

ATTACHMENT A - SCHEDULE

A.1 PURPOSE OF GRANT

The purpose of this Grant is to provide support to the "The University of Texas at Austin" as described in Attachment B entitled "Program Description."

A.2 PERIOD OF GRANT

1. The effective date of this Grant is May 1, 2010. The estimated completion date of this Grant is April 30, 2013.
2. Funds obligated hereunder are available for program expenditures for the estimated period: May 1, 2010 – April 30, 2013.

A. GENERAL

- | | |
|--------------------------------|---|
| 1. Total Estimated NRC Amount: | \$430,830.00 |
| 2. Total Obligated Amount: | \$430,830.00 |
| 3. Cost-Sharing Amount: | \$134,336.00 |
| 4. Activity Title: | The University of Texas at Austin Nuclear Energy Systems Junior Faculty Development Program |
| 5. NRC Project Officer: | John Gutteridge |
| 6. DUNS No.: | 170230239 |

B. SPECIFIC

- | | |
|-------------------|---------------|
| RFPA No.: | HR-10-926 |
| FFS: | N/A |
| Job Code: | T8460 |
| BOC: | 4110 |
| B&R Number: | 0-8415-5C1115 |
| Appropriation #: | 31X0200 |
| Amount Obligated: | \$430,830.00 |

A.3 BUDGET

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

Direct Participant Cost	\$356,495.00
Indirect Cost	<u>\$74,335.00</u>
NRC Yearly Total	\$430,830.00

All travel must be in accordance with The University of Texas at Austin Travel Regulations or the US Government Travel Policy absent Grantee's travel regulation.

A.4 AMOUNT OF AWARD AND PAYMENT PROCEDURES

1. The total estimated amount of this Award is \$430,830.00 for the three year period.

2. NRC hereby obligates the amount of \$430,830.00 for program expenditures during the period set forth above and in support of the Budget above. The Grantee will be given written notice by the Contracting Officer when additional funds will be added. NRC is not obligated to reimburse the Grantee for the expenditure of amounts in excess of the total obligated amount.

3. Payment shall be made to the Grantee in accordance with procedures set forth in the Automated Standard Application For Payments (ASAP) Procedures set forth below.

Attachment B – Program Description

P,ROGRAM DESCRIPTION

Executive Summary

Project Title: A Junior Faculty Development Program in Nuclear Energy Systems at The University of Texas at Austin

Senior Personnel:

Dr. Erich Schneider (PI); Assistant Professor, Nuclear and Radiation Engineering Program, Mechanical Engineering Department, Nuclear Engineering Teaching Lab, Pickle Research Campus, R-9000; Austin, Texas 7812; (607) 227-1414, eschneider@mail.utexas.edu

The Cockrell School of Engineering at The University of Texas at Austin has nominated Assistant Professor Erich Schneider as its applicant for a Junior Faculty Development Award. Dr. Schneider's primary area of research is nuclear energy systems, but he has also assembled an active record in related areas, for instance technical aspects of counter-proliferation as well as reactor theory and analysis.

The objective of the program is to catalyze the junior faculty member's development of a sustainable research and teaching program in these fields. A sustainable program is one that attracts ongoing, stable research funding from a broad range of sources, maintains an outstanding academic reputation, and consistently places students in prominent positions in industry, the laboratories and academia. A rigorous metric is proposed to quantify progress toward these goals. Early-career funding enables the faculty member and his/her supported students to accumulate a track record of success; in essence it is leveraged many times over. The central benefit of the program is thus to establish, via the faculty member's graduates, a pipeline serving the needs of the nuclear industry in Texas and nationwide. Texas will remain a key state for the industry: four or more new reactors are poised to be added to its existing fleet of four power reactors. These reactors, as well as the NRC Region IV Headquarters in Dallas, have employed multiple UT-Austin graduates in the past five years alone. A successful program will serve the demands of these industries for decades to come.

