

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

1. GRANT/AGREEMENT NO. NRC-HQ-11-G-38-0039	2. MODIFICATION NO.	3. PERIOD OF PERFORMANCE FROM: 8/4/2011 TO: 8/3/2014	4. AUTHORITY Pursuant to Section 31b and 141b of the Atomic Energy Act of 1954, as amended
5. TYPE OF AWARD <input checked="" type="checkbox"/> GRANT <input type="checkbox"/> COOPERATIVE AGREEMENT	6. ORGANIZATION TYPE Public State-Controlled Institution of Higher ED DUNS:148515460 NAICS:611310	7. RECIPIENT NAME, ADDRESS, and EMAIL ADDRESS University of Nevada Reno Materials and Engineering Department 1664 North Virginia Street, 204 Ross Hall/Mail Stop 325 Reno, Nevada 89557	
8. PROJECT TITLE: University of Nevada Reno, Faculty Development Program in Nuclear Materials			
9. PROJECT WILL BE CONDUCTED PER GOVERNMENT'S/RECIPIENT'S PROPOSAL(S) DATED See Program Description AND APPENDIX A-PROJECT GRANT PROVISIONS	10. TECHNICAL REPORTS ARE REQUIRED <input checked="" type="checkbox"/> PROGRESS AND FINAL <input type="checkbox"/> FINAL ONLY <input type="checkbox"/> OTHER (Conference Proceedings)	11. PRINCIPAL INVESTIGATOR(S) NAME, ADDRESS and EMAIL ADDRESS University of Nevada Reno Attn: Dev Chidambaram Email: dcc@unr.edu Phone: 775-784-1603 and 775-784-7066	
12. NRC PROGRAM OFFICE (NAME and ADDRESS) NRC Attn: Nancy Hebron-Isreal Office of Human Resources MS: GW5E03 301-492-2231 11545 Rockville Pike Rockville, Maryland 20852	13. ACCOUNTING and APPROPRIATION DATA APPN. NO: 31X0200 B&R NO: 2011-84-51-K-164 JOB CODE: T8460 BOC NO: 4110 OFFICE ID NO: RFPA: HR-11-137 FMMIS GR002	14. METHOD OF PAYMENT <input type="checkbox"/> ADVANCE BY TREASURY CHECK <input type="checkbox"/> REIMBURSEMENT BY TREASURY CHECK <input type="checkbox"/> LETTER OF CREDIT <input checked="" type="checkbox"/> OTHER (SPECIFY) Electronic ASAP.gov (See Remarks in Item #20 "Payment Information")	
15. NRC OBLIGATION FUNDS THIS ACTION <u>\$449,393.00</u> PREVIOUS OBLIGATION _____ TOTAL <u>\$449,393.00</u>		16. TOTAL FUNDING AGREEMENT NRC <u>\$449,393.00</u> RECIPIENT <u>\$165,594.00</u> TOTAL <u>\$614,987.00</u> This action provides funds for Fiscal Year in the amount of See Page Two.	
17. NRC ISSUING OFFICE (NAME, ADDRESS and EMAIL ADDRESS) U.S. Nuclear Regulatory Commission Div. of Contracts Attn: Mark Lohrmann email: Mark.Lohrmann@NRC.GOV Mail Stop: TWB-01-B10M Rockville MD 20852			
18. Signature Not Required		19. NRC CONTRACTING OFFICER <u>Sheila Bumpass</u> <u>8/4/11</u> (Signature) (Date) NAME (TYPED) <u>Sheila Bumpass</u> TITLE <u>Contracting Officer</u> TELEPHONE NO. <u>301-492-3484</u>	
20. PAYMENT INFORMATION Payment will be made through the Automated Standard Application for Payment (ASAP.gov) unless the recipient has failed to comply with the program objectives, award conditions, Federal reporting requirements or other conditions specified in 2 CFR 215 (OMB Circular A110).			
21. Attached is a copy of the "NRC General Provisions for Grants and Cooperative Agreements Awarded to Non-Government Recipients. Acceptance of these terms and conditions is acknowledged when Federal funds are used on this project.			
22. ORDER OF PRECEDENCE In the event of a conflict between the recipient's proposal and this award, the terms of the Award shall prevail.			
23. By this award, the Recipient certifies that payment of any audit-related debt will not reduce the level of performance of any Federal Program.			

TEMPLATE - ADM001

SUNSI REVIEW COMPLETE

AUG 09 2011

ADM002

ATTACHMENT A - SCHEDULE

A.1 PURPOSE OF GRANT

The purpose of this Grant is to provide support to the "University of Reno, Faculty Development Program in Nuclear Materials" as described in Attachment B entitled "Program Description."

A.2 PERIOD OF GRANT

1. The effective date of this Grant is August 4, 2011. The estimated completion date of this Grant is August 3, 2014.
2. Funds obligated hereunder are available for program expenditures for the estimated period: August 4, 2011 – August 3, 2014.

A. GENERAL

1. Total Estimated NRC Amount: \$449,393
2. Total Obligated Amount: \$449,393
3. Cost-Sharing Amount: \$165,594
4. Activity Title: University of Reno, Faculty Development Program in Nuclear Materials
5. NRC Project Officer: Nancy Hebron-Isreal
6. DUNS No.: 146515460

B. SPECIFIC

- RFPA No.: HR-11-137
FFS: N/A
Job Code: T8460
BOC: 4110
B&R Number: 2011-84-51-K-164
Appropriation #: 31X0200
Amount Obligated: \$449,393

A.3 BUDGET

Revisions to the budget shall be made in accordance with Revision of Grant Budget in accordance with 2 CFR 215.25.

	NRC Contribution	Cost Share
Personnel	\$160,620	\$100,500
Fringe	13,848	18,315
Travel	33,500	11,650
Equipment	126,000	14,000
Supplies	14,000	10,711
Tuition	10,418	10,418
Total Direct Charges	\$358,386	\$165,594
Indirect Charges	91,007	
Total	\$449,393	\$165,594

A.4 AMOUNT OF AWARD AND PAYMENT PROCEDURES

1. The total estimated amount of this Award is \$614,987 for the three year period, of which NRC will contribute \$449,393 and the University of Reno Nevada will contribute \$165,594. Cost share must conform to the provisions in 2 CFR 215.
2. NRC hereby obligates the amount of \$449,393 for program expenditures during the period set forth above and in support of the Budget above. The Grantee will be given written notice by the Contracting Officer when additional funds will be added. NRC is not obligated to reimburse the Grantee for the expenditure of amounts in excess of the total obligated amount.
3. Payment shall be made to the Grantee in accordance with procedures set forth in the Automated Standard Application For Payments (ASAP) Procedures set forth below.

