

Grant and Cooperative Agreement

CHOOSE ONE:
 COOPERATIVE AGREEMENT
 GRANT

CHOOSE ONE: EDUCATION FACILITIES RESEARCH SDCR TRAINING

1. GRANT/COOPERATIVE AGREEMENT NUMBER NRC-HQ-84-14-G-0055	2. SUPPLEMENT NUMBER M0003	3. EFFECTIVE DATE 06/30/2017	4. COMPLETION DATE
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5. ISSUED TO NAME/ADDRESS OF RECIPIENT (No., Street, City/County, State, Zip) UNIV TENNESSEE SYSTEM OFFICE 1331 CIR PARK DR KNOXVILLE TN 379163801	6. ISSUED BY U.S. NRC - HQ Mailing Address: Acquisition Management Division Mail Stop: TWFN-8E06M Washington DC 20555-0001
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7. TAXPAYER IDENTIFICATION NO. (TIN)	9. PRINCIPAL INVESTIGATOR/ORGANIZATION'S PROJECT OR PROGRAM MGR. (Name & Phone) SEE SCHEDULE
8. COMMERCIAL & GOVERNMENT ENTITY (CAGE) NO.	

10. RESEARCH, PROJECT OR PROGRAM TITLE
SEE SCHEDULE

11. PURPOSE
SEE SCHEDULE

12. PERIOD OF PERFORMANCE (Approximately)
08/01/2014 through 06/29/2020

13A.	AWARD HISTORY	13B.	FUNDING HISTORY
PREVIOUS	\$430,000.00	PREVIOUS	\$430,000.00
THIS ACTION	\$450,000.00	THIS ACTION	\$50,048.00
CASH SHARE	\$0.00	TOTAL	\$480,048.00
NON-CASH SHARE	\$0.00		
RECIPIENT SHARE	\$150,000.00		
TOTAL	\$880,000.00		

14. ACCOUNTING AND APPROPRIATION DATA
2017-X0200-IUPNSE-60-60D099-52-S-164-1148-4110

PURCHASE REQUEST NO.	JOB ORDER NO.	AMOUNT	STATUS
RES-17-0178			

15. POINTS OF CONTACT

	NAME	MAIL STOP	TELEPHONE	E-MAIL ADDRESS
TECHNICAL OFFICER	NANCY V. HEBRON-ISREAL	TWFN10B56	301-415-6996	Nancy.Hebron-Isreal@nrc.gov
NEGOTIATOR				
ADMINISTRATOR	M'LITA R. CARR		301-415-6869	MLita.Carr@nrc.gov
PAYMENTS				

16. THIS AWARD IS MADE UNDER THE AUTHORITY OF:
Pursuant to Section 31b and 141b of the Atomic Energy Act of 1954, as amended

17. APPLICABLE STATEMENT(S), IF CHECKED: <input type="checkbox"/> NO CHANGE IS MADE TO EXISTING PROVISIONS <input type="checkbox"/> FDP TERMS AND CONDITIONS AND THE AGENCY-SPECIFIC REQUIREMENTS APPLY TO THIS GRANT	18. APPLICABLE ENCLOSURE(S), IF CHECKED: <input type="checkbox"/> PROVISIONS <input type="checkbox"/> SPECIAL CONDITIONS <input type="checkbox"/> REQUIRED PUBLICATIONS AND REPORTS
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UNITED STATES OF AMERICA	COOPERATIVE AGREEMENT RECIPIENT
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CONTRACTING/GRANT OFFICER M'LITA R. CARR	DATE 06/28/2017	AUTHORIZED REPRESENTATIVE	DATE
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Grant and Cooperative Agreement

