

ATTACHMENT A - SCHEDULE

A.1 PURPOSE OF GRANT

The purpose of this Grant is to provide support to the "Nuclear Education Curriculum Development Program" as described in Attachment B entitled "Program Description."

A.2 PERIOD OF GRANT

1. The effective date of this Grant is July 1, 2010. The estimated completion date of this Grant is June 30, 2011.

2. Funds obligated hereunder are available for program expenditures for the estimated period: July 1, 2010 – June 30, 2011.

A. GENERAL

1. Total Estimated NRC Amount:	\$121,000
2. Total Obligated Amount:	\$121,000
3. Cost-Sharing Amount:	\$0
4. Activity Title:	Nuclear Education Curriculum Development Program
5. NRC Project Officer:	Randi Neff
6. DUNS No.:	940020381

B. SPECIFIC

RFPA No.:	HR-10-987
FFS:	N/A
Job Code:	T8453
BOC:	4110
B&R Number:	0-8415-5C1116
Appropriation #:	31X0200
Amount Obligated:	\$121,000

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
Direct Participant Cost	\$109,560.00
Indirect Cost	<u>\$11,440.00</u>
Yearly Total	\$121,000.00

All travel must be in accordance with the Southern University and A&M College 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 \$121,000 for one year period.

2. NRC hereby obligates the amount of \$121,000 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

Nuclear Education Curriculum Development Program

Innovative Approaches and Techniques to Enhance Student Learning

The objective of the Nuclear Education Curricula Development Program (NECDP) is to develop classroom and internet-available educational materials at Southern University A&M College that will support the nation's nuclear energy initiatives. Proposed modules will cover: a) Radiation Measurement and Dosimetry, b) Environmental Impact Assessment, c) Neutron Activation Analysis (NAA) d) Environmental Sampling and Monitoring, e) Radioactive Waste Decontamination and Handling, f) Reactor Physics, g) Nuclear Power Plant Safety, h) Environmental Toxicology, i) Material Corrosion, j) Criticality Safety, k) Health Physics Modeling, and l) Power Generation-Distribution. These new and enhanced teaching materials are being developed by the University of Tennessee at Knoxville (UTK), the University of Missouri at Rolla (UMR) and will be shared with Southern University in Baton Rouge (SUBR). Additional support for criticality safety, decontamination and decommissioning will be shared from B&W Y-12 Nuclear Weapons Complex to strengthen the Naval Nuclear and Engineering Programs at SUBR A&M College in the areas of environmental protection and nuclear security.

This collaborative will assist SUBR in developing a full blown nuclear program and provide technical electives to make an introduction into the Nuclear Education arena. Moreover, innovative methods will be developed to remotely share nuclear research capabilities and other laboratory infrastructure to benefit a larger group of students from the three universities. Additionally, the curricula material will be composed to be taught during semester hours from SUBR, UTK and UMR via Distance Education. Most importantly, the delivery of the new and enhanced teaching material will develop much needed skills for the nation's nuclear workforce.

Nuclear Program at SUBR

Although Southern University does not have a Nuclear Engineering Program, the campus does have a Naval Nuclear Training and Certification Program that was established at SUBR in 1971 and provides commissions in the United States Navy or Marine Corps. Students graduate with a Midshipman's or an Officer Candidate's certification by completing bachelor degree requirements in accordance with SUBR rules and regulations. In parallel, all requirements for the Naval Science curriculum are completed; which includes nuclear courses. Additionally, the SUBR Physics Department performs nuclear research and teaches nuclear fundamentals as a part of its existing curriculum.

Nuclear Engineering Program at UTK

The University of Tennessee's Nuclear Engineering Department (UTKNE) offers Bachelor of Science (B.S.), Master of Science (M.S.), and Doctor of Philosophy (Ph.D.) degrees. To date, the enrollment in Nuclear Engineering at UTK is increasing. Although a single degree is offered students may choose two course sequences to obtain a degree in Nuclear Engineering. One option is the traditional nuclear engineering, and the other is radiological engineering. Both the traditional nuclear engineering and

radiological engineering options prepare students for careers associated with nuclear power systems. The radiological engineering program is intended to also prepare students for careers, and graduate study, in health physics and in medical physics.