Attachment B – Program Description

PROGRAM DESCRIPTION

Background The Materials Engineering (ME) Department at the University of Nevada, Reno (UNR) has conducted externally-funded nuclear-related research since 1992. The ME Department's main research focus is to determine the performance and reliability of materials in advanced nuclear power applications. These projects have been supported by the Nuclear Regulatory Commission (NRC), the Department of Energy (DOE), the Nevada Office of Nuclear Projects, and private corporations. The speakers from the NRC, GE-Hitachi, as well as Argonne, Sandia, Idaho and Oak Ridge National Labs have lectured on nuclear energy topics at the Engineering Seminar program. **Recently, the Materials Engineering department initiated a Nuclear Materials Emphasis** which includes courses titled Materials Applications in Nuclear Reactors, Fundamentals of Nuclear Energy, Nuclear Fuel Cycle, and Corrosion Degradation of Nuclear Materials. The Materials and Mechanical Engineering Departments recently submitted a Letter of Interest (LOI) to the NRC Nuclear Education Curricula Development Grant Opportunity to develop additional nuclear-power related courses which was encouraged by the NRC to be submitted as a full proposal. UNR is working with the University of Nevada, Las Vegas (UNLV) and the University of Utah (UU), which have, respectively, a program in radiochemistry and a new minor in Nuclear Engineering, to develop an internetbased system to share unique Nuclear-Related Engineering Courses. While UNR does not have a Nuclear Engineering Department, there are at least nine faculty at UNR who are performing research and developing educational opportunities in Nuclear Power that help prepare students who can support the mission of the NRC.

Objective

This funding will initiate a Faculty Development Program in Nuclear Materials and support an outstanding young faculty who was recently hired by the Materials Engineering Department. *The ultimate goal is to increase the number and quality of students receiving BS, MS and Ph.D. degrees at UNR who are able to support the design, construction, operation, and regulation of nuclear facilities, and the safe handling of nuclear materials.* We plan to achieve this goal via supporting the faculty member in both his research and teaching initiatives.

Research Support: To establish a sustainable research program in Advanced Nuclear Materials, the junior faculty will be provided with (i) financial support for establishment of laboratory research facilities, (ii) mentorship via a team of eminent Nuclear Scientists who will be part of the Faculty Advisory Committee and (iii) collaborative opportunities

with National Laboratories, Universities, and Industry.

Teaching Support: Support for the new faculty's teaching initiatives will be provided in terms of joint development and teaching of new courses, collaborating on marketing plan to attract students, and support in writing educational proposals. It should be noted that the new Faculty was a Co-Pi on a successful NRC Fellowship grant and is making progress towards achieving our educational goals.

Faculty Advisory Committee (FAC) This committee will provide mentorship, monitor and evaluate the progress made by the junior faculty member. The committee will consist of the two participants on this proposal, and a minimum of one external member each from a National Laboratory, University and the industry. Dr. Clive Clayton (Distinguished Professor of Materials Science and Engineering at SUNY at Stony Brook), Dr. Jinghua Guo (Staff Scientist, Lawrence Berkeley National Laboratory), and Dr. Eric Loewen (Industry consultant and President-Elect American Nuclear Society) have agreed to serve on the FAC. The committee will provide mentorship to the faculty via regularly scheduled informal and formal discussions. The FAC will advise on collaborative research and educational opportunities, the development of new courses, and advice on obtaining academic tenure. The faculty member will be required to discuss his progress with the FAC members at least once a year. The committee will be invited to visit UNR during the second year of the program to meet with the junior faculty to discuss his progress. Further, the committee will evaluate the progress made by the junior faculty at least once a year.

Nuclear Materials Research The irradiation dose in ANRs, whose operating temperatures vary from ~300-1000°C, is expected to be in the range of 30 to 250 displacements per atom (dpa). The reactor cooling environment may consist of liquid sodium, lead-bismuth, molten salt, and helium, which will all be more corrosive and lead to enhanced degradation of the materials. Also, the reactors are also designed to operate for 60-80 years. In comparison, materials used in LWRs operate around 350°C, experience less than 1 dpa of irradiation, are exposed to water and generally designed for 40 years. It is for this reason that the development of high performance materials has been considered the essential step in making ANRs a reality. Junior faculty's research will focus on studying the degradation of various high performance alloys such as nickel-base super alloys, austenitic alloys and oxide-dispersive strengthened (ODS) steels. ODS alloys exhibit high creep and oxidation resistance at ANR operating temperatures. Traditional fusion welding of these alloys results in detrimental microstructural changes such as floatation and agglomeration of nanodispersoids, grain size modification and grain orientation changes that lead to reduced creep strength. Solid state welding techniques result in similar changes near bonding line. Preliminary results from UNR show that Friction Stir Welding (FSW) of these alloys can alleviate several of the shortcomings noted above. Creep strength depends strongly on grain size and aspect ratio for ODS alloys. Microstructural changes and damage accumulation will be studied using Electron Microscopy, Electron Energy Loss Spectroscopy (EELS), and synchrotron-based X-ray Absorption Spectroscopic (XAS) techniques, and the results will be correlated to FSW parameters such as normal pressure. He will also study how localized preheating using a pulsed plasma source can affect the mechanical and corrosion properties. High-temperature corrosion studies will be conducted on select alloys and correlated to the chemistry of their native surface film. Exposure to helium and methane in very high temperature reactors leads to carburization on the alloy surface, precipitation of carbides and eventually loss of tensile strength and impact energy. Native surface films will be studied using X-ray Photoelectron Spectroscopy (XPS) and XAS and correlated to mechanical and corrosion properties. A critical understanding of the surface chemistry and its correlation to mechanical and corrosion properties will enable the design and development of advanced alloys containing

engineered microstructures. Also, alternatives to the Yucca Mountain repository are currently being sought. This will probably require long-term (60-100 year) dry storage of current generation spent fuel. The fuel generates heat, but its Zircaloy cladding can form radial hydrides (due to radiolysis of water) at high temperatures (400°C) and become brittle. Dr. Chidambaram will also be studying the hydride formation in Zircalloy and related alloys, using XAS, and would develop methods to mitigate the formation of such hydrides. X-ray absorption spectroscopy can be used to study the local structure and irradiation induced damage. Dr. Chidambaram has successfully used XAS in the past to study hydrides. UNR is a member of a consortium on Nuclear Education with the UNLV and UU. The junior faculty is also working with researchers at UNLV to conduct irradiation experiments at the Advanced Test Reactor National Scientific User Facility (ATR NSUF) at the Idaho National Laboratory. He has access to several external instrumentation at UNLV, SUNY at Stony Brook, Brookhaven National Laboratory and Lawrence Berkeley National Laboratory.

