

ATTACHMENT A - SCHEDULE

A.1 PURPOSE OF GRANT

The purpose of this Grant is to provide support to the "University of Missouri Fellowship Program" 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, 2014.

2. Funds obligated hereunder are available for program expenditures for the estimated period: May 1, 2010 – April 30, 2014.

A. GENERAL

1. Total Estimated NRC Amount:	\$399,993
2. Total Obligated Amount:	\$399,993
3. Cost-Sharing Amount:	\$398,901
4. Activity Title:	Support to the University of Missouri Fellowship Program in Nuclear Engineering and Health Physics
5. NRC Project Officer:	John Gutteridge
6. DUNS No.:	153890272

B. SPECIFIC

RFPA No.:	HR-10-946
FFS:	N/A
Job Code:	T8460
BOC:	4110
B&R Number:	0-8415-5C1115
Appropriation #:	31X0200
Amount Obligated:	\$399,993

A.3 BUDGET

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

	Year 1	Year 2	Year 3	Year 4
Direct Cost:	\$92,591.00	\$92,591.00	\$92,591.00	\$92,591.00
In-Direct (F&A) Cost:	<u>\$7,407.25</u>	<u>\$7,407.25</u>	<u>\$7,407.25</u>	<u>\$7,407.25</u>
Total Costs:	\$99,998.25	\$99,998.25	\$99,998.25	\$99,998.25

All travel must be in accordance with the University of Missouri 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 \$399,993 for the four year period.

2. NRC hereby obligates the amount of \$399,993 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

University of Missouri Fellowship Program in Nuclear Engineering and Health Physics: Advanced Modeling and Simulation

B. Project Description

B.1 Capacity and ability of the institution to effectively conduct the program including quality and feasibility of the recruitment and marketing strategies

The Nuclear Science and Engineering Institute (NSEI) at the University of Missouri-Columbia (MU) is requesting five fellowships to educate and train graduate students in the area of advanced modeling and simulation in Nuclear Engineering and Health Physics. An additional sixth fellowship, some infrastructural support funds, and tuition waivers for all fellows will be provided by MU as matching funds, enabling a substantially greater impact of the grant funds. The NSEI has both the capacity and ability to conduct the proposed program effectively. The NSEI has been offering M.S. and PhD degrees in Nuclear Engineering, Health Physics, and Medical Physics since the 1960's. We also offer a minor in nuclear engineering for non-nuclear engineering and science undergraduates and a certificate for graduate students. The MU Nuclear Engineering Program was ranked # 1 in 2007 based on Faculty Scholarly Productivity as reported in The Chronicle of Higher Education. MU has the largest university based nuclear research reactor (MURR) in the nation that operates continuously at 10 MWth. This is a magnificent resource for students, for both research at the cutting edge of technology, and for training. Our close ties and collaboration with the Callaway Nuclear Power Plant, which is 40 miles from MU, is another resource for hands-on training of our NRC Fellows. These resources, along with the NRC fellowship program, will allow us in attracting, retaining and educating young scientists and engineers in the program.

Currently, we have 56 graduate students and we can easily accommodate six new graduate students. Table 1 gives the number of M.S. and PhD degrees awarded in the last five years by the Nuclear Engineering Program. These figures indicate that the MU-Nuclear Engineering Program is comparable to other universities in terms of science and engineering graduate degree production, and also indicates an adequate capacity for accommodating the student advisement associated with the six requested NRC Fellows.

Table 1. Graduate Degree Production from Nuclear Engineering Program, 2004-2009.

	2004-05		2005-06		2006-07		2007-08		2008-09	
	M.S.	PhD								
NE	9	2	5	2	13	8	9	11	11	3

Our faculty have strong research and educational programs in modeling and simulation, and we have published regularly in both nuclear engineering and health physics with our students and have been funded by a number of federal agencies, including NSF, NRC, DOE, EPA, NASA, 000 and industry. We have a 128-node computing cluster acquired under a recent DOE grant, and that is dedicated to nuclear engineering and health physics computations relating to neutron, phonon, photon, charged particle, and fission product (molecular) and aerosol transport. Our fellows will take advanced courses at the university, and also do practicums at several national laboratories with whom we regularly interact. Thus, we have both the capacity and ability to offer a quality program to the fellows.