ITEM NO. (A)	ITEM OR SERVICE (Include Specifications and Special Instructions) (B)	QUANTITY (C)	UNIT (D)	ESTIMATED COST	
				UNIT PRICE (E)	AMOUNT (F)
	<p>CFDA Number: 77.008 NRC-HQ-84-14-G-0055 RES-17-0178</p> <p>The purpose of this modification is to revise the grant in it's entirety:</p> <ol style="list-style-type: none"> 1. Add an additional program to the existing grant: Program B: entitled "The Nuclear Engineering Faculty Development Program at the University of Tennessee"; 2. Update the Terms and Conditions; 3. Extend the grant's period of performance as a result of the addition of Program B. <p>As a result of this modification:</p> <ol style="list-style-type: none"> 1. Block 9, PRINCIPAL INVESTIGATOR/ORGANIZATION'S PROJECT OR PROGRAM MGR, delete in its entirety and replace with the following: "Programs A and B: ██████████, ██████████ 2. Block 10, RESEARCH, PROJECT, OR PROGRAM TITLE, delete in its entirety and replace with the following: "Program A: The Nuclear Engineering Faculty Development Program at the University of Tennessee; Program B: The Nuclear Engineering Faculty Development Program at the University of Tennessee"; 3. Attachments A, B, & C, delete in its entirety and replace with the following, see attached Continued ... 				

Grant and Cooperative Agreement

ITEM NO. (A)	ITEM OR SERVICE (Include Specifications and Special Instructions) (B)	QUANTITY (C)	UNIT (D)	ESTIMATED COST	
				UNIT PRICE (E)	AMOUNT (F)
	<p>beginning on page 4.</p> <p>Please see attached for detailed information.</p> <p>LIST OF CHANGES:</p> <p>Period Of Performance End Date changed from 2018-07-31 00:00:00 to 2020-06-29 00:00:00</p> <p>Total Amount for this Modification: \$450,000.00</p> <p>New Total Amount for this Version: \$450,000.00</p> <p>New Total Amount for this Award: \$880,000.00</p> <p>Payment:</p> <p style="padding-left: 40px;">ASAP GRANT FUNDS REIMBURSEMENT SYS</p> <p style="padding-left: 40px;">US TREASURY</p> <p>Period of Performance: 08/01/2014 to 06/29/2020</p>				

Attachment A - Schedule

A.1 PURPOSE OF GRANT

The purpose of this Grant is to provide support to two distinct programs with University of Tennessee, as described in Attachment B entitled "Program Description."

1. **Program A:** The Nuclear Engineering Faculty Development Program at the University of Tennessee
2. **Program B:** The Nuclear Engineering Faculty Development Program at the University of Tennessee

A.2 PERIOD OF GRANT

The effective date of this Grant is:

Program A: The Nuclear Engineering Faculty Development Program at the University of Tennessee – The effective date of this grant is August 1, 2014. The estimated completion date of this Grant is July 31, 2017. Funds obligated hereunder are available for program expenditures for the estimated period: August 1, 2014 – July 31, 2017.

Program B: The Nuclear Engineering Faculty Development Program at the University of Tennessee – The effective date of this grant is June 30, 2017. The estimated completion date of this Grant is June 29, 2020. Funds obligated hereunder are available for program expenditures for the estimated period: June 30, 2017 – June 29, 2020.

A.3 AMOUNT OF AWARD AND PAYMENT PROCEDURES

1. **Program A:** The total estimated amount of this program is \$430,000.00 for the three year period. NRC hereby obligates the amount of \$430,000.00 for program expenditures during the period set forth above and in support of the Budget above. NRC is not obligated to reimburse the Grantee for the expenditure of amounts in excess of the total obligated amount.

2. **Program B:** The total estimated amount of this program is \$600,000.00 for the three year period; inclusive of \$150,000.00 in cost share. NRC hereby obligates the amount of \$50,048.00 for program expenditures during the period set forth above and in support of the Budget above. 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 Recipient in accordance with procedures set forth in the Automated Standard Application for Payments (ASAP) Procedures set forth below.

A.4 AVAILABILITY OF FUNDS

1. Funding for this award is available through the date specified in Section A.2.2.

2. Additional funding for subsequent periods is optional and contingent upon and subject to the availability of funds as well as satisfactory performance of the most recent performance period.

A.5 BUDGET

Revisions to the grant award budget shall be made in accordance with Revision of Grant Budget in accordance with [2 CFR § 200.308](#).

