring, and that due consideration is given to all candidates.
- Create a search plan that includes as broad an outreach as possible.
- Include language in the job advertisement signaling a special interest in candidates who may contribute to our diversity priorities. For example: *"We are especially interested in candidates who,*

through their research, teaching, and/or service, will contribute to the diversity and excellence of our academic community."

- Advertise broadly in the field, including to interest groups with diverse faculty audiences, and reach out to colleagues at institutions and organizations that have diverse faculty and students, to identify high-potential female and underrepresented minority candidates and encourage them to apply for the position.
- Discuss, prior to interviewing, how criteria in job advertisement will be weighted and valued.
- During the job interviews, discuss with candidates about their commitment to diversity, and their experience working in diverse environments.
- Ensure that each candidate is evaluated on all the criteria listed in the job advertisement and identified as meaningful in the search.

Finally, our recruitment process will coordinate with the University-wide effort to diversify Columbia's faculty to include underrepresented groups. A letter is attached from the Columbia University Provost describing Columbia's commitment of 83 million dollars towards this important goal.

3. Arrangements with other Non-Federal Entities

- Matching funds, at the level of \$60K per year (\$180K total), will be provided by the Dean of Health Sciences and Medicine at CUMC. A letter of support and commitment from the Dean is included, also extending beyond the 3-year period of the requested NRC funding.

The Chair of the Department of Environmental Health Sciences has agreed to commit funds to support the tuition of a graduate student to work with the planned new faculty member on low dose risk estimation. A letter of commitment from the Chair is attached

Attachment C – Standard Terms and Conditions**The Nuclear Regulatory Commission's
Standard Terms and Conditions for U.S. Nongovernmental Recipients****Preface**

This award is based on the application submitted to, and as approved by, the Nuclear Regulatory Commission (NRC) under the authorization 42 U.S.C. § 2051(b), pursuant to section 31b and 141b of the Atomic Energy Act of 1954, as amended, and is subject to the terms and conditions incorporated either directly or by reference in the grant or cooperative agreement. The following also apply:

- Restrictions on the expenditure of Federal funds in appropriation acts, to the extent those restrictions are pertinent to the award.
- Code of Federal Regulations/Regulatory Requirements – 2 CFR Part 200 Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards.

Any inconsistency or conflict in terms and conditions specified in the award will be resolved according to the following order of precedence: public laws, regulations, applicable notices published in the Federal Register, Executive Orders (E.O.), Office of Management and Budget (OMB) Circulars, the NRC's Mandatory Standard Provisions, special award conditions, and standard award conditions.

Certifications and Representations: These terms incorporate the certifications and representations required by statute, executive order, or regulation that were submitted with the SF424B application through GRANTS.GOV.

I. Mandatory General Requirements

The order of these requirements does not make one requirement more important than any other requirement.

1. Applicability of 2 CFR Part 200

All provisions of 2 CFR Part 200 and all Standard Provisions attached to this grant/cooperative agreement are applicable to the Recipient and to sub-recipients which meet the definition of "Recipient" in 2 Part §200.86, unless a section specifically excludes a sub-recipient from coverage. The Recipient and any sub-recipients must, in addition to the assurances made as part of the application, comply and require each of its sub-awardees employed in the completion of the project to comply with Subpart D of 2 CFR Part 200 and include this term in lower-tier (sub-award) covered transactions.

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

2. Award Package

The Recipient is obligated to conduct project oversight as may be appropriate, to manage the funds with prudence, and to comply with the provisions outlined in 2 CFR Part 200. Within this framework, the Principal Investigator (PI) named on the award face page, is responsible for the scientific or technical direction of the project and for preparation of the project performance reports. This award is funded on a cost-reimbursement basis, not to exceed the amount awarded as indicated on the face page, and is subject to a refund of unexpended grant funds to the NRC.

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

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

Sub-recipients, sub-awardees, and contractors have no relationship with NRC under the terms of this grant/cooperative agreement. All required NRC approvals must be directed through the Recipient to NRC. See 2 CFR § 200.318.

Nondiscrimination

This provision is applicable when work under the grant/cooperative agreement is performed in the U.S. or when employees are recruited in the U.S.