B.2 Quality and feasibility of recruitment and marketing strategies.

One of our main recruitment pools will be our minor in the nuclear engineering program. We will also use alumni lists, MU science and engineering undergraduate research participation programs, as well as our strong interaction with institutions in the state. We will advertise the availability of the NRC Fellowships in appropriate publications and databases, and both through mailings and electronically via the Internet. These announcements will emphasize the opportunities and challenges of research in advanced modeling and simulation, with clear discussion of the unique possibilities at MU and the interdisciplinary nature of the research in this area. Information will be sent to local chapters and national offices of the American Nuclear Society, the Health Physics Society, the Society of Women Engineers, the Society of Black Engineers and other professional societies such as the American Physical Society and the American Chemical Society. We will utilize the department heads' email lists for wide circulation of the NRC Fellowship program.

In terms of assuring non-discriminatory practices, the University of Missouri is an equal opportunity institution. Students participating in the NRC Fellowships will be chosen on the basis of merit. Within these guidelines, every effort possible will be made to attract and to encourage application by students with backgrounds that have been traditionally underrepresented in the sciences and engineering. MU has a Memorandum of Understanding (MOU) in place with the Polytechnic University of Puerto Rico (PUPR) that NSEI faculty helped to develop, to facilitate doctoral graduate study at MU by PUPR faculty and students. This MOU will help us recruit students from PUPR. We will work closely with Minority Participation program to recruit minority students currently based at the University of Arizona Hispanic Research Center. We will contact Project 1000 and the CMID Hyper Aid division to advertise for the NRC fellowships.

B.3 Type and Degree of Proposed Student Support including Quality of Technical Programs for Scholars

Normal departmental and MU Graduate School procedures will be implemented to ensure that each Fellow makes timely progress toward completion of the Fellowship Program and that a high quality of academic rigor is instilled in the student. Since the Fellows' academic review committee will consist of participating Fellowship Program faculty, each student's progress will be closely monitored by the faculty as well. The MU graduate school also requires annual review of all our graduate students via our Graduate Student Progress System.

Once the Fellow selects his/her research project and advisor, the advisor will establish the advisory committee for the Fellow. The committee will evaluate the Fellow's academic needs for successful completion of the qualifying exam, comprehensive examination, and research project, and will accordingly advise the Fellow. The committee will meet every semester and the

student's academic program would be adjusted accordingly to accommodate any additional coursework or training.

An attractive component of our retention activities will be the opportunity for students to participate in practicum assignments with industries and government organizations that collaborate with us on nuclear engineering and health physics related research. Arrangements will be pursued for each Fellow to spend a summer with a relevant federal laboratory or agency. This opportunity for industrial/governmental interaction, coupled with dissertation guidance under some of the country's best researchers, will lead to the next generation of academic and industrial researchers.

MU has established an office on Academic Retention Services. Students participating in this program receive unlimited access and personalized attention and assistance from full-time retention coordinators. In addition, students are immediately connected to other campus resources and services that help students succeed at MU. On a monthly basis, workshops are offered that help students develop the appropriate strategies for academic achievement. Also, we will have regular informal meetings with the fellow to detect any problem so that immediate corrective action can be taken.

With the relevant academic policies and regulations in place, and in conjunction with evaluation instruments scheduled throughout the Fellowship Program, we are confident that the Program will meet the stated goals and objectives. The Project Director and other involved faculty and administrative staff will share the responsibility to evaluate the Fellowship Program in order to ensure the student's success in achieving personal and professional objectives.

B.4 Quality of technical programs for scholars.

The quality of our graduate program is reflected by the (1) courses taught (2) research program, (3) the quality of the faculty and (4) student involvement. Over the last several years, we have not only introduced several new courses, but also modified existing courses to accommodate the current need such as advanced reactors, and our going funded research includes experimental and theoretical studies relevant to very high temperature reactor systems, and development of multiscale and parallel computing for nuclear fuels and source terms. NRC Fellows under this grant will focus on advanced modeling and simulation.

We note that the Office of Nuclear Energy at DOE will be establishing a Hub to provide "game changing" modeling and simulation technologies that will rapidly advance the use of nuclear energy to address the United States energy security and climate change concerns. This will be a multimillion (\$125 million) and multiyear (5) program, with a likely 5 year extension. Simultaneously, DOE is also spending almost a billion dollars over 10 years on advanced numerics and simulations in nuclear energy. We have funded projects from DOE in the area, and both interests and expertise to involve our students in this exciting research further through the NRC scholarship program.