The UTKNE also offers a comprehensive Master of Science (MS) distance education program for professionals who cannot attend classes on a university campus. These courses permit students with undergraduate degrees in engineering, physics, chemistry, and mathematics to obtain an MS degree in Nuclear Engineering. In particular, UTKNE has created five distance education activities during the past six years. They are the MS in Nuclear Engineering, which is essentially identical to the local on-campus MS program, a Graduate Certificate in Nuclear Criticality Safety, a Graduate Certificate in Maintenance and Reliability Engineering, a weekly Colloquium Program that is web cast, and a one-week short course on Nuclear Criticality Safety. Distance delivery of the latter program has only recently become available and is therefore untested. However, the first four distance programs have proven to be successful.

Another innovative activity of the UTKNE distance education program is the ability to conduct reactor experiments over the internet. Many nuclear engineering programs have had the benefit of reactor experiments as an integral part of their nuclear engineering laboratory experience, but this opportunity for students has greatly diminished during the past 20 years. However, these reactor experiments can now be accomplished over the internet at some of the remaining university reactors.

Developments in both hardware and software during the past several years have opened new and significant opportunities. It is now possible to remotely managed experiments on a real time basis using advanced computer software and hardware, coupled with cameras controlled by a remote experimenter. Using these technologies UTKNE students can now remotely utilize the PULSTAR reactor at North Carolina State University. We also plan to develop and demonstrate these capabilities for SUBR as well through a variety of remotely controlled experiments.

Nuclear Engineering Curricula at UTK

The nuclear engineering curriculum at UTKNE is typical of most accredited undergraduate programs and most graduate programs. The course offerings at the undergraduate level include the following areas:

- 1) introduction to nuclear and radiological engineering,
- 2) reactor physics,
- 3) radiation transport,
- 4) thermodynamics, heat transfer and fluid flow,
- 5) radiation protection,
- 6) shielding,
- 7) reactor systems and control,
- 8) radiation measurement laboratory exercises,
- 9) reactor, heat transfer and control laboratory exercises, and
- 10) capstone design.

Some additional areas of course offerings at the graduate level include: radiological assessment, medical physics, management of radioactive materials, advanced information processing methods, nuclear instrumentation, space radiation, and charged particle transport all of which would greatly benefit SUBR A&M College's curriculum development.

Nuclear Engineering Program at UMR

UMR, one of the nation's leading technological institutions, hosts the only accredited Nuclear Engineering program in the state of Missouri. Nuclear engineering at UMR is combined with mining engineering which is a part of the School of Materials, Energy and Earth Resources (SoMEER). SoMEER offers an exceptional opportunity for interdisciplinary research because of the synergy between the following departments:

- Geological Sciences & Engineering,
- Materials Science & Engineering, and
- Mining & Nuclear Engineering.

Collaborative research ideas are particularly feasible between UMR and SUBR due to the Advanced Research Materials Lab at SUBR (ARML) and the availability of an on-campus research reactor at UMR. UMR Reactor (UMRR) is a "SWIMMING POOL" reactor. Currently, UMRR is licensed to operate at 200 kilowatts thermal power. UMRR is equipped with several experimental facilities designed for research activities, including:

- Graphite Thermal Column,
- Beam Port, and
- Rabbit Port Pneumatic Facility for automatic specimen handling.

These facilities are especially valuable for research and experimentation with thermal neutrons and would greatly increase the participation of SUBR in the areas of nuclear research and educational infrastructure. UMR administration is committed to supporting the reactor facility and to increase its capability and utilization for education and innovative research. Therefore, Reactor Standard Operating Procedures (SOP) are being computerized to facilitate distance users³.

Enrollment in the nuclear engineering program is consistently increasing at UMR. More and more students in their First year Engineering Program (FEP) are declaring nuclear engineering as their major of choice and almost all of them continue NE program. The total enrollment for 2006 was 166, which includes; 45 FEP, 110 sophomores, juniors and seniors and 11 graduate students. For the last five years, UMR-NE faculty has been holding a nuclear camp every summer. Nuclear summer camp seems to be an effective method to stimulate interest in nuclear engineering within high school students and to attract them into the undergraduate nuclear engineering program at UMR. Approximately 1/3 of the campers join a B.S. degree program in nuclear engineering at UMR.