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

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. §§ 2000d et seq.), which prohibits discrimination on the grounds of race, color, or national origin in any program or activity receiving federal financial assistance.
- Title IX of the Education Amendments of 1972 (20 U.S.C. §§ 1681 et seq.), which prohibits discrimination on the basis of sex in any education program or activity receiving federal financial assistance.
- Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. § 794), which prohibits discrimination on the basis of disability in any program or activity receiving federal financial assistance.
- The Age Discrimination Act of 1975, as amended (42 U.S.C. §§ 6101 et seq.), which prohibits discrimination on the basis of age in any program receiving federal financial assistance.
- The Americans with Disabilities Act of 1990 (42 U.S.C. §§ 12101 et seq.), which prohibits recipients from discriminating on the basis of disability in employment (Title I); State and local government services (Title II); and places of public accommodation and commercial facilities (Title III).
- Parts II and III of E.O. 11246, as amended by E.O. 11375, 11478, 12086, 12107, 13279, 13665, and 13672, which prohibits federal contractors and federally assisted construction contractors and subcontractors, who do over \$10,000 in Government business in one year, from discriminating in employment decisions on the basis of race, color, religion, sex, or national origin and requires that government contractors take affirmative action to ensure that equal opportunity is provided in all aspects of their employment.
- E.O. 13166, "Improving Access to Services for Persons with Limited English Proficiency," which clarifies that national origin discrimination under Title VI includes discrimination on the basis of limited English proficiency (LEP) and requires that the recipient take reasonable steps to ensure that LEP persons have meaningful access to programs and activities.
- Any other applicable non-discrimination law(s).

Generally, Title VII of the Civil Rights Act of 1964, 42 U.S.C. § 2000e et seq., provides that it shall be an unlawful employment practice for an employer to discharge any individual or otherwise to discriminate against an individual with respect to compensation, terms, conditions, or privileges of employment because of such individual's race, color, religion, sex, or national origin. However, Title VII, 42 U.S.C. § 2000e-1(a), expressly exempts from the prohibition against discrimination on the basis of religion, a religious corporation, association, educational institution, or society with respect to the employment of individuals of a particular religion to perform work connected with the carrying on by such corporation, association, educational institution, or society of its activities.

Modifications/Prior Approval

NRC's prior written approval may be required before a Recipient makes certain budget modifications or undertakes particular activities. If NRC approval is required for changes in the grant or cooperative agreement, it must be requested and obtained from the NRC Grants Officer in advance of the change or obligation of funds. All requests for NRC prior approval, including requests for extensions to the period of performance, must be made, in writing (which includes submission by e-mail), to the designated Grants Officer at least 30 days before the proposed change. The request must be signed by the authorized organizational official. Failure to obtain prior approval, when required, from the NRC Grants Officer, may result in the disallowance of costs, or other enforcement action within NRC's authority.

Lobbying Restrictions

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

The Recipient will comply with provisions of 31 U.S.C § 1352. This provision generally prohibits the use of Federal funds for lobbying in the Executive or Legislative Branches of the Federal Government in connection with the award, and requires disclosure of the use of non-Federal funds for lobbying.

The Recipient shall submit a completed "Certification Regarding Lobbying" form, regardless of dollar value.

If applicable, the Recipient receiving in excess of \$100,000.00 in Federal funding shall submit a completed Standard Form (SF-LLL), "Disclosure of Lobbying Activities" for any persons engaged in lobbying activities, as discussed at 31 U.S. Code § 1352 – Limitation on use of appropriated funds to influence certain Federal contracting and financial transactions. The form concerns the use of non-Federal funds for lobbying within 30 days following the end of the calendar quarter in which there occurs any event that requires disclosure or that materially affects the accuracy of the information contained in any disclosure form previously filed. If the Recipient must submit the SF-LLL, including those received from sub-recipients, contractors, and subcontractors, to the Grants Officer.

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

The Recipient agrees to notify the Grants Officer immediately upon learning that it or any of its principals:

- (1) Are presently excluded or disqualified from covered transactions by any Federal department or agency;
- (2) Have been convicted within the preceding three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, receiving stolen property, making false claims, or obstruction of justice; commission of any other offense indicating a lack of business integrity or business honesty that seriously and directly affects the recipient's present responsibility;
- (3) Are presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph (1)(b); or
- (4) Have had one or more public transactions (Federal, State, or local) terminated for cause or default within the preceding three years.
- (5) The Recipient agrees that, unless authorized by the Grants Officer, it will not knowingly enter into any subaward or contracts under this grant/cooperative agreement with a person or entity that is not included on the System for Award Management (SAM) (<https://www.sam.gov>).

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

Debarment, Suspension, Ineligibility, and Voluntary Exclusion

The Recipient certifies that neither it nor its principals is presently excluded or disqualified from participation in this transaction by any Federal department or agency. The policies and procedures applicable to debarment, suspension, and ineligibility under NRC-financed transactions are set forth 2 CFR Part 180 and 2 CFR Part 200.