The specific areas of research that our fellows will focus on will include advanced deterministic and montecarlo techniques for phonon, photon, neutron, charged particle, molecular, and aerosol transport, and also their coupling to continuum calculations for thermal-hydraulic calculations. This research will impact advanced nuclear fuel, materials, structures, safety, nuclear fuel cycle, and overall nuclear reactor designs. Additional areas would be advanced numerical and simulation techniques for risk and nuclear proliferation analysis, including graph theory, inverse methods, combustion and fire modeling, nuclear source term

and dispersion modeling. These efforts will be directly responsive to both DOE, NRC, industry interests, needs and initiatives, and help create a nuclear workforce that would be of service to the entire nuclear enterprise.

We will work with our fellows to arrange practicum assignments related to their degree program at government laboratories, the DOE hub, industrial facilities, and other universities with whom we collaborate. The quality of our academic program may be best judged by the achievements of our graduates. Our graduates routinely publish papers from their research work in referred journals, and present papers at national meetings. A number of students have received awards for their research in a variety of student, national and international conferences.

The quality of the participating faculty may be judged from the brief resumes attached in the proposal. Three of our faculty are Fellows of the American Nuclear Society, and one is a Fellow of the American Physical Society also. It may be noted that 90% of the publications by the faculty are co-authored by our students. This is evidence of our close working relationship and nurturing of our students.

B.5 Feasibility and completeness of an evaluation plan to measure the effectiveness of the scholarship or fellowship program.

B.5.1 Management Structure

Dr. Loyalka will be the Project Director and responsible for overall management and administration of the program. Dr. Loyalka's main administrative duties will be to chair the NRC Fellow selection committee, advertising, review of student qualifications, academic and financial needs assessment, and final program assessments. Each of the faculty involved in the proposed NRC Fellowship Program is committed to providing the time necessary for recruiting and advising the Fellows and for the teaching of relevant courses. The faculty included in this proposal will share the responsibilities of teaching and advising, recruitment of students, evaluation of the program, and other necessary functions in support of the Project Director. We will require all Fellows to accept the service agreements as defined in the FOA.

B.5.2 Evaluation Plan to measure the effectiveness of the scholarship or fellowship program.

The Evaluation Plan will have several components (we are currently using this plan in conjunction with other fellowship projects). These components are:

1. Evaluation Plan in Relation to Goals and Measurable Objectives of the Program
2. Assessment of Program Effect on Persons from Underrepresented Backgrounds
3. Evaluation Questionnaire for Program Activities, Outcomes, and Management Plan
4. Process and Product Evaluation Measures for Program Activities and Outcomes
5. Data Collection Procedures, Instruments, and Schedules
6. Analysis and Reporting of Data

7. Time-Line Chart of Key Evaluation Processes and Benchmarks to Program Activities

Table 2. Summarizes the NRC Fellowship Program activities to be evaluated.

- Publicity and Recruiting • Notification of Fellowship Award
- Program Management • Program Policies and Procedures
- Academic Advisement and Counseling • Practicum/Laboratory Assignments
- Fiscal Operations • Program and Environment
- Minority and Female Retention Strategies
- Professional Development Opportunities (publications, travel, etc.)
- MU Campus Social and Cultural Infrastructure
- Educational Assessment and Science Teaching Methods Training Program

B.6 Institutional support for the program as well as number and quality of students

B.6.1 Institutional Support for the program

The average time to completion for the PhD degree in our program is three years for a student with a Master degree and about four years beyond the BS degree. Our experience has been that students supported with external, full fellowships (such as the NRC Fellowships) usually require less time, due primarily to the more concentrated research focus afforded these students by external support. We have requested support for 5 Fellows, NSEI has committed support for a s" Fellow, and the graduate school at MU is providing both in-state and out-of-state tuition fee waiver for all the Fellows for the four year duration. However, for any reason, if NRC Fellows cannot complete their PhD degree within the average time frame, we are confident of providing support to continuing students at the same level as provided by the NRC program until they complete their PhD degree.