UMR and Lincoln University (LU - a minority-serving institution of higher education) have been awarded a DoE grant to develop a collaborative nuclear engineering program. Dr. Usman is contributing to this effort as a Co-PI. This project will provide LU undergraduates the opportunity to enter nuclear science and engineering fields. Using his previous experience⁴, Dr. Usman is utilizing this program to develop a vehicle to attract under-represented minority students to the UMR nuclear engineering program on a continuous basis. This same process can be repeated at SUBR to develop a nuclear educational infrastructure.

Currently, fundamental classes from UMR-NE curriculum are being taught to LU students using distance education technology. UMR is equipped with the V-Brick telecommunication system which allows real time two-way video conferencing. This system is also used for sharing technical seminars between UMR and the University of Missouri-Columbia. The proposed work will make extensive use of this capability for broadcasting the proposed teaching material to reach SUBR.

Nuclear Engineering Curricula at UMR

Nuclear engineering curriculum at UMR is quite traditional with major emphasis on fission power reactors. The courses required for an undergraduate degree cover: nuclear reactor physics, thermo-hydraulics (fluid mechanics and heat transfer), nuclear fuel cycle, reactor safety, nuclear materials, radiation measurement laboratory and nuclear power plant systems. These courses are taught on a regular basis. Additional dual/graduate level courses are offered for graduate students and for undergraduate students who are required to select a minimum of six credit hours of technical electives. A number of dual level courses are listed in the catalog. For example the catalog includes:

- Applied Health Physics
- Radiation Protection Engineering
- Radioactive waste Management and Remediation

- Reactor Kinetics
- Fusion Fundamentals
- Probabilistic Risk Assessment.

Milestone Chart and Proposed Activities

The University of Tennessee at Knoxville (UTK) and the University of Missouri-Rolla (UMR) have developed educational materials for on-campus and distance education use. SUBR offers training in Hazardous Materials, nuclear physics, and nuclear science. The courses at UTK and UMR can be extended to SUBR via distance learning, summer workshops and cross-faculty integration. These efforts will improve the nuclear education infrastructure, teaching competencies, subject matter expertise, and skills at SUBR. The materials developed will benefit students at SUBR that have chosen to participate in the distance education programs offered by UTK and UMR. Table 1 describes the milestones for all major activities.

Activity	1 Qtr	2 Qtr	3 Qtr	4 Qtr	Year 2	Year 2
Visit UTK-UMR	X					
Set up Distance Learning	X					
Examine Courses	X	X				
Examine Labs						
Cross Reference Courses		X				
Finalize Courses to be Taught			X			
Integrate Courses to SUBR			X			
Start Courses			X	X		
Evaluate Course Participation						
Set up SUBR Labs				X		
Develop SUBR Courses				X	X	X
Test SUBR Distance Courses					X	X

Table 1. Milestones and Activities

The proposed effort is truly collaborative, complementing skills and leveraging resources from all three campuses. Each of the major tasks will involve UTK and UMR supporting the development of the module integration at SUBR via distance education courses, contributions from both UTK and UMR. All will have equal share in the total funding. The budget reflects efforts for UTK and UMR to support the integration and delivery of the modules at SUBR. SUBR will incorporate these modules into its engineering curriculum, physics curriculum, and navalscience program. Reports on the progress of the modules will be written each quarter. These quarterly reports will be reviewed by UTK and UMR.

Improvements to the Education Infrastructure, Teaching Competencies, Subject Matter Expertise and Skills in Serving Students in the Target Disciplines

SUBR will improve the existing nuclear sciences curricula by working with both UTK and UMR to increase the course offerings, allow students to pursue graduate level studies in the nuclear field, perform nuclear research via distance learning, collaborate and capitalize on nuclear research opportunities, integrate summer training and research at UTK and UMR and slowly develop courses leading to a nuclear engineering program. This program will compliment the naval program and further encourage

students to develop their skill sets and knowledge in nuclear education, science and training. This project will give SUBR the tools to further interface with other universities and collaborate regarding nuclear educational curricula development and support academic teaching programs at each university by:

- Increasing academic curriculum and collaboration
- Creating additional courses and degree options for students
- Structuring the learning process for distance education opportunities
- Promoting student interest in the nuclear field
- Linking students across the world with a broad range of backgrounds
- Organizing the certification program into flexible segments for student enrollment.
- Establishing partnerships with academia and industry

Additional fundamental goals for UTK and UMR are to first support SUBR in their endeavors to pursue nuclear course development. This collaboration will also support the enhancement of the existing nuclear engineering curricula at UTK and UMR in the areas of Health Physics, Nuclear Engineering and Nuclear Security by evaluating and potentially incorporating some of the modules developed at SUBR into their distanced learning programs. To meet this objective, the University of Tennessee (UTK) and the University of Missouri-Rolla (UMR) will continue to develop and share innovative distance education methods and educational materials that will improve: the nuclear education infrastructure for distance education in nuclear engineering, teaching competencies, and subject matter expertise. These materials will benefit SUBR students as well as other students across the United States, and in any country permitted to participate in distance education programs offered by universities in the United States, and at UTK, UMR and potentially SUBR's Distance Learning Center. In order to achieve these objectives, the following tasks are proposed:

1. implement a radiation measurements course for distance education at SUBR,
2. continue to enhance educational materials for environmental impact assessments, including radiological assessments and performance assessments used by SUBR,
3. coordinate the graduate course on environmental assay analysis by NAA, and upgrade the UMR nuclear reactor facility for distance education/experiment readiness to be used by SUBR's Distance Learning Program,
4. distribute and continue to develop educational and training materials for environmental sampling and monitoring near NRC licensed facilities, and
5. develop education and training material for handling and characterizing radioactive materials that enter and leave nuclear facilities and leverage distance learning capabilities to SUBR.

This collaborative effort will improve nuclear educational infrastructure at SUBR, UTK and UMR. The program will provide collaboration within the industrial sector through relationships with B&W Y-12 National Nuclear Security Complex.

SUBR, UTK and UMR will support career placement and through distance learning and offer students larger resource pools for receiving educational training and industrial contacts. Such placement support gives teachers a sense of promise that the program is working and that the material introduced will have an impact on the students' career and educational vitae. The program will implement a tracking system to determine which program alumnus has been successful and a feedback system to outline potential improvements to the certification program. A number of tracking improvements have already been suggested, including upgrading of curriculum for all students, transition classes for students who need them, and the implementation of a strong incentive system. Alternatively, tracking of the most qualified vocational students would be an ideal way to recruit student candidates. On the other hand, for SUBR students, a core number of courses may have to be completed in order to enter the program.

Projects Academic Focus within Nuclear Safety, Nuclear Security, Nuclear Environmental Protection or any other areas

The environmental impacts associated with disposal of low- and high-level radioactive material is of interest to regulators and to the general public. Performance assessments have already been completed for several Department of Energy (DoE) facilities and for potential USNRC licensed facilities by UTK and UMR. SUBR has performed research in the areas of decontamination and decommissioning and thus the integration of the three universities can provide a viable educational tool for student and curricula development. With a number of additional nuclear reactors and fuel reprocessing facilities under serious consideration, the need for individuals familiar with the industry standards and established methodologies for environmental impact analysis is likely to increase significantly. Since UTK and UMR are already establishing coursework in these areas, the material can easily be extended to SUBR for program integration. Likewise, during the site selection and evaluation phase of these future projects, a segment of the general public is expected to take significant interest in understanding techniques and general approaches taken by the regulators to perform environmental impact analysis. Therefore, there is a need to develop educational materials for minority serving institutions for increased course development and student participation.

To address this need, it is proposed that educational and training materials for these methodologies developed for graduate classes and for regulators at UTK and UMR be extended to SUBR. These in-depth performance assessments training modules will include topics pertaining to the determination of release rates from radioactive packages in a disposal facility (source term), transport through environmental pathways (atmosphere, surface and ground water), and finally dose to a receptor. Scientific basis of pathway modeling methodologies will be discussed with engineering examples and references to available modeling tools. Moreover, uncertainty analyses will be performed in conjunction with these calculations to determine the quality of results.