Principal Investigators and Participants

Dr. Mano Misra, Professor of Materials Engineering, is also the Director of the Center of Materials Reliability. Currently, he is currently directing two Department of Energy (DOE) funded projects on nuclear materials: (i) environmental degradation of nickel base alloy 22 for nuclear waste package applications, and (ii) nuclear materials research for advanced sodium cooled nuclear reactors. He will be one of the 'research mentors' for the junior faculty.

Dr. Nicholas Tsoulfanidis, is one of the top educators in nuclear reactor design and radiation detection in the nation. He is the Editor-in-chief of the American Nuclear Society's *Journal Nuclear Technology*. He has authored two commonly used text books: (i) *The Nuclear Fuel Cycle Analysis and Management* and (ii) *Measurement and Detection of Radiation*. He is currently an Emeritus Professor at UNR. He will be the 'education mentor' for the junior faculty. More details regarding Dr. Chidambaram, a junior faculty member who joined the ME Department in the Fall of 2009, and who would be served by this grant is provided in section 2.

Capacity and ability of the institution to effectively conduct the program, including quality and feasibility of the recruitment and marketing strategies.

Materials Engineering (ME) Department at the University of Nevada, Reno (UNR) has conducted externally-funded nuclear-related research since 1992. Recently, the Materials Engineering department initiated a Nuclear Materials Emphasis. Several Nuclear Engineering classes have been taught or presently underway. Research facilities The Nuclear Materials research program at UNR is well-funded and thus well-equipped. Instrumentation available for this research include state-of-the-art HRTEM and SEM that were purchased recently, EELS, SKPFM, XRD, Atomic Force Microscopy, two potentiostats, one glove box for controlled atmosphere, a dedicated radioactive materials laboratory, universal testing machines (UTM), and a comprehensive mechanical testing laboratory. Recently, the one of the PIs (Misra) received an infrastructure development award (\$289,000) from the DOE to establish a solid state welding facility for research and development of structural materials for advanced nuclear reactors. Access to XPS is available through collaborators at SUNY, Stony Brook. Dr. Chidambaram also manages two synchrotron XAS beamlines at the National Synchrotron Light Source, BNL and access to μ -XAS and μ -XRF is available via collaborators.

Institutional Ability UNR was recently awarded a NRC Fellowship grant for supporting graduate students in Nuclear Materials and Thermal Nuclear Science. Dr. Chidambaram is the PI of that proposal. In the three months since receiving the grant, UNR has already completed the process of marketing the program, accepting applications, forming a Fellowship committee, reviewing the applications and selecting two graduate students. This example shows the capacity and ability of UNR to effectively conduct the program.

Recruiting and Marketing Strategy Since the junior faculty that will be served by the program has already been recruited, the process used to recruit him is described here. *Also, it should be noted that the position was authorized by the Provost during a time of hiring freeze and budget cuts at UNR in 2009.* The Tenure-Track faculty position for an Assistant Professor in the Materials Engineering Department was advertised in various professional journals such as the American Chemical Society's 'Chemical and Engineering News' and various other online outlets. *The focus was to select the candidate with the most versatile materials research experience with specific interest in nuclear materials.* Over 150 qualified candidates applied for the position. Since the hiring was conducted during a time of economic recession, the competition for any of the few tenure track positions that were open throughout the country was especially strong. A faculty search committee, consisting of three members of Materials Engineering and one member from Chemical Engineering, shortlisted 15 candidates for the first interview from which, 5 candidates were brought to the UNR campus for a second interview. Also, the selection committee directly spoke with references for the candidates. At the end of the process, Dr. Chidambaram emerged as the overwhelming choice of the faculty. Then, Dr. Chidambaram was made an offer that consisted of a very generous startup package. In all, the institution has the ability to administer the faculty development award and the department has the capabilities needed to help foster the research of junior faculty members. Also, it is for these reasons that GE-Hitachi is currently considering the installation of a large component testing facility to close the fuel cycle at the UNR campus for research purposes

Quality of faculty that will be served by the program.

As described earlier, Dr. Chidambaram was the top candidate from over 150 individuals who applied for the open position. *Dr. Chidambaram emerged as top candidate for the following reasons:*

- i. Dr. Chidambaram has a very strong background in Materials Science (MS, PhD) and Electrochemical Engineering (BS)
- ii. He had worked at Brookhaven National Laboratory (BNL) as a scientific staff for 5 years; starting as a Goldhaber Distinguished Fellow and had been promoted to an Associate Materials Scientist.
- iii. He has broad background in materials characterization techniques including various synchrotron-based techniques. He is also the spokesperson for the X11A & X11B synchrotron X-ray absorption beamlines at the NSLS, BNL.
- iv. He has conducted extensive research in corrosion and alloys, including passivity of alloys, uranium alloys, metal hydrides, thermal sprayed coatings for challenging environments, and nuclear fuel container materials.
- v. He has received numerous awards including the *Morris Cohen Award from The Electrochemical Society* and the *Hans-Jurgen Engell Prize from the International Society of Electrochemistry*.
- vi. Dr. Chidambaram has published over 30 articles. One of his most recent publications, in which he was the main and corresponding author, was in the esteemed *Proceedings of the National Academy of Sciences* (v106, p14201-06, 2009).

Dr. Chidambaram is therefore an established researcher with extensive background in materials science and nuclear materials. He is a highly qualified researcher who has recently joined the ME Department at UNR and will be the individual whose career will be supported through the NRC faculty development award. Dr. Chidambaram has been very successful in the short period he has been at UNR. Dr. Chidambaram's proposal to the NRC Fellowship grants for supporting graduate students in Nuclear Materials and Thermal Nuclear Science was successful was awarded in full by the NRC. In the three months since receiving the grant, Drs. Chidambaram

and Greiner (Co-PI, Mechanical Engineering at UNR) has already completed the process of marketing the program, accepting applications, forming a Fellowship committee, reviewing the applications and selecting two well-qualified graduate students. Further, the graduate students have accepted the fellowship awards and have started their term at UNR as NRC fellows starting this Fall.