B.6.2 Number and quality of students that will be served by the program.

We will be supporting six Fellows on this project, including those from underrepresented backgrounds, who will satisfy the criteria mandated by the NRC, relating to maintenance of a minimum a 3.3 GPA (on a 4.0 scale), 12 credit course load and I or a full-time status, and pursuit of a graduate degree the fields of Nuclear Engineering and Health Physics. Students will be encouraged to pursue a PhD degree. However, if for any reason a fellow would like to pursue a master degree, we have the flexibility to accommodate that request. We view the successful completion of the degree by a student as a joint responsibility. Not only must the students work hard, but the faculty and NSEI also provide a supportive and encouraging environment for the student to succeed.

B.6.3 Justification for number of students served and amount of fellowship.

Our main justification in requesting six Fellows is simply our confidence in our ability to educate and train these students well which we base on the size and quality of our program

(faculty, staff, students, the physical plant) and experiences with our current and previous fellowship programs.

Funds will be used according to NRC program guidelines. The stipend amount will be used for supporting students. A schedule of the tuition fees can be found in Table 3. The amount of award will depend on the student's need as determined from the Free Application for Federal Student Aid (FAFSA) form. An individual student will not receive tuition for any year that exceeds the yearly cost of attendance as defined in section 472 of the Higher Education Act of 1965 (20 USC 108711) exclusive of the stipend. Fellowship recipients will be U.S. citizens, permanent residents, and others as defined eligible in FaA, matriculated in a graduate degree program, and students in good standing with the institution. With all the fee waiver, the total package will be \$25,089.60 for in-state students, and \$35,514.60 for out-of-state students. If the suggested stipend amount does not meet the fellows' need, we can provide additional stipend from the NSEI internal resources.

Table 3. Schedule of Tuition Fees and Other Pertinent Costs (AY 09-10 Projected)

Resident Educational	Student Activity Fee	Information Technology	Student Health Fee	Recreation Facility Fee	Engineering Course Fee
\$307.66/ch	\$11.71/ch	\$12.20/ch	\$92.78/sem	\$133.11/sem	\$54.50/ch

B.7 Innovation demonstrated through establishment of Consortia or Partnership with other institution

In the last several years, the NSEI has developed an excellent network of partners in providing nuclear education to various institutions. Our INIE grant helped us to initiate a Associate degree in Nuclear Technician in Lynn State, Missouri, offer courses to PUPR and UMKC. We are a part of the Big12 Consortium for Nuclear Engineering Education and establishing minor for Big 12 schools that do not have Nuclear Engineering Program. We have used V-brick (www.vbrick.com) system for offering courses to these partners, and we have a co-operative program with Washington University in St. Louis, and we are the lead member of a NERI-C consortium on VHTR's that includes North Carolina State University (Raleigh) and the Missouri University of Science and Technology (Rolla).

B.8 Leveraged or matching funding initiated due to this solicitation

Our leveraged and matching funds for this project are \$80,000 from our Institute (NSEI), \$80,000 from the Office of Research at MU, and tuition waivers worth \$ 221,938 for the fellows from the MU Graduate School (to which NSEI reports) as described in the budget. Thus about a 1:1 matching and leverage (a total of \$ 398,901 to match the requested \$399,993 from NRC) will be provided by the university due to this solicitation, subject to NRC funding of the proposal. The State of Missouri supports two nuclear engineering academic programs and two nuclear reactors on our campuses (Columbia and Rolla). A written document on the State or regional strategic educational development plan is not available.

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:

Fellowship Awards

1. The number and percentage of STEM graduates who take a job in a STEM or STEM-related field;
2. The number and percentage of students who participate in scientific activities or research experiences in industry, government, or the not-for-profit sector;
3. The number and percentage of students who present research findings at scientific meetings or student science exchange events;
4. The number of students who participate in interdisciplinary research or educational experiences;
5. The number of students who engage in research experiences in an academic, government, or non-for-profit industry;
6. The number and percentage of graduate and postdoctoral fellowships who complete a STEM graduate or postdoctoral program;
7. The number and percentage of program completers who are employed in a STEM or STEM-related field;
8. The number and percentage of students who participate in scientific activities or research experiences in industry, government, or the not-for-profit sector. This metric will include internships;
9. The number and percentage of students who present research findings at scientific meetings or student science exchange events.