Performance assessments are required by 10 CFR 61, and regulators are familiar with computational methodologies associated with this requirement. It is proposed that the two-day short course be developed specifically to target regulators involved with radiological assessment and management of radioactive materials at SUBR, as well as with web-based courses for environmental impact of low- and high-level radioactive materials. This educational material is critical to achieve a mass "buy-in" from the majority of the general public to support the benefits of these technologies.

Co-PI, Dr. Usman, teaches a sequence of dual level courses on Nuclear Reactor Laboratory at the UMR campus. These courses are particularly helpful in providing the students with hands-on experience on the use of the nuclear reactor for research. Earlier parts of the second course cover the techniques of neutron activation analysis (NAA). Topics covered in this section of the course includes: comparison of prompt and delay NAA, effect of neutron cross section and half life on serial transformation (build-up and decay) and the concept of "Secular Equilibrium," unfolding techniques, gamma spectroscopy and coincidence measurements, artifacts of radiation measurements and dead-time corrections. The second half of the course requires students to do a project using the reactor. Teams of two to four students make use of the techniques learned previously to conduct guided research on a topic of their selection.

It is proposed that the selected part of these two classes, enhanced with additional material, will be developed as a graduate level distance education class on "Environmental Assay Analysis by Neutron Activation Analysis" and proposed to SUBR for their graduate physics and engineering programs. While the course will be offered both in on-campus and distance education format from UMR, SUBR can participate in student and faculty exchange programs. Furthermore, the same class will be offered to UTK students as an on-campus class with remote use of the UMR reactor. UTK will discuss background theory and the regulatory aspects of environmental sample collecting and handling. Students can make visits to the UMR research reactor and get acquainted with reactor environment and irradiation facilities. Subsequently, UTK and SUBR students will remotely use the reactor facility from their home campus.

The major benefit of this project is resource sharing between SUBR, UTK, and UMR. Moreover, this task will enhance the UMR research reactor to make it accessible to students at SUBR. In addition, the

material developed for environmental assay analysis by neutron activation analysis will enhance UMR's nuclear education infrastructure, and it will improve critical competencies in the area of reactor based research. Since no specialized course is available on the proposed topic anywhere in the country, this course can serve a large group of students at SUBR.

The issue of clean up of a potentially contaminated site involves several stakeholders including the local population and government, and a number of federal and state agencies. Likewise, an operating nuclear facility is required to demonstrate compliance to a number of agencies, each having a slightly different view point and procedure to establish compliance. Regulators and other interested parties must be cognizant of the interdependencies of these agencies and their respective role in public safety. Surveys of potentially contaminated facilities and properties are required prior to releasing for general public use. And regulators should be aware of procedures and criteria for compliance. The material prepared under this task will be presented to SUBR as a two-day short course for regulators who want to familiarize themselves with the detail methodologies employed for site monitoring and evaluation.

Shipments of radioactive and non-radioactive materials often require characterization through the use of inspections and assays for radioactivity and other potentially hazardous constituents. Commercial equipment for these characterizations is available, and applicable procedures are well established. NRC has compiled a document, "Regulatory Guides - Transportation (Division 7)," to address this issue. Using this material, together with fundamental engineering concepts, training material will be also available for a short two days course on radioactive assay handling. The material will cover; procedures for shipping and receiving packages containing radioactive material, administrative protocol and documentation for handling packages containing radioactive material, leakage testing, tests for structural integrity of the cask, and other pertinent topics critical to nuclear science at SUBR.

Nuclear safety covers the actions taken to prevent nuclear and radiation accidents or to limit their consequences. Nuclear safety is involved with nuclear power plants as well as all other nuclear facilities, the transportation of nuclear materials, the use and storage of nuclear materials for medical, power, industry, and military uses. There are also safety issues involved in products created with radioactive materials. Some of the products are legacy ones (such as watch faces), others, like smoke detectors, are still being produced. While UTK and UMR *have* some experience with safety and safety methodologies, SUBR will prepare, in conjunction with UMR, a criticality safety course with the assistance of B&W Y-12.