Feasibility and completeness of an evaluation plan to measure the effectiveness of the faculty development program.

The faculty development award will support Dr. Chidambaram, a tenure-track faculty, in establishing a sustainable research and education program and thereby promote the growth of the Nuclear Materials (NM) research and education at UNR. Thus, the success of the UNR faculty development award will be defined in largely in terms of the success of the faculty member and, to a minor extent, the success of the Nuclear Materials Emphasis degree offered by the department. Given Dr. Chidambaram's unique skills in materials science, surface characterization, synchrotron-based analysis and corrosion, this NRC faculty development award is expected to provide him with resources to establish what would be a unique research program in nuclear materials; one that would be sustained by external funding. Also, it will help the growth and strengthening of the nuclear materials research within the department. Success of the junior faculty member will be aligned with UNR's promotion and tenure process. The ultimate success of the faculty development award will be measured by a successful promotion and award of tenure. Dr. Chidambaram is not expected to apply for tenure until his fifth year in his position (just after the completion of this development award). *Thus, we will evaluate the candidate in terms of his scholarship of research, teaching, and service; the three components of an academic profession.*

Performance Metrics

Research Evaluation The scholarship of research will be measured in terms of the following metrics:

- i. Publications: Publications are one the most important metric used in the evaluation of researchers. The quantity of the publications (N), the quality of the journal and the number of times an article is cited are all important in evaluating a publication. However, new articles do not have an opportunity to be cited frequently and thus should not be used for short term evaluations (such as annual evaluations). Impact Factor (IF) is generally considered a good metric to assess the quality of a publication. According to Journal Citation Reports®, there are 29 professional journals catering to nuclear Science and Technology with an average IF of 0.80. The IF of top 10 journals is 1.3. A good metric would be to use quantity times impact Factor, $N \times IF$, henceforth referred to as NIF. Total NIF for 3 publications in top 10 journals would be 3.9 and *any NIF higher than 3.9 resulting from this award would be considered a success.*
- ii. Patents: are often considered as more valuable scholarly output than journal publications and will also be monitored.
- iii. Conference presentations: The number of presentations at technical conferences will also be evaluated. It is expected that an average of 1 presentation be given per year.
- iv. Research funding and expenditure The quality of an individual's research on any topic can be correlated to a certain degree to their ability to obtain further funding on that topic. Dr. Chidambaram's ability to obtain other funding will be a strong testament to the success of this program.
- v. Advising An important function of a professor is to be a responsible research advisor. To this extent, the number of students graduating and the number of students pursuing graduate degrees under the guidance of Dr. Chidambaram will be monitored.

Teaching Evaluation Dr. Chidambaram is scheduled to teach two courses that are integral to Nuclear Science namely, (i) Advanced Ceramics Materials and (ii) Energy and Mass Balance, in his second and third semesters, respectively. Further, Dr. Chidambaram is expected to develop and co-develop new courses in Nuclear Engineering for the Nuclear Materials emphasis. The scholarship of his teaching will be measured in terms of the following metrics:

Evaluation Average received in his classes - UNR has a comprehensive electronic program that tracks student teaching evaluations. The students grade the instructor on various criteria. This resource is used by the Department as well as the College for both annual and tenure evaluation of the faculty.

Student graduation rate The successful graduation of Master's and Doctoral students who are advised by untenured faculty is an important criterion in faculty evaluation.

Ability to creatively design course curriculum and methodologies is a characteristic of a good teacher. While, it is a relatively harder criterion to evaluate, one can use historical evaluation grades to identify significant improvement.

The last criteria, namely, scholarship of service, usually plays a minor role in tenure evaluations and is based on invitations to deliver lectures, organize symposiums and review articles.

All of the above evaluation criteria are aligned with UNR's 'Guidelines for Promotion and Tenure'. *At UNR, Junior faculty members are evaluated annually by the Department Chair. The Chair also discusses the evaluation with the individual and provides suggestions for improvement. These evaluations are also reviewed by the Department's Science Advisory Board which consists of eminent members from academia and industry outside of the university. In addition, Dr. Chidambaram will also be evaluated by the FAC that is being set up solely for this grant. Also, tenure-track faculty members undergo a comprehensive evaluation by the Department and the College at the end of their third year. This is a critical component of an individual's tenure dossier and the review is expected to be consistent with tenure decision. Dr. Chidambaram will be reviewed in the summer of 2012 and his progress on a NRC faculty development award will be a critical component of this review. The Tenure dossier is usually evaluated by 4-6 independent members external to the University. Thus, it can be seen that UNR has stringent criteria for obtaining tenure. A successful third year review followed by a successful tenure decision will be evidence for the success of this NRC award.*

Institutional support for the program and plans for sustainability.

UNR is highly committed to the strengthening its Nuclear Materials program and has invested significant amount of resources towards this goal. *The University Provost and the Dean of the College of Engineering (CoEN) provided a fully-funded faculty-line for the hiring of Dr. Chidambaram during a time of hiring freeze at UNR. The Vice-President for Research (VPR) provided a generous start-up package to attract the best candidate available to grow this program. Moreover, two other research faculty members with emphasis on nuclear materials have been hired in the last few years. Finally, UNR is also committing \$165,594 (Overhead-free) in matching funds for this proposal.*

Nuclear Materials Research program has been a central focus theme of the ME Department for over 18 years during which research expenditures has exceeded \$20 million. DOE has been the primary sponsor of this program. Six faculty members in the department are active in Nuclear Materials research. Moreover, several more faculty in various other departments, including Mechanical Engineering, Computer Science and Chemistry, are involved in nuclear materials research. At the present time, the department has several funded projects from the DOE Nuclear Energy Program to train graduate students. The PI has three active grants in nuclear

science. UNR was also successful in its infrastructure proposal that was submitted to the DOE NEUP program to purchase a scanning electron microscope that would be dedicated to nuclear science. Further, the fact that UNR has an existing NRC Fellowship grant and is also submitting an application to the NRC curriculum development grants program in this fiscal year is an evidence of institutional support.

It is for these reasons that UNR has approved the undergraduate Nuclear Materials Emphasis option in Materials Science and Engineering degree of the ME Department. Based on the level of enrollment in this Nuclear Materials, it is proposed that a Minor in Nuclear Materials may be developed and offered in four to five years. With the full support of the Department, Dr. Chidambaram will be one of the faculty members who will be spearheading the development of the Minor.