Drug-Free Workplace

The Recipient must be in compliance with The Federal Drug Free Workplace Act of 1988. The policies and procedures applicable to violations of these requirements are set forth in 41 U.S.C. §§ 8101-8106.

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

The Recipient is reminded that U.S. Executive Orders and U.S. law prohibits transactions with, and the provision of resources and support to, individuals and organizations associated with terrorism. It is the legal responsibility of the Recipient to ensure compliance with these Executive Orders and laws. This provision must be included in all contracts/sub-awards issued under this grant/cooperative agreement.

The Recipient must comply with E.O. 13224, Blocking Property and Prohibiting Transactions with Persons who Commit, Threaten to Commit, or Support Terrorism. Information about this Executive Order can be found at:

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

Procurement Standards - 2 CFR §§ 200.318-200.326

Sections 200.318 - 200.326 set forth standards for use by Recipients in establishing procedures for the procurement of supplies and other expendable property, equipment, real property and other services with Federal funds. These standards are furnished to ensure that such materials and services are obtained in an effective manner and in compliance with the provisions of applicable Federal statutes and executive orders. No additional procurement standards or requirements will be imposed by the Federal awarding agencies upon Recipients, unless specifically required by Federal statute, executive order, or approved by OMB.

Travel and Transportation

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

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

Domestic Travel:

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

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

International Travel:

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

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

Property Standards

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

Intangible Property

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

Inventions Report - The Bayh-Dole Act (P.L. 96-517) affords Recipients the right to elect and retain title to inventions they develop with funding under an NRC grant award ("subject inventions"). In accepting an award, the Recipient agrees to comply with applicable NRC policies, the Bayh-Dole Act, and its Government-wide implementing regulations found at Title 37, Code of Federal Regulations (CFR) Part 401. A significant part of the regulations require that the Recipient report all subject inventions to the awarding agency (NRC) as well as include an acknowledgement of federal support in any patents.

Patent Notification Procedures - If the NRC or its Recipients, without making a patent search, knows (or has demonstrable reasonable grounds to know) that technology covered by a valid United States patent has been or will be used without a license from the owner, E.O.12889 requires NRC to notify the owner. If the Recipient uses or has used patented technology under this award without license or permission from the owner, the Recipient must notify the Grants Officer. This notice does not imply that the Government authorizes and consents to any copyright or patent infringement occurring under the financial assistance.

Data, Databases, and Software - The rights to any work produced or purchased under a NRC federal financial assistance award, such as data, databases or software are determined by Subpart D of 2 CFR Part 200. The Recipient owns any work produced or purchased under a NRC federal financial assistance award subject to NRC's right to obtain, reproduce, publish or otherwise use the work or authorize others to receive, reproduce, publish or otherwise use the data for Government purposes.

Copyright - The Recipient may copyright any work produced under a NRC federal financial assistance award subject to NRC's royalty-free nonexclusive and irrevocable right to reproduce, publish or otherwise use the work or authorize others to do so for Government purposes. Works jointly authored by NRC and Recipient employees may be copyrighted, but only the part authored by the Recipient is protected because, under 17 U.S.C. § 105, works produced by Government employees are not copyrightable in the United States. On occasion, NRC may ask the Recipient to transfer to NRC its copyright in a particular work when NRC is undertaking the primary dissemination of the work. Ownership of copyright by the Government through assignment is permitted under 17 U.S.C. § 105.

Record Retention and Access

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

Conflict Of Interest

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

Dispute Review Procedures

- a. Any request for review of a notice of termination or other adverse decision should be addressed to the Grants Officer. It must be postmarked or transmitted electronically no later than 30 days after the postmarked date of such termination or adverse decision from the Grants Officer.
- b. The request for review must contain a full statement of the Recipient's position and the pertinent facts and reasons in support of such position.
- c. The Grants Officer will promptly acknowledge receipt of the request for review and shall forward it to the Director, Office of Acquisition Management Division, unless otherwise delegated, who shall appoint an intra-agency Appeal Board to review a recipient appeal of an agency action, if required, which will consist of the program office director, the Deputy Director of Office of Administration, and the Office of General Counsel.

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

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

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

Remedies for Noncompliance

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

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

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

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

FEDERAL FINANCIAL REPORTS

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

PERFORMANCE PROGRESS REPORTS

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

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 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:

Faculty Development Metrics:

1. How many faculties 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, 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.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.