SUBR will meet with several plant personnel and examine available resources and documentation supporting nuclear safety training and nuclear environmental protection. In fact, SUBR has an extensive environmental program such that an environmental module will be implemented into criticality safety courses. SUBR has a working relationship with the Louisiana Department of Environmental Quality (LDEQ) and has already been collaborating to discuss a potential implementation plan. SUBR currently works with the United States Army Corps of Engineers (USACE) in the environmental area and has an extensive track record for performing environmental research in our labs or application work in the field.

As a part of the criticality safety, SUBR will concentrate on how nuclear safety imposes strict demands on the containment of toxic and/or radioactive materials. SUBR will outline how the contamination of surrounding communities and environments is regarded as a "never event" from the perspective of plant design. SUBR will highlight facts such as, "...the energetic nature of nuclear reactions, nuclear material in a chain reaction is not necessarily stable from an energy output perspective, often requiring *active* control mechanisms to impose artificial stability and support safety." SUBR will describe how systems are often designed with multiple redundant backups to preclude system failure, and note that each independent system is often designed with a conservative factor of safety in an attempt to preclude failure of the primary system. Elimination of common mode failure mechanisms is integral to the design of nuclear facilities; preventing cascade failures and enforcing safety. In fact, key safety information will include such topics as facility design, highlighting safety information structured around the defense in depth approach,

and the use of multiple active and passive systems to prevent catastrophic failure. At the core of such systems, one finds the Reactor Protective System, with ionizing radiation protection incorporated to protect facility crews and emergency responders in the event of an accident. The final layer of protection is typically a large containment building designed to prevent the release of nuclear material in the event that all active systems should be rendered inoperative. Finally, beyond just technological means, human factors must also be taken into account. Elimination of conflict of interest is a key concern in regulatory strategy, and development of a safety culture to ensure that operator error does not allow avoidable errors to occur.

Projects Innovative Instructional Approach or Technique to Enhance Student Learning Including Distance Education and Experimental Learning

The programs at Southern University in Baton Rouge, the University of Tennessee at Knoxville, and the University of Missouri at Rolla have quality facilities available for the proposed project. Computing capabilities are excellent, library resources are very good, and the general environments for academic activities are commendable. SUBR, UTK and UMR have all the video equipment and the nuclear instrumentation necessary for implementation of the remote radiation/dose measurements laboratory.

The UMR has one of the only few remaining university owned nuclear reactors, a swimming pool reactor currently licensed to operate at 200 kilowatts thermal power. The UMR research reactor is extensively used for training. In addition to permanent staff, several graduate and undergraduate students have gone through the required training and NCR examination to acquire the Senior Reactor Operator (SRO) and Reactor Operator (RO) licenses. In addition, the reactor is used for innovative research by UMR faculty and students. Outcomes from the proposed work will mitigate this need by providing applicable training and education modules for local and distance education, by developing teaching materials on new topics that support the goals of the NRC, and by implementing existing and new courses at SUBR.

Resource sharing is a very valuable feature of the proposed plan. For example, both SUBR and UTK do not have a reactor on-site; UMR will provide access to the use of their reactor to SUBR and UTK students. Likewise, UMR does not have a working gas-flow proportional counter, and UTKNE will facilitate the use of their equipment to SUBR and UMR students. This resource sharing will be seamless for a distance education student, because a remote user will not notice any difference between logging to the UMR laboratory or to the UTK laboratory. All the teaching materials developed will be done as a collaborative effort and the product will be shared. This collective effort will build teaching competencies and infrastructure which will provide an enriching academic experience. Benefits will be maximized by reaching to the remote audience through distance education with SUBR as a pilot program.

SUBR will develop curriculum specific experiments to teach nuclear practices and train students to work in conjunction with the UTK and UMR research efforts. SUBR will provide three labs to set-up for nuclear research and experiments in the nuclear program. Specifically, SUBR will establish a radiation lab, similar to UTK; enhance its materials lab for nuclear applications by working with the reactor research group at UMR, and design a radiation work station with mock plant components specific to measurement and dose training.