The commitment of UT -Austin to the success of this effort is reflected by the multiple sources of matching funding: funding commitments come from the Cockrell School of Engineering and the Mechanical Engineering Department. These are augmented by an in-kind contribution from the University whereby one-half of the facilities and administrative have been waived. Together these demonstrate a strong commitment to the success of the junior faculty member at the Departmental, College and University level.

Narrative: Project Title: A Junior Faculty Development Program in Nuclear Energy Systems at The University of Texas at Austin

Introduction: Nuclear Engineering at UT-Austin

A curriculum in nuclear energy systems has existed at UT Austin since the first formal course on the subject was offered in 1957. Nuclear and Radiation Engineering (NRE) became a field of study within the Department of Mechanical Engineering in 1970 as part of UT-Austin's Cockrell School of Engineering. The 2009 US News and World Report rankings place the School among the top ten graduate schools of engineering. Four faculty currently form the University's NRE program, one full, one associate and two assistant professors.

The nuclear engineering program is centered at the University's Nuclear Engineering Teaching Laboratory (NETL) which houses a 1.1 MW TRIGA Mark II research reactor. The NRE program is active and productive:

- thirty-eight graduate students are enrolled; most reside on-campus, but several are employed at national laboratories on a permanent basis or as graduate research assistants;
- it is an important pillar of domestic higher education in nuclear engineering: for instance, seven PhDs graduated in 2007-08, more than 10% of US citizen graduates for that year;
- thirteen undergraduates are enrolled in the NRE Certificate (an optional concentration for mechanical engineers) and Radiation Physics Options;
- the program attracts over \$1.5 million per year in external funding.

The faculty strength of the NRE program has doubled since 2005 when only two professors were active. Therefore, the program views this award as an opportunity to reinforce recent success. Specifically, the Junior Faculty Program is viewed as an opportunity to catalyze the transition of an assistant professor nearing tenure review to a role of leadership within the NRE program and international prominence in his community of peers. This transition - from leading smaller projects while serving as co-investigator on larger ones to organizing and managing large, multi-institutional efforts - is a challenging one for assistant professors whose priorities have of necessity have lain with research productivity rather than assumption of leadership.

Description of Junior Faculty Program

The Cockrell School of Engineering has nominated Asst. Prof. Erich Schneider as its applicant for a Junior Faculty Development Award. While Dr. Schneider's primary area of research is nuclear energy systems, he has also assembled an active record in related areas, for instance technical aspects of counter-proliferation as well as reactor theory and analysis. Hired in 2006, Dr. Schneider would undergo tenure review during the performance period of this award.

Therefore, the objective of the program is to catalyze the development of a sustainable program at the associate professor level. A sustainable program is one that attracts ongoing research funding from a broad range of sources, maintains an outstanding academic reputation, and consistently places students in prominent positions in industry, the laboratories and academia. A rigorous metric is proposed to quantify progress toward these goals.

Early-career funding enables the faculty member and his/her supported students to accumulate a track record of success; in essence it is leveraged many times over. Such funding is especially valuable at two points in a junior faculty member's career:

- at the earliest stage, to launch a research program by providing the basic capabilities and tools needed to maintain a small group of undergraduate and graduate students;
- as the faculty member is transitioning from the shorter term priorities of the assistant professor (introduce new classes to the curriculum, demonstrate the ability to publish, supervise a student through the PhD, attract a degree of external funding) to the longer-term goals of a tenured faculty member (leadership of multi-institutional, multi-year research efforts, international recognition reflected by invitations to serve on multi-national

working groups and major publications such as authorship of a textbook, placement of graduates in prominent academic and industrial positions).

Dr. Schneider is at the second of the stages identified above. The specific items proposed in this faculty development program, and their importance to the objective, are as follows:

Provide Faculty Summer Salary. Summer is a critical time for a faculty member to obtain training in the latest techniques current in his/her field, write grants, and increase visibility by attending workshops and conferences. Other sources of summer salary are available, but they often entail commitments that distract a junior faculty member from pursuing these longer-term objectives that are crucial to building a sustainable research program.