The Department has provided Dr. Chidambaram with a *reduced teaching load* so as to enable him to establish a sustainable research and teaching program. A successful Nuclear Science research program requires collaborations outside of one's field of expertise. Dr. Chidambaram has a proven track record of collaborating with researchers from various disciplines. In the short time, he has been at UNR he has already started building collaborations with faculty in Mechanical Engineering, Chemistry and Computer Science Departments.

In all, the support from the Department, College and the Vice President of Research at UNR, in combination with his new collaborations with other departments and existing collaborations at other institutions, will help him establish a sustainable research and educational program in the development and characterization of novel materials for Gen-IV ANRs.

The amount and type of leveraged funding that was initiated due to this solicitation.

The Materials Engineering Department, the College of Engineering (COEN) and the Vice-President for Research at UNR are committed to supporting Dr. Chidambaram in establishing a successful research and teaching program in Nuclear Materials. In recognition of his research potential, the COEN has provided him a reduced teaching load for the first three years of his position. In addition, UNR is providing matching funds of \$131,304 in cash and \$34,290 in-kind support for a total of \$165,594, as highlighted in the letter from VPR. This matching contribution is equivalent to \$223,476 with F&A and amounts to ~50% of the total funding of \$449,393 (with F&A) requested from NRC.

Attachment C – Standard Terms and Conditions

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

Preface

This award is based on the application submitted to, and as approved by, the Nuclear Regulatory Commission (NRC) under the authorization 42 USC 2051(b) pursuant to section 31b and 141b of the Atomic Energy Act of 1954, as amended, and is subject to the terms and conditions incorporated either directly or by reference in the following:

- Grant program legislation and program regulation cited in this Notice of Grant Award.
 - Restrictions on the expenditure of Federal funds in appropriation acts, to the extent those restrictions are pertinent to the award.
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- Code of Federal Regulations/Regulatory Requirements - 2 CFR 215 Uniform Administrative Requirements For Grants And Agreements With Institutions Of Higher Education, Hospitals, And Other Non-Profit Organizations (OMB Circulars), as applicable.

To assist with finding additional guidance for selected items of cost as required in 2 CFR 220, 2 CFR 225, and 2 CFR 230 this URL to the Office of Management and Budget Cost Circulars is included for reference to:

A-21 (now 2 CFR 220)

A-87 (now 2 CFR 225)

A-122 (now 2 CFR 230)

A-102:

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

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

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

I. Mandatory General Requirements

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

1. Applicability of 2 CFR Part 215

a. All provisions of 2 CFR Part 215 and all Standard Provisions attached to this grant/cooperative agreement are applicable to the Grantee and to sub-recipients which meet the definition of "Grantee" in Part 215, unless a section specifically excludes a sub-recipient from coverage. The Grantee and any sub-recipients must, in addition to the assurances made as part of the application, comply and require each of its sub-awardees employed in the completion of the project to comply with Subpart C of 2 CFR 215 and include this term in lower-tier (subaward) covered transactions.

b. Grantees must comply with monitoring procedures and audit requirements in accordance with OMB Circular A-133. <

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

2. Award Package

§ 215.41 Grantee responsibilities.

The Grantee is obligated to conduct such project oversight as may be appropriate, to manage the funds with prudence, and to comply with the provisions outlined in 2 CFR 215.41. Within this framework, the Principal Investigator (PI) named on the award face page, Block 11, is responsible for the scientific or technical direction of the project and for preparation of the project performance reports. This award is funded on a cost reimbursement basis not to exceed

the amount awarded as indicated on the face page, Block 16., and is subject to a refund of unexpended funds to NRC.

The standards contained in this section do not relieve the Grantee of the contractual responsibilities arising under its contract(s). The Grantee is the responsible authority, without recourse to the NRC, regarding the settlement and satisfaction of all contractual and administrative issues arising out of procurements entered into in support of an award or other agreement. This includes disputes, claims, protests of award, source evaluation or other matters of a contractual nature. Matters concerning violation of statute are to be referred to such Federal, State or local authority as may have proper jurisdiction.

Subgrants

Appendix A to Part 215—Contract Provisions

Sub-recipients, sub-awardees, and contractors have no relationship with NRC under the terms of this grant/cooperative agreement. All required NRC approvals must be directed through the Grantee to NRC. See 2 CFR 215 and 215.41.

Nondiscrimination

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

No U.S. citizen or legal resident shall be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity funded by this award on the basis of race, color, national origin, age, religion, handicap, or sex. The Grantee agrees to comply with the non-discrimination requirements below:

Title VI of the Civil Rights Act of 1964 (42 USC §§ 2000d et seq)

Title IX of the Education Amendments of 1972 (20 USC §§ 1681 et seq)

Section 504 of the Rehabilitation Act of 1973, as amended (29 USC § 794)

The Age Discrimination Act of 1975, as amended (42 USC §§ 6101 et seq)

The Americans with Disabilities Act of 1990 (42 USC §§ 12101 et seq)

Parts II and III of EO 11246 as amended by EO 11375 and 12086.

EO 13166, "Improving Access to Services for Persons with Limited English Proficiency."

Any other applicable non-discrimination law(s).

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

Modifications/Prior Approval

NRC's prior written approval may be required before a Grantee makes certain budget modifications or undertakes particular activities. If NRC approval is required for changes in the grant or cooperative agreement, it must be requested of, and obtained from, the NRC Grants Officer in advance of the change or obligation of funds. All requests for NRC prior approval

should be made, in writing (which includes submission by e-mail), to the designated Grants Specialist and Program Office no later than 30 days before the proposed change. The request must be signed by both the PI and the authorized organizational official. Failure to obtain prior approval, when required, from the NRC Grants Officer may result in the disallowance of costs, or other enforcement action within NRC's authority.

Lobbying Restrictions

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

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

The Grantee receiving in excess of \$100,000 in Federal funding shall submit a completed Standard Form (SF) LLL, "Disclosure of Lobbying Activities," regarding the use of non-Federal funds for lobbying within 30 days following the end of the calendar quarter in which there occurs any event that requires disclosure or that materially affects the accuracy of the information contained in any disclosure form previously filed. The Grantee must submit the SF-LLL, including those received from sub-recipients, contractors, and subcontractors, to the Grants Officer.

§ 215.13 Debarment And Suspension.