Program A

- 1. Total Estimated NRC Amount: \$430,000.00
- 2. Total Obligated Amount: \$430,000.00
- 3. Cost-Sharing Amount: \$0.00
- 4. Activity Title: The Nuclear Engineering Faculty Development Program at the University of Tennessee
- 5. NRC Project Officer: Nancy Hebron-Isreal
- 6. DUNS No.: 003387891

Category	Year 1	Year 2	Year 3	Total
Personnel	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Fringe Benefits	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Supplies	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Travel	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Equipment	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Indirect Costs	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Total	\$142,148.33	\$143,322.33	\$144,529.34	\$430,000.00

Program B

- 1. Total Estimated NRC Amount: \$450,000.00
- 2. Total Obligated Amount: \$50,048.00
- 3. Cost-Sharing Amount: \$150,000.00
- 4. Activity Title: The Nuclear Engineering Faculty Development Program at the University of Tennessee
- 5. NRC Project Officer: Nancy Hebron-Isreal
- 6. DUNS No.: 003387891

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total (5)
	(1) NRC-HQ-60-17- FOA-0001 (year 1)	(2) NRC-HQ-60-17- FOA-0001 (year 2)	(3) NRC-HQ-60-17- FOA-0001 (year 3)	(4)	
a. Personnel	\$ [REDACTED]	\$ [REDACTED]	\$ [REDACTED]	\$ [REDACTED]	\$ [REDACTED]
b. Fringe Benefits	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
c. Travel	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
d. Equipment	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
e. Supplies	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
f. Contractual	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
g. Construction	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
h. Other	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
i. Total Direct Charges (sum of 6a-6h)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	\$ [REDACTED]
j. Indirect Charges	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	\$ [REDACTED]
k. TOTALS (sum of 6i and 6j)	\$ 168,090.00	\$ 155,772.00	\$ 126,138.00	\$ [REDACTED]	\$ 450,000.00
7. Program Income	\$ [REDACTED]	\$ [REDACTED]	\$ [REDACTED]	\$ [REDACTED]	\$ [REDACTED]

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ATTACHMENT B - PROJECT DESCRIPTION

Program A: The Nuclear Engineering Faculty Development Program at the University of Tennessee

Principal Investigator: [REDACTED]

The University of Tennessee's Nuclear Engineering Faculty Development Program (NEFDP) will support the development and retention of two junior faculty members in the university's Nuclear Engineering Department. The NEFDP is described below, focusing on the following components: (1) Faculty Development for teaching and research in the thrust areas of (i) experimental materials research focused on combined extreme conditions of energetic ion irradiation, high pressure and high temperature, and (ii) Physical metallurgy of structural materials; the effects of ion and neutron irradiation on the microstructure, physical properties, and mechanical properties of metals and ceramics; (2) the Faculty Evaluation Process; (3) Evaluation of NEFDP Effectiveness; (4) Program Management and Administration; and (5) Leveraging of non-Federal Funds.

(1) Faculty Development

The primary areas of proposed support for the two tenure track faculty members are: (a) *developing proposals for research*, (b) *new course development*, and (c) *preparation of research papers for publication*. We expect that these three areas will occupy a significant fraction of their time. In addition to those activities, the NEFDP will also provide them with materials stipends, support for participation in professional society meetings, summer schools, and additional travel needed for them to become established in their areas of expertise.

(a) Development of Proposals

At the University of Tennessee, our faculty members' ability to obtain external research funding is a critical component in their retention through the tenure process. Also, their research is a vital component of their abilities to teach and train both undergraduate and graduate students. Research is a tool that the department uses to keep our training modern and relevant to the nation's current needs. Each of our new faculty members is expected to participate in any proposal applicable to his area of research. The department will contribute to faculty members' success through internal review of research grant proposals, as appropriate. The University, through the Office of Research, will also contribute through internal review of all proposals and assistance in submitting them to the appropriate agencies.

(b) Course development

Both faculty members supported through this funding will be teaching existing courses in the department. The faculty member hired in August 2013 will be teaching "Introduction to Health Physics", a required course for all nuclear engineering undergraduates, as well as graduate students entering the program with a non-nuclear engineering undergraduate degree. The faculty member to be hired in August 2013 will help teach two graduate courses, "Introduction to Nuclear Fuels and Materials" and "Fundamentals of Irradiation Effects in Nuclear Materials". All of these courses require course development through continual updating of material to be used in the course.