Support Two Graduate Students for Three Years. Graduate students form the backbone of any research group. Dr. Schneider supports several graduate students through grants and contracts. Yet these projects are often deliverable-driven and do not afford rich opportunities for capability-building. For a faculty member with a computational/modeling emphasis, capability-building entails training students to use new analytic techniques or scientific software packages and to acquire skills outside of their narrow specialty. Reflecting the importance of collaboration, the graduate student funding budget assumes that summer research will be conducted at a national laboratory or another university.

Support Two Undergraduate Students per Year. Support of undergraduate students expands the pool of well-trained and prepared graduate students, but workforce talent is not limited to those with graduate-level training. Therefore, it is important for faculty members at all stages in their careers to maintain a strong undergraduate presence in their research groups.

Provide Travel Funding. Travel funding achieves two objectives. Faculty and student travel to give seminars and papers increases exposure and recognition; this is vital when peers are nominated to write letters supporting a tenure package. It also builds networks that are crucial to assembling the multi-institutional teams that are necessary to tackle the largest challenges in the field - those that a newly-tenured professor should be addressing. Student and faculty travel to training workshops is particularly important as it brings new capabilities to a group.

Provide Research Equipment (Computer Software and Hardware). The junior faculty member makes extensive use of Monte Carlo and deterministic radiation transport and other computation intensive analysis tools. Most of the tools used in our field are available free of charge to universities through RSICC at ORNL; however this is not universally true. Funding is requested to purchase CASMO-4/SIMULATE-3. This software would extend Dr. Schneider's capabilities for fuel cycle analysis, burnable poison design, and fuel management studies. Purchase of equipment capable of tackling large-scale problems (example from Dr. Schneider's research - full-core neutron transport and thermal hydraulic analysis of the Advanced Test Reactor) enables ambitious challenges to be pursued. Dr. Schneider has access to massively parallel computing capabilities, but it is limited and cannot support intensive activities. Thus, funds are budgeted to expand a workstation cluster already in Dr. Schneider's possession.

Strength of Candidate and Selection Process

This section describes i) the process by which the junior faculty member was selected to apply for this award, and ii) the selection and recruitment process the faculty member will pursue to secure outstanding students and bring additional students into the nuclear energy milieu. Shortly after arriving at UT-Austin in 2006, Dr. Schneider secured a small (\$225k) Department of Energy Junior Faculty Award Program (DOE JFAP) grant. The purpose of this award was to establish research, student training and teaching programs and lay the groundwork for a favorable tenure review. His DOE JFAP funding:

- provided initial support for a PhD student, Joshua Peterson, who is at INL completing his PhD with co-supervision from an Advanced Test Reactor staff scientist;

- has supported a PhD student, Anthony Scopatz, throughout his program. Anthony has interned at INL and authored two journal articles and numerous proceedings papers;
- provided support for a MA student in nonproliferation policy analysis, Zoe Meyer, who is now a staff scientist at PNNL;
- provided summer support for Dr. Schneider to develop the curriculum for his Nuclear Fuel Cycle class that received a 4.8/5.0 "Overall Instructor Rating" in student evaluations;
- offered conference travel support that, together with capabilities built up through the DOE JFAP, directly led to \$380k in contracts with INL alone in the areas of reactor physics (ATR group) and nuclear fuel cycle systems analysis (GNEP/AFCI group).

Other accomplishments not solely attributable to the JFAP include a co-investigatorship on an NSF grant, research contracts with ORNL and LANL, and a number of other small to moderate grant awards as PI, two of which are NRC-sponsored and are described in the "Results from Past NRC Funding." Dr. Schneider has graduated two PhD students as co-supervisor two as supervisor (both switched to Dr. Schneider partway through their programs), and seven MS and MA students. His students now work at the NRC (3), PNNL, Bettis Laboratory, Schlumberger and Bechtel. Having made effective use of the DOE JFAP grant to overcome hurdles faced by a new assistant professor, Dr. Schneider has been identified to apply for this award.