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

(1) Are presently excluded or disqualified from covered transactions by any Federal department or agency;

(2) Have been convicted within the preceding three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, receiving stolen property, making false claims, or obstruction of justice; commission of any other offense indicating a lack of business integrity or business honesty that seriously and directly affects your present responsibility;

(3) Are presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph (1)(b); and

(4) Have had one or more public transactions (Federal, State, or local) terminated for cause or default within the preceding three years.

b. The Grantee agrees that, unless authorized by the Grants Officer, it will not knowingly enter into any subgrant or contracts under this grant/cooperative agreement with a person or entity that is included on the Excluded Parties List System (<http://epils.arnet.gov>).

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

'Debarment, Suspension, Ineligibility, and Voluntary Exclusion

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

Drug-Free Workplace

The Grantee must be in compliance with The Federal Drug Free Workplace Act of 1988. The policies and procedures applicable to violations of these requirements are set forth in 41 USC 702.

Implementation of E.O. 13224 -- Executive Order On Terrorist Financing

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

Award Grantees must comply with Executive Order 13224, Blocking Property and Prohibiting Transactions with Persons who Commit, Threaten to Commit, or Support Terrorism. Information about this Executive Order can be found at: www.fas.org/irp/offdocs/eo/eo-13224.htm.

Procurement Standards. § 215.40-48

Sections 215.41 through 215.48 set forth standards for use by Grantees in establishing procedures for the procurement of supplies and other expendable property, equipment, real property and other services with Federal funds. These standards are furnished to ensure that such materials and services are obtained in an effective manner and in compliance with the provisions of applicable Federal statutes and executive orders. No additional procurement standards or requirements shall be imposed by the Federal awarding agencies upon Grantees, unless specifically required by Federal statute or executive order or approved by OMB.

Travel

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

Domestic Travel:

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

All common carrier travel reimbursable hereunder shall be via the least expensive class rates consistent with achieving the objective of the travel and in accordance with the

Grantee's policies and practices. Travel by first-class travel is not authorized unless prior approval is obtained from the Grants Officer.

International Travel:

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

The Grantee shall comply with the provisions of the Fly American Act (49 USC 40118) as implemented through 41 CFR 301-10.131 through 301-10.143.

Property and Equipment Management Standards

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

Procurement Standards

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

Intangible and Intellectual Property

Intangible and intellectual property of this award shall generally follow provisions established in 2 CFR 215.36.

Inventions Report - The Bayh-Dole Act (P.L. 96-517) affords Grantees the right to elect and retain title to inventions they develop with funding under an NRC grant award ("subject inventions"). In accepting an award, the Grantee agrees to comply with applicable NRC policies, the Bayh-Dole Act, and its Government-wide implementing regulations found at Title 37, Code of Federal Regulations (CFR) Part 401. A significant part of the regulations require that the Grantee report all subject inventions to the awarding agency (NRC) as well as include an acknowledgement of federal support in any patents. NRC participates in the trans-government Interagency Edison system (<http://www.iedison.gov>) and expects NRC funding Grantees to use this system to comply with Bayh-Dole and related intellectual property reporting requirements. The system allows for Grantees to submit reports electronically via the Internet. In addition, the invention must be reported in continuation applications (competing or non-competing).

Patent Notification Procedures- Pursuant to EO 12889, NRC is required to notify the owner of any valid patent covering technology whenever the NRC or its financial assistance Grantees, without making a patent search, knows (or has demonstrable reasonable grounds to know) that technology covered by a valid United States patent has been or will be used without a license from the owner. To ensure proper notification, if the Grantee uses or has used patented technology under this award without license or permission from the owner, the Grantee must notify the Grants Officer. This notice does not necessarily mean that the Government authorizes and consents to any copyright or patent infringement occurring under the financial assistance.

Data, Databases, and Software - The rights to any work produced or purchased under a NRC federal financial assistance award are determined by 2 CFR 215.36. Such works may include data, databases or software. The Grantee owns any work produced or purchased under a NRC federal financial assistance award subject to NRC's right to obtain, reproduce, publish or otherwise use the work or authorize others to receive, reproduce, publish or otherwise use the data for Government purposes.

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

Records Retention and Access Requirements for records of the Grantee shall follow established provisions in 2 CFR 215.53.

Organizational Prior Approval System

In order to carry out its responsibilities for monitoring project performance and for adhering to award terms and conditions, each Grantee organization shall have a system to ensure that appropriate authorized officials provide necessary organizational reviews and approvals in advance of any action that would result in either the performance or modification of an NRC supported activity where prior approvals are required, including the obligation or expenditure of funds where the governing cost principles either prescribe conditions or require approvals.

The Grantee shall designate an appropriate official or officials to review and approve the actions requiring NRC prior approval. Preferably, the authorized official(s) should be the same official(s) who sign(s) or countersign(s) those types of requests that require prior approval by NRC. The authorized organization official(s) shall not be the principal investigator or any official having direct responsibility for the actual conduct of the project, or a subordinate of such individual.

Conflict Of Interest Standards for this award shall follow OCOI requirements set forth in Section 170A of the Atomic Energy Act of 1954, as amended, and provisions set forth at 2 CFR 215.42 Codes of Conduct.

Dispute Review Procedures

- a. Any request for review of a notice of termination or other adverse decision should be addressed to the Grants Officer. It must be postmarked or transmitted electronically no later than 30 days after the postmarked date of such termination or adverse decision from the Grants Officer.
 - b. The request for review must contain a full statement of the Grantee's position and the pertinent facts and reasons in support of such position.
 - c. The Grants Officer will promptly acknowledge receipt of the request for review and shall forward it to the Director, Office of Administration, who shall appoint an intra-agency Appeal Board to review a grantee appeal of an agency action, if required, which will consist of the program office director, the Deputy Director of Office of Administration, and the Office of General Counsel.
 - d. Pending resolution of the request for review, the NRC may withhold or defer payments under the award during the review proceedings.
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e. The review committee will request the Grants Officer who issued the notice of termination or adverse action to provide copies of all relevant background materials and documents. The committee may, at its discretion, invite representatives of the Grantee and the NRC program office to discuss pertinent issues and to submit such additional information as it deems appropriate. The chairman of the review committee will insure that all review activities or proceedings are adequately documented.

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

Termination and Enforcement. Termination of this award by default or by mutual consent shall follow provisions as established in 2 CFR 215.60-62.