New courses are encouraged by all faculty in the Nuclear Engineering Department, including the two faculty members here. The tenure-track faculty member hired in August 2013 will continue his development of a graduate course in accelerator technology, as well as develop a graduate course in the related to his area of research, tentatively titled "Advanced materials characterization techniques". Support in these areas will help develop and optimize

the teaching capabilities of our new faculty. In addition, course revision and new course creation will allow faculty to incorporate new, cutting edge research in their curricula by giving them the tools to utilize the strengths they bring to our department (see section 2). This, in turn, will help to attract and retain top students in the NE program.

(c) Preparation of research papers

The publication of research papers is another key component in our faculty members' ability to attain tenure. Our department strongly encourages and helps our faculty to publish in the major journals, thereby increasing the visibility of the faculty and department in the science and engineering communities, as well as increasing our ability to attract and retain high-quality students. The department will conduct an internal review of research papers, as appropriate, and the UT College of Engineering offers assistance in the preparation of those papers.

(d) Other developmental support

Other support is needed to allow our new faculty to become established in the scientific community in their areas of expertise, conduct research, and pass tenure review while alleviating the added pressure of having to produce full, externally funded support for themselves in the process. To this end, the NEFDP funds will be used for materials, including texts, books and software for new faculty, as well as equipment needed by the faculty engaged in experimental research. The NEFDP will also provide the support for new faculty members to attend professional conferences, summer schools, workshops in order to assist in their professional development as well as make important connections in government, industry, and academia, as they deem appropriate.

(2) Faculty Evaluation Process

Because both of the junior faculty members will be tenure track, the goal of the program is to aid in their retention by the Department of Nuclear Engineering. Our success in retaining our junior faculty depends greatly on how they perform in the evaluation process at the University of Tennessee. Junior faculty will be formally evaluated on an annual basis by the program administrator, Dr. Wes Hines. The evaluation includes a rubric designed to both rate and track the performance of the junior faculty member through the probationary period before tenure review. The table below shows the rubric for junior faculty, with scores of three or higher meaning that the performance in the particular area is satisfactory.

		Score →				
		1	2	3	4	5
Teaching	Undergraduate Evaluations	<1	>1	>2	>3	>4
	Graduate Evaluations	<2	>2	>2.75	>3.5	>4.2
	# Courses taught during the year	0	1	2	3	4
Research	Proposals Submitted	1	2	3	4	5
	# Students Funded	0	1	1	2	3
	# Journal articles	0	1	2	3	4
	Research expenditures	██████	██████	████████████████████		
	# Post docs	0	0	0	1	>1
	Salary recovery	██████	██████	██████	██████	██████
Service	Internal	None	None	1	2	3
	External	██████	██████	██████	██████	██████

The graduate and undergraduate course evaluations are based on metrics determined from the course SAIS forms.

The goal of this evaluation is to provide feedback to junior faculty on their progress in meeting the high expectations for tenure in the College of Engineering. These expectations include consistent and demonstrated success in: **teaching**, measured by student evaluations and peer review; **research and scholarship**, measured by publications in highly respected peer reviewed journals, the ability of the faculty member to bring in external funded research projects; **research administration**, measured by the success in graduating Masters and Ph.D. students; and **service to the department, the university, the scientific community, and professional societies**. Furthermore, awards in teaching, research, and service are also considered. The goal of the NEFDP is to ensure that high-quality, nuclear engineering faculty members are developed in such a way that they will be retained in the tenure process. As such, **the evaluation criteria used in the NEFDP will be the same as they are for the tenure process**. The entire text of the University of Tennessee’s “Guidelines for the Tenure and Promotion Review Process” is too long to include in this proposal, but for promotion of tenure-track faculty, the following areas are listed as **Essential**:

Teaching – SAIS student evaluations, Peer Teaching Evaluation, Graduate student advising, consistent production of MS and PhD degrees.

Research – Financial support of graduate students from external funds, Evidence of growing and vibrant externally funded research program.