The success of a faculty member at any level is tied to the strength and success of his or her graduate students. Therefore it is vital to apply rigorous selection criteria to identify well-prepared, bright student collaborators. The NRE program has a strong record of attracting exceptional graduate students. Reflecting and encouraging this, the budgeted amount to over \$25,000 per calendar year in the first year, significantly larger than the departmental minimum of \$16,000. An additional \$9,000 per year is provided by the Cockrell School of Engineering to students scoring greater than 35.5 out of 40 on the formula below. The strength of the students attracted by the NRE program can be measured by the number accepted for academic year 2008-09 who were offered this large stipend: seven, almost two per faculty member.

Upper Division GPA (junior and senior year) * 4 = 16 maximum points
 GRE Verball10 = 8 maximum points
 GRE Math/10 = 8 maximum points
 GRE Analytical Writing + 2 = 8 maximum points

In the fall of 2008 the NRE program began advertising for graduate applicants at the top twenty five physics departments in the US and through Tau Beta Pi at the top twenty-five undergraduate engineering colleges in the country. Our recruitment flyer is included as Attachment A. To leverage the NRC support to further expand our pool of applicants, we will modify this flyer to highlight the assistantships made available through this award and distribute it to institutions maintaining American Nuclear Society (ANS) student chapters. Therefore, the junior faculty member proposes to use the selection criterion defined above to choose supported graduate students, with the assistantships open to students having a score of 35.5 or greater unless convincing circumstances (e.g. exceptional undergraduate research experience) militate otherwise. If that is the case, a written justification will be provided to the sponsor.

Participation in research, in particular as a member of a large and dynamic team, is exceptionally valuable to undergraduates choosing a field to pursue in the professional or research arenas. We plan to utilize existing UT-Austin programs to provide such research experience to underrepresented undergraduates. The Texas Research Experience (TRES)

program of the Equal Opportunity in Engineering office pairs African American, Hispanic and Native American students with faculty mentors. The Women in Engineering Program (WEP) Graduates Linked with Undergraduates in Engineering (GLUE) program accommodates twenty to thirty undergraduate-graduate student mentoring pairs each spring semester. One undergraduate student will be drawn from each program per year.

Management Structure

Ample support, both academic and administrative, is available for management of the award. Junior faculty at UT-Austin are assigned mentors; Dr. Schneider's mentor is Dr. Sheldon Landsberger, the Area Coordinator for the NRE program. Dr. Schneider and Dr. Landsberger interact daily and meet individually on a regular basis. As part of the evaluation plan for this award, these meetings will be formalized in two ways. First, Dr. Landsberger commits to provide feedback upon the junior faculty member's quantitative annual report. Second, Dr. Landsberger will review the junior faculty member's semi-annual progress reports and meet with Dr. Schneider to provide verbal feedback: identification of strengths and weaknesses, recommendations for further steps to be taken. The junior faculty member will write a digest of this meeting which Dr. Landsberger will sign off on. Dr. Landsberger commits to undertake these duties; see Attachment B, his letter of support for this application.

Administrative support - for instance, for collection of data related to the faculty annual reports discussed in the next section - is provided through NETL staff. No dedicated administrative funding is requested as all necessary services are available through support staff paid from facilities and administrative overhead attaching to grants and contracts.

Evaluation Plan

A multi-faceted evaluation plan is proposed to measure the performance of the junior faculty member against widely-used standards of faculty performance and to define the extent to which capabilities put in place by the funding are leveraged to attract additional funding and draw high-quality students into the field. The following efforts will be undertaken (on an annual or semi-annual basis, as indicated) and included in progress reports delivered to the sponsor.

1. A quantitative Faculty Annual Report will be prepared at the end of each year: All UT-Austin faculty members are required to complete an annual report (see Attachment C). The report details papers published, MS/PhD student supervisions completed and ongoing, presentations made at professional conferences, sessions chaired, papers reviewed, external funding acquired, courses taught, quality of teaching and other benchmarks of faculty achievement. The Mechanical Engineering Department has devised numerical metrics as quantitative barometers of faculty performance. Achievements are assigned points: e.g. one point per \$25,000 of external funding. The metric values of accomplishments are defined in Attachment D. It offers a Simple method for quantifying faculty achievements in both the relative (to tenured faculty members) and absolute senses.