Service Agreement

A signed service agreement and resume are required for all student recipients of scholarships or fellowships funded by the US Nuclear Regulatory Commission. The Service Agreement is attached to the Terms and Conditions.

§ 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 semi-annual basis for the periods ending March 31 and September 30, 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.”

**2010 Scholarship and Fellowship Program
Service Agreement**

1. This service agreement is required for all student recipients of scholarships or fellowships (hereinafter referred to as the "recipient") funded by the U.S. Nuclear Regulatory Commission (NRC) through the University of _____.
2. This agreement confirms the recipient's obligations to maintain satisfactory academic progress and serve 6 months in nuclear-related employment for each year of academic support. The employment may be with NRC, other Federal agencies, State agencies, Department of Energy laboratories, nuclear-related industry, or academia in the recipients' sponsored fields of study.
3. The scholarship recipient must: (check here if scholarship)
 - a. remain matriculated in the degree program for the field of study for which the scholarship was approved,
 - b. maintain satisfactory academic progress in the recipient's field of study, as demonstrated by maintaining a 3.0 Grade Point Average both overall and within the recipient's major, and
 - c. maintain a course load of at least 12 credit hours per semester as a full-time student in good standing.
4. The fellowship recipient must: (check here if fellowship)
 - a. maintain a 3.3 GPA overall and within a field of study
 - b. maintain a course load of at least 12 credit hours per semester **or** be classified as a full time student
 - c. remain matriculated in a graduate degree program in a nuclear related area, preferably in the fields of Nuclear Engineering, Health Physics, and Radiochemistry.
5. If a recipient fails to maintain satisfactory academic progress, the scholarship or fellowship will be terminated and the recipient could be obligated to repay the NRC the full amount of the scholarship/fellowship.
6. If a recipient receives any subsequent scholarship(s) or fellowship(s) through this program, the service obligation periods will be consecutive.
7. At the discretion of the NRC, the service obligation period may be delayed to allow the recipient to continue a subsequent degree program immediately following that sponsored under this program. For example, a recipient who receives a fellowship to earn a Master's degree, may request and be permitted to delay fulfilling their service obligation until after they complete a subsequent terminal degree program. Any such requests must be made to the NRC before a student enrolls in a subsequent degree program. If a student enrolls in a subsequent degree program before or without NRC approval, and the NRC does

not subsequently approve the request, the NRC will not be held liable for any expenses incurred to dis-enroll, or for failure to otherwise meet the terms of this service obligation. Recipients only incur a service obligation for funded periods of study.

8. If the student receives no employment offers or does not accept any of the offers received, the student is not relieved of the service obligation, unless, pursuant to this service agreement, the student applies for and receives a waiver from the NRC. Implicit in the waiver request is data or explanation by the student that efforts to secure employment in a nuclear-related field were undertaken. This can be in the form of job searches, referrals, etc. Absent a waiver from the NRC, rejection of one or more job offers could trigger the service agreement obligation.
9. If a recipient voluntarily leaves the employment during a period of obligated post-academic service, the recipient may immediately become liable to the U.S. Government for repayment of the entire amount of the assistance provided under the scholarship or fellowship, for which the service obligation has not been fulfilled.
10. The recipient employed by NRC understands that his or her last pay check and any lump sum payment for annual leave and other payment due on separation will be applied toward any unfulfilled service obligation without further notice. If the recipient's last pay check and any lump sum payment do not satisfy the debt, the recipient may pay the balance of the debt in full or set up a repayment plan.
11. By accepting this scholarship/fellowship, I agree to provide the NRC with current contact information (address, telephone, email), and employment information, subject to the provisions of the Privacy Act, for as long as I remain under obligated service. This information will be used solely for the purposes of verifying appropriate nuclear related employment in compliance with the service obligation requirements of this service agreement. In accordance with the Privacy Act, providing this information is voluntary; however, failure to do so may result in removal from the scholarship/fellowship program and/or repayment of all scholarship/grant money received. Contact information should be reported to: eduscholar@nrc.gov.
12. By signing this agreement, the recipient certifies that he or she has read this agreement and agrees to all of the obligations it entails.

Scholarship or Fellowship Recipient

Date

University Program Coordinator

Date

NRC Office of Human Resources

Date