Scholarship – Archival journal publications, Oral or Poster Presentations at Conferences, and Citations.

Service – Peer review of papers or proposals.

In addition, there are several areas listed as **Desirable or Beneficial** for promotion.

Some of those areas are:

- Evidence of Teaching Innovation (course content /design/ breadth)
- Undergraduate student advising, student organizations advising
- Management of multiple contracts/grants

- Refereed conference proceedings/ publications, Invited presentations, Other scholarly work (textbooks, monographs, patents, software, etc.)
- University Citizenship (internal service to department, college, university), Teaching Awards, and Service Awards.

(3) Evaluation of NEFDP Effectiveness (includes description of selection process)

Faculty retention at the University of Tennessee Nuclear Engineering Department is excellent because faculty members are only selected if it is deemed that the probability that they will succeed is very high. As an example, the selection process for final candidates for the position starting in August 2014 has finished at the time of this writing, with interviews starting very shortly. The candidates were selected through a search and evaluation process conducted by a committee of three NE faculty members. The search was conducted nationally, with advertisements in many national publications. The evaluation process takes into consideration the requirements for tenure at the University of Tennessee. All four candidates have records of accomplishment that fit the tenure criteria listed above very well, and as such it is expected that the person hired for the position will have no weaknesses in any of the listed categories.

Faculty retention is also high because faculty members choose to stay for the same reasons that attracted them to the department: academic reputation, opportunities in research at a nearby national laboratory, the many lures of the Knoxville-Oak Ridge area, a very positive working environment, and competitive faculty salaries. By retaining highly qualified, well developed professors, we achieve the goal of the NEFDP over the long-term: that UT may be better equipped to meet the nation's need to train and equip a new generation of nuclear engineers and health physicists.

(4) Program Management and Administration

The NEFDP at the University of Tennessee will be managed by [REDACTED]. [REDACTED]. [REDACTED]. As department head, he will be the direct supervisor of all Nuclear Engineering faculty, and so it is natural that he will manage the NEFDP as well. As supervisor, [REDACTED] will guide the supported faculty members through the development program. [REDACTED] will also be responsible for all reports required by the NRC. Additionally, each junior faculty member is assigned a tenured faculty mentor in the NE department, who will assist [REDACTED] in guiding the development of the junior faculty members. Overall, this departmental administrative structure creates an environment where junior faculty members are supported and directed where direction is needed.

The College of Engineering will provide support to the NEFDP through providing needed support to [REDACTED] and the faculty members of the NE department. One relevant, important function of college administrators is internal review of all proposals. In this review process, they assist and help train junior faculty in writing proposals that will be successful.

Institutional capability, support, and commitment to nuclear engineering and science:

The Nuclear Engineering Department at the University of Tennessee is healthy, vibrant, and growing in its 57th year, having produced over 1000 graduates with B.S., M.S., and Ph.D. degrees since its inception. When many nuclear departments dwindled or closed completely in the last few decades, the UT department continued to prosper due to its commitment to excellence in teaching and in research innovation. Continued excellence in research has led to consistent support from DOE and ORNL, as well as support from the NRC. The NE department is a responsive team player for the NRC and has or is currently preparing over a half a dozen proposals in response to recent calls by the NRC.

The College of Engineering at the University of Tennessee is fully committed to a strong Department of Nuclear Engineering. The College has consistently supported the NE department in a number of ways. In the fall of 2010, the College awarded the NE department over \$145,000 for the purchase of new laboratory equipment for use in its undergraduate and graduate courses. Because both of the new faculty members on this proposal will be actively involved with the improvement of existing lab courses and in the development of new lab courses, those funds will greatly enhance the probability of their retention in the department.

Over the past 8 years, the Department of Nuclear Engineering has experienced a tremendous growth in the number of undergraduate and graduate nuclear engineering majors. Nine new faculty members have been hired over that time to help keep pace with our growing student population. During this time, our graduate program has risen to the rank of #5 in the nation in the annual U.S. News and World Report's ranking of university programs. The University of Tennessee both welcomes and is fully capable to handle the current and expected Nuclear Engineering program growth. Over the past three years, the College of Engineering has provided additional space and other required support so that the quality of teaching and research is not hindered. In January of 2012, we were given an additional 5400 square feet of space, all of which is fully utilized. Furthermore, the College has recently welcomed program growth by adding new faculty positions. For these new positions, a substantial portion of the startup funds is coming directly from the University.