Therefore, the following items will be delivered to the sponsor annually: the junior faculty member's annual report and numerical metric score, a chart of numerical metric scores of all 60+ faculty members in the Department by topical area (teaching, research, service), and a 1-2pp. report prepared by the junior faculty member and signed by his mentor highlighting areas of strength, weaknesses (if the junior faculty member's score falls below the departmental average), and a work plan for remedying any weaknesses.

2. Qualitative semi-annual reports will be submitted to NRC following meetings of the junior faculty member with his mentor. The quantitative metric cannot capture all aspects of faculty contribution to science and education. Every six months, the junior faculty member will therefore prepare a short (2-3 pp.) report outlining research and educational

activities conducted under the junior faculty award, instances in which the award was leveraged to obtain additional funding or recruit a talented student to the field, and plans for future leveraging activities. The junior faculty member and his mentor will together review these accomplishments and plans. The junior faculty member will write a summary of his mentor's feedback which will be submitted to the NRC. The mentor will review and sign off on the feedback summary and be afforded the opportunity to provide comments of his own to the NRC.

Since the junior faculty member will undergo review for promotion to Associate Professor during the performance period, evaluations will be oriented toward his long-term success and productivity in the field. Performance will be measured against the full departmental faculty, not only assistant professors. Paramount will be establishment of prominence at the international level and demonstration of research productivity at the level expected of a full professor.

Institutional Support and Sustainability

The commitment of UT -Austin to the success of this effort is reflected by multiple sources of matching funding, extending from the PI's academic program to the University at large. At the program and departmental level, NETI and the Mechanical Engineering Department have together committed to provide \$30,000 (\$10,000 per year). The Cockrell School of Engineering has likewise provided \$30,000; commitment letters signed by the Chair of the Department and the Associate Dean for Research of the Cockrell School are attached (Attachments E and F). These funds are augmented by an in-kind contribution from the University. The normal facilities and administrative (F&A) charge rate is 52%. Dr. Susan Sedwick, UT-Austin Associate Vice President and Director of its Office of Sponsored Projects, has agreed to waive one-half of the F&A associated with the NRC award and NRC-supplied matching funding. This reflects a three- year in-kind contribution by the University of \$74,335.

The sustainability of a program put in place by the award must not be tied to ongoing support from the University or NRC. Instead, the sustainability plan is integral to the proposal. The program will have achieved its sustainability goals if the junior faculty member:

- receives tenure (expected during the second year of the performance period),
- graduates the two supported graduate students and places them in nuclear-related industrial, research or postdoctoral academic positions,
- achieves a funding 'multiplier' as was the case with his DOE JFAP award: utilizes the capabilities built up through the NRC award to pursue and obtain additional research funding well in excess of the amount of the award,
- secures a leadership role in the field by serving as Pion a grant award that involves other universities and national laboratories,
- publishes at least three peer-reviewed journal articles per supported student.

looking ahead, the sustainable program catalyzed by this award would transition the junior faculty member from the shorter-term goals of an assistant professor to the broader, higher- impact role assumed by an associate professor.

Attachment C – Standard Terms and Conditions

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

Preface

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

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

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

A-21 (now 2CFR 220): <http://www.whitehouse.gov/omb/circulars/a021/print/a021.html>
A-87 (now 2CFR 225): <http://www.whitehouse.gov/omb/circulars/a087/print/a087-all.html>
A-122 (now 2 CFR 230): <http://www.whitehouse.gov/omb/circulars/a122/print/a122.html>
A-102, SF 424: <http://www.whitehouse.gov/omb/circulars/a102/print/a102.html>
Form 990: <http://www.irs.gov/pub/irs-pdf/i990-ez.pdf>

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.

By drawing funds from the Automated Standard Application for Payment system (ASAP), the recipient agrees to the terms and conditions of an award.