SUBR will design and utilize a web page to support the distance learning program and also to determine the feasibility of distance learning. Currently, as it exists, SUBR does have the capability to perform multi-media teaching with the aid of the Louisiana Optical Network Initiative (LONI) and intends to use this capability to extend its program to UTK and UMR. It is through this project that SUBR will introduce students to the nuclear industry and advance training for the workforce in the south central portion of the United States by working with two major research institutions that have active nuclear degree programs. Although many students pursue the typical nuclear engineering degree, others are not so fortunate and tend to pursue other options. Unfortunately, interest and enrollment in nuclear engineering has declined this past decade. In 2000, only 160 bachelor's degrees were awarded, which is a 20% drop from just

1999. Additionally, there are fewer places to study nuclear engineering. Today, there are only 30 universities offering nuclear engineering programs, which is a 50% drop from a decade ago. In fact, it is estimated that in 5 years, 30% of the current nuclear workforce will be eligible to retire; in 15 years this number will increase to 50%. The current nuclear workforce includes approximately 14,000 nuclear engineers working in the United States today. Therefore, the demand for nuclear trained professionals, such as nuclear engineers is increasing as indicated by the enrollment for UTK and UMR.

Project Emphasis on Developing Stand-Alone Modules or Entire Courses of Study, Curricula, Individual Classes and Teaching Material

The proposed nuclear program development at SUBR will offer course credits and certification to a public workforce that participates in the program. The objective of the program is to slowly develop a nuclear engineering curriculum with the assistance of UTK and UMR. The program will function similarly to a community college discipline at the beginning and transition into the college of engineering. There will be evening classes and each modular course will be offered just as a college course would. The emphasis is to slowly offer topic specific courses with input from UTK and UMR and eventually add more courses and a full program curriculum. Eventually the program will offer scholarships and financial assistance. Registration will be made available via the internet, and career services and counseling will be available. The proposed program will collaborate with the planning committee to outline relevant materials for course preparation in the respective areas of concentration. SUBR will utilize personnel from its currently existing physics, chemistry and engineering departments to assist with the preparation of course work.

The program will become self sustaining after a few years and SUBR will offer students more courses as student interest increases. Additionally, some students may want to pursue graduate level degrees in the nuclear profession on-line via this program. The nuclear engineering program will be developed by adding courses and training until many other areas that would ultimately contribute to a nuclear engineering degree are in place.

Southern University's Capability and Capacity to Implement the Proposed Project and Long Term Sustainability of the Project

SUBR will coordinate with UTK and UMR to discuss, develop and prepare an implementation plan to support the stated objectives and project milestones. The team will interface regularly to introduce and evaluate new program objectives. SUBR will provide program leadership, faculty, students, and on-campus space and labs to fully establish and sustain the nuclear program. SUBR will develop the selection protocol for participating staff, faculty, and students, assist in developing public relations and other institution and web-based material memorializing the program's progress and success. SUBR will develop program improvements and implementations with the team staff and input providers. SUBR will share lessons learned, best practices, and faculty findings with UTK and UMR for project improvements.

Quantifiable Criteria for Demonstrating Success

As a measure of success, SUBR will track the number of students enrolling and expressing interest in nuclear courses. SUBR will trend whether enrollment is stable, increasing or decreasing. SUBR will document and discuss faculty needs and training requirements and suggest cross training with UTK and UMR leading to summer research collaborations and project initiatives. SUBR will meet regularly with university leaders to develop improvement strategies and recommendations for the program. SUBR will measure success based upon the continuation of the program itself. SUBR has noted that the program should be self-sustaining after the three year period and will measure success depending on whether state and local agencies are willing to invest and offer support.

Effective management of the certification program will depend on SUBR's ability to communicate program success and progress through appropriate quantitative and qualitative measures. Such

measures will allow staff to track resource use and the effectiveness of activities, communicate with the public, gain program support, and convince the community of the importance of nuclear training compliance. To a degree, adjustments can be made to the certification program activities to ensure program effectiveness. Allowing participants to discuss challenges, assist in devising meaningful measures, develop and communicate accurate information, and relate a range of purposes and audiences for this information is an accurate demonstration of success for the certification program.

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 2CFR 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 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 curriculum development 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:

1. Overall number of new courses developed in NRC designated STEM areas;
2. Number of students enrolled in new STEM courses;
3. Number of these enrolled students retained in STEM major.

§ 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.

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."