Monitoring and Reporting § 215.50-53

a. Grantee Financial Management systems must comply with the established provisions in 2 CFR 215.21

- Payment – 2 CFR 215.22
- Cost Share – 2 CFR 215.23
- Program Income – 2 CFR 215.24
 - Earned program income, if any, shall be added to funds committed to the project by the NRC and Grantee and used to further eligible project or program objectives or deducted from the total project cost allowable cost as directed by the Grants Officer or the terms and conditions of award.
- Budget Revision – 2 CFR 215.25
 - The Grantee is required to report deviations from the approved budget and program descriptions in accordance with 2 CFR 215.25, and request prior written approval from the Program Officer and the Grants Officer.
 - The Grantee is not authorized to rebudget between direct costs and indirect costs without written approval of the Grants Officer.
 - The Grantee is authorized to transfer funds among direct cost categories up to a cumulative 10 percent of the total approved budget. The Grantee is not allowed to transfer funds if the transfer would cause any Federal appropriation to be used for purposes other than those consistent with the original intent of the appropriation.
 - Allowable Costs – 2 CFR 215.27

b. Federal Financial Reports

The Grantee shall submit a "Federal Financial Report" (SF-425) on a quarterly basis for the periods ending March 31, June 30, September 30, and December 31, or any portion thereof, unless otherwise specified in a special award condition. Reports are due no later than 30 days following the end of each reporting period. A final SF-425 is due within 90 days after expiration of the award. The report should be submitted electronically to:

Grants FFR@NRC.GOV. *(NOTE: There is an underscore between Grants and FFR).*

Period of Availability of Funds 2 CFR § 215.28

a. Where a funding period is specified, a Grantee may charge to the grant only allowable costs resulting from obligations incurred during the funding period and any pre-award costs authorized by the NRC.

b. Unless otherwise authorized in 2 CFR 215.25(e)(2) or a special award condition, any extension of the award period can only be authorized by the Grants Officer in writing. Verbal or written assurances of funding from other than the Grants Officer shall not constitute authority to obligate funds for programmatic activities beyond the expiration date.

c. The NRC has no obligation to provide any additional prospective or incremental funding. Any modification of the award to increase funding and to extend the period of performance is at the sole discretion of the NRC.

d. Requests for extensions to the period of performance should be sent to the Grants Officer at least 30 days prior to the grant/cooperative agreement expiration date. Any request for extension after the expiration date may not be honored.

Automated Standard Application For Payments (ASAP) Procedures

Unless otherwise provided for in the award document, payments under this award will be made using the Department of Treasury's Automated Standard Application for Payment (ASAP) system < <http://www.fms.treas.gov/asap/> >. Under the ASAP system, payments are made through preauthorized electronic funds transfers, in accordance with the requirements of the Debt Collection Improvement Act of 1996. In order to receive payments under ASAP, Grantees are required to enroll with the Department of Treasury, Financial Management Service, and Regional Financial Centers, which allows them to use the on-line method of withdrawing funds from their ASAP established accounts. The following information will be required to make withdrawals under ASAP: (1) ASAP account number – the award number found on the cover sheet of the award; (2) Agency Location Code (ALC) – 31000001; and Region Code. Grantees enrolled in the ASAP system do not need to submit a "Request for Advance or Reimbursement" (SF-270), for payments relating to their award.

Audit Requirements

Organization-wide or program-specific audits shall be performed in accordance with the Single Audit Act Amendments of 1996, as implemented by OMB Circular A-133, "Audits of States, Local Governments, and Non-Profit Organizations."

<http://www.whitehouse.gov/omb/circulars/a133/a133.html> Grantees are subject to the provisions of OMB Circular A-133 if they expend \$500,000 or more in a year in Federal awards.

The Form SF-SAC and the Single Audit Reporting packages for fiscal periods ending on or after January 1, 2008 must be submitted online.

1. Create your online report ID at <http://harvester.census.gov/fac/collect/ddeindex.html>
2. Complete the Form SF-SAC
3. Upload the Single Audit
4. Certify the Submission
5. Click "Submit."

Organizations expending less than \$500,000 a year are not required to have an annual audit for that year but must make their grant-related records available to NRC or other designated officials for review or audit.

III. Programmatic Requirements

Performance (Technical) Reports

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

b. Unless otherwise specified in the award provisions, performance (technical) reports shall contain brief information as prescribed in the applicable uniform administrative requirements 2 CFR §215.51 which are incorporated in the award.

c. The Office of Human Resources requires the submission of the semi-annual progress report on the SF-PPR, SF-PPR-B, and the SF-PPR-E forms. The submission for the six month period ending March 31st is due by April 30th, or any portion thereof. The submission for the six month period ending September 30th is due by October 31st or any portion thereof.

d. Grant Performance Metrics:

The Office of Management and Budget requires all Federal Agencies providing funding for educational scholarships and fellowships as well as other educational related funding to report on specific metrics. These metrics are part of the Academic Competitiveness Council's (ACC) 2007 report and specifically relates to Science, Technology, Engineering, and Mathematics (STEM) curricula.

As part of the FY 2010 HR grant awards, in addition to the customary performance progress report requested on the SF-PPR, SF-PPR-B, and SF-PPR-E forms, HR requires the following metrics to be reported on by the awardees as follows:

Faculty Development Awards

1. Number of new faculty hired and currently eligible faculty supported in NRC designated STEM areas.

Unsatisfactory Performance

Failure to perform the work in accordance with the terms of the award and maintain at least a satisfactory performance rating or equivalent evaluation may result in designation of the Grantee as high risk and assignment of special award conditions or other further action as specified in the standard term and condition entitled "Termination."

Failure to comply with any or all of the provisions of the award may have a negative impact on future funding by NRC and may be considered grounds for any or all of the following actions: establishment of an accounts receivable, withholding of payments under any NRC award, changing the method of payment from advance to reimbursement only, or the imposition of

other special award conditions, suspension of any NRC active awards, and termination of any NRC award.

Other Federal Awards With Similar Programmatic Activities

The Grantee shall immediately provide written notification to the NRC Project Officer and the Grants Officer in the event that, subsequent to receipt of the NRC award, other financial assistance is received to support or fund any portion of the program description incorporated into the NRC award. NRC will not pay for costs that are funded by other sources.

Prohibition Against Assignment By The Grantee

The Grantee shall not transfer, pledge, mortgage, or otherwise assign the award, or any interest therein, or any claim arising thereunder, to any party or parties, banks, trust companies, or other financing or financial institutions without the express written approval of the Grants Officer.

Site Visits

The NRC, through authorized representatives, has the right, at all reasonable times, to make site visits to review project accomplishments and management control systems and to provide such technical assistance as may be required. If any site visit is made by the NRC on the premises of the Grantee or contractor under an award, the Grantee shall provide and shall require his/her contractors to provide all reasonable facilities and assistance for the safety and convenience of the Government representative in the performance of their duties. All site visits and evaluations shall be performed in such a manner as will not unduly delay the work.