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 Part 180 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

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.

§ 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 215.180 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 VII 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 VII, 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 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 must 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, termination of the award, or other enforcement action within NRC's authority.

Lobbying Restrictions

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

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

The Grantee receiving in excess of \$100,000 in Federal funding shall submit a completed Standard Form (SF) LLL, "Disclosure of Lobbying Activities," regarding the use of non-Federal

funds for lobbying within 30 days following the end of the calendar quarter in which there occurs any event that requires disclosure or that materially affects the accuracy of the information contained in any disclosure form previously filed. The Grantee must submit the SF-LLL, including those received from sub-recipients, contractors, and subcontractors, to the Grants Officer.

§ 215.13 Debarment And Suspension.

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

- (1) Are presently excluded or disqualified from covered transactions by any Federal department or agency;
- (2) Have been convicted within the preceding three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, receiving stolen property, making false claims, or obstruction of justice; commission of any other offense indicating a lack of business integrity or business honesty that seriously and directly affects your present responsibility;
- (3) Are presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph (1)(b); and
- (4) Have had one or more public transactions (Federal, State, or local) terminated for cause or default within the preceding three years.

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

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

'Debarment, Suspension, Ineligibility, and Voluntary Exclusion

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

Drug-Free Workplace

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

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

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

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

Procurement Standards. § 215.40

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 is an appropriate charge to this award and prior authorization for specific trips are not required, as long as the trip is identified in the Grantee's original program description and original budget. All other travel, domestic or international, must not increase the total estimated award amount. Trips that have not been identified in the approved budget require the written prior approval of the Grants Officer.

Travel will be in accordance with the US Government Travel Regulations at: www.gsa.gov/federaltravelregulation and the per diem rates set forth at: www.gsa.gov/perdiem.

Travel costs to the grant must be consistent with provisions as established in Appendix A to 2 CFR 220 (J.53)

Property Management Standards

Property standards of this award shall follow provisions as established in 2 CFR 215.30.

Equipment procedures shall follow provision established in 2 CFR 215.34.

Procurement Standards

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

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 title and retain ownership 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 of this award shall follow provisions as established in 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 a review committee consisting of a minimum of three persons.
- d. Pending resolution of the request for review, the NRC may withhold or defer payments under the award during the review proceedings.
- e. The review committee will request the Grants Officer who issued the notice of termination or adverse action to provide copies of all relevant background materials and documents. The committee may, at its discretion, invite representatives of the Grantee and the NRC program office to discuss pertinent issues and to submit such additional information as it deems appropriate. The chairman of the review committee will insure that all review activities or proceedings are adequately documented.
- f. Based on its review, the committee will prepare its recommendation to the Director, Office of Administration, who will advise the parties concerned of his/her decision.

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

Monitoring and Reporting § 215.51

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.
- Budget Revision – 2 CFR 215.25
 - In accordance with 2 CFR 215.25(e), the NRC waives the prior approval requirement for items identified in sub-part (e)(1-4).
 - The Grantee is not authorized to rebudget between direct costs and indirect costs without written approval of the Grants Officer.
 - Allowable Costs – 2 CFR 215.27

b. Federal Financial Reports

Effective October 1, 2008, NRC transitioned from the SF-269, SF-269A, SF-272, and SF-272A to the Federal Financial Report (SF-425) as required by OMB:

http://www.whitehouse.gov/omb/fedreg/2008/081308_ffr.pdf

http://www.whitehouse.gov/omb/grants/standard_forms/ffr.pdf

http://www.whitehouse.gov/omb/grants/standard_forms/ffr_instructions.pdf

The Grantee shall submit a "Federal Financial Report" (SF-425) on a quarterly basis for the periods ending 3/31, 6/30, 9/30, and 12/31 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 shall be submitted within 90 days after expiration of the award.

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 shall 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 shall 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 as specified in the special award conditions in the same frequency as the Federal Financial Report unless otherwise authorized by the Grants Officer.

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

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 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."