IV. Miscellaneous Requirements

Criminal and Prohibited Activities

- a. The Program Fraud Civil Remedies Act (31 USC §§ 3801-3812), provides for the imposition of civil penalties against persons who make false, fictitious, or fraudulent claims to the Federal government for money (including money representing grant/cooperative agreements, loans, or other benefits.)
- b. False statements (18 USC § 287), provides that whoever makes or presents any false, fictitious, or fraudulent statements, representations, or claims against the United States shall be subject to imprisonment of not more than five years and shall be subject to a fine in the amount provided by 18 USC § 287.
- c. False Claims Act (31 USC 3729 et seq), provides that suits under this Act can be brought by the government, or a person on behalf of the government, for false claims under federal assistance programs.
- d. Copeland "Anti-Kickback" Act (18 USC § 874), prohibits a person or organization engaged in a federally supported project from enticing an employee working on the project from giving up a part of his compensation under an employment contract.

American-Made Equipment And Products

Grantees are hereby notified that they are encouraged, to the greatest extent practicable, to purchase American-made equipment and products with funding provided under this award.

Increasing Seat Belt Use in the United States

Pursuant to EO 13043, Grantees should encourage employees and contractors to enforce on-the-job seat belt policies and programs when operating company-owned, rented or personally-owned vehicle.

Federal Leadership of Reducing Text Messaging While Driving

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

Federal Employee Expenses

Federal agencies are generally barred from accepting funds from a Grantee to pay transportation, travel, or other expenses for any Federal employee unless specifically approved in the terms of the award. Use of award funds (Federal or non-Federal) or the Grantee's provision of in-kind goods or services, for the purposes of transportation, travel, or any other expenses for any Federal employee may raise appropriation augmentation issues. In addition, NRC policy prohibits the acceptance of gifts, including travel payments for Federal employees, from Grantees or applicants regardless of the source.

Minority Serving Institutions (MSIs) Initiative

Pursuant to EOs 13256, 13230, and 13270, NRC is strongly committed to broadening the participation of MSIs in its financial assistance program. NRC's goals include achieving full participation of MSIs in order to advance the development of human potential, strengthen the Nation's capacity to provide high-quality education, and increase opportunities for MSIs to participate in and benefit from Federal financial assistance programs. NRC encourages all applicants and Grantees to include meaningful participations of MSIs. Institutions eligible to be considered MSIs are listed on the Department of Education website:
<http://www.ed.gov/about/offices/list/ocr/edlite-minorityinst.html>

Research Misconduct

Scientific or research misconduct refers to the fabrication, falsification, or plagiarism in proposing, performing, or reviewing research, or in reporting research results. It does not include honest errors or differences of opinions. The Grantee organization has the primary responsibility to investigate allegations and provide reports to the Federal Government. Funds expended on an activity that is determined to be invalid or unreliable because of scientific misconduct may result in a disallowance of costs for which the institution may be liable for repayment to the awarding agency. The Office of Science and Technology Policy at the White House published in the Federal Register on December 6, 2000, a final policy that addressed research misconduct. The policy was developed by the National Science and Technology Council (65 FR 76260). The NRC requires that any allegation be submitted to the Grants Officer, who will also notify the OIG of such allegation. Generally, the Grantee organization shall investigate the allegation and submit its findings to the Grants Officer. The NRC may accept the Grantee's findings or proceed with its own investigation. The Grants Officer shall inform the Grantee of the NRC's final determination.

Publications, Videos, and Acknowledgment of Sponsorship

Publication of the results or findings of a research project in appropriate professional journals and production of video or other media is encouraged as an important method of recording and reporting scientific information. It is also a constructive means to expand access to federally funded research. The Grantee is required to submit a copy to the NRC and when releasing information related to a funded project include a statement that the project or effort undertaken

was or is sponsored by the NRC. The Grantee is also responsible for assuring that every publication of material (including Internet sites and videos) based on or developed under an award, except scientific articles or papers appearing in scientific, technical or professional journals, contains the following disclaimer:

"This [report/video] was prepared by [Grantee name] under award [number] from [name of operating unit], Nuclear Regulatory Commission. The statements, findings, conclusions, and recommendations are those of the author(s) and do not necessarily reflect the view of the [name of operating unit] or the US Nuclear Regulatory Commission."

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

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

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

Award Term

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

Reporting Subawards and Executive Compensation.

a. Reporting of first-tier subawards.

1. *Applicability.* Unless you are exempt as provided in paragraph d. of this award term, you must report each action that obligates \$25,000 or more in Federal funds that does not include Recovery funds (as defined in section 1512(a)(2) of the American Recovery and Reinvestment Act of 2009, Pub. L. 111-5) for a subaward to an entity (see definitions in paragraph e. of this award term).

2. Where and when to report.

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

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

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

b. Reporting Total Compensation of Recipient Executives.

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

i. the total Federal funding authorized to date under this award is \$25,000 or more;

ii. in the preceding fiscal year, you received—

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

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

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

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

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

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

c. Reporting of Total Compensation of Subrecipient Executives.

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

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

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

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

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

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

i. To the recipient.

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

d. *Exemptions*

If, in the previous tax year, you had gross income, from all sources, under \$300,000, you are exempt from the requirements to report:

i. Subawards,

and

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

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

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

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

ii. A foreign public entity;

iii. A domestic or foreign nonprofit organization;

iv. A domestic or foreign for-profit organization;

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

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

3. *Subaward:*

- i. This term means a legal instrument to provide support for the performance of any portion of the substantive project or program for which you received this award and that you as the recipient award to an eligible subrecipient.
- ii. The term does not include your procurement of property and services needed to carry out the project or program (for further explanation, see Sec. ____ .210 of the attachment to OMB Circular A-133, "Audits of States, Local Governments, and Non-Profit Organizations").
- iii. A subaward may be provided through any legal agreement, including an agreement that you or a subrecipient considers a contract.

4. *Subrecipient* means an entity that:

- i. Receives a subaward from you (the recipient) under this award; and
- ii. Is accountable to you for the use of the Federal funds provided by the subaward.

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

i. *Salary and bonus.*

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

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

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

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

vi. Other compensation, if the aggregate value of all such other compensation (e.g. severance, termination payments, value of life insurance paid on behalf of the employee, perquisites or property) for the executive exceeds \$10,000.