In the past year, approval was given to start the design process for a new building which will house the Nuclear Engineering Department, with possible completion in 4 years. The new building will more than triple all of our existing space, with new labs, classrooms, offices, and shops for our expanding program. The new building has the full support of the University and the State of Tennessee, showing their commitment to Moreover, the University's commitment to making nuclear an organizational focus extends beyond what it is doing in the Nuclear Engineering Department. The University is fully supportive of nuclear physics and engineering, demonstrated by their recent efforts to strengthen ties with Oak Ridge National Laboratory through creation of a host of joint faculty positions across many different disciplines that relate to nuclear. Moreover, in the College of Engineering, researchers in many departments are involved in nuclear-related research, including Electrical and Computer Engineering, Materials Science Engineering, Mechanical Engineering, and Civil Engineering, where neutron imaging is being pursued as a major focus of the department head. The University of Tennessee is very excited about the opportunity to help lead the nation in the endeavor of expanding its nuclear capability.

Program B: The Nuclear Engineering Faculty Development Program at the University of Tennessee

Principal Investigator: [REDACTED]

The University of Tennessee's Nuclear Engineering Faculty Development Program (NEFDP) has and will continue to support the development and retention of our five current junior faculty members in the Nuclear Engineering Department. Through this solicitation and in alliance with the US NRC, the NEFPD will be able to provide significant developmental resources toward the new tenure track assistant professorship which is still in process of being selected and hired for the Fall of 2017. The NEFDP is described below, focusing upon various elements noted on the position advertisement issued (shown in Section G): **(1) faculty development** for teaching and research in the thrust areas of reactor physics, reactor dynamics and safety, and advanced

reactor design, while also emphasizing synergy with other emerging areas of current research pursued by our existing faculty, namely, nuclear materials research with a focus on nuclear fuels or materials degradation in fission or fusion reactors; nuclear system instrumentation & controls; monitoring and diagnostics; reactor dynamics; nuclear security; nuclear materials safeguards; nuclear medicine; nuclear chemistry; and numerical methods development for nuclear engineering applications; **(2) the faculty evaluation process; (3) evaluation of the effectiveness of the NEFDP; (4) program management and administration; and (5) leveraging of non-federal funds.** These key elements of the NEFDP are described below in further detail.

(1) Faculty Development

In this proposal, the primary areas of support for the new faculty member will be: (a) developing proposals for research, (b) new course development, and (c) preparation of research papers for publication. We expect that these three areas will occupy a significant fraction of their time. In addition to those activities, the NEFDP will also provide them with materials stipends, support for participation in professional society meetings, summer schools, and additional travel needed for them to become established in their areas of expertise.

(a) Development of Proposals

At the University of Tennessee, our faculty members' ability to obtain external research funding is a critical component in their retention through the tenure process. Also, their research is a vital component of their abilities to teach and train both undergraduate and graduate students. Research is a tool that the department uses to keep our training modern and relevant to the nation's current needs. Each of our junior faculty members is expected to participate in any proposal applicable to his or her area of research. The department will contribute to faculty members' success through internal review of research grant proposals, as appropriate. The University, through the Office of Research, will also contribute through internal review of all proposals and assistance in submitting them to the appropriate agencies.

(b) Course development

All faculty members supported through this funding will be teaching and/or enhancing existing courses in the department. Since the primary theme of our advertisement highlights reactor physics, the faculty member hired in August 2017 will most probably teach or be involved in updating one or more courses within our Reactor Physics core sequence, which includes; "Reactor Theory I," a required course for all nuclear engineering undergraduates, as well as for graduate students entering the program with a non-nuclear engineering undergraduate degree; "Reactor Theory II," an elective for undergraduates and graduates; and "Reactor Theory and Design," our graduate level reactor theory capstone course. The new faculty member to start in Fall 2017 will also help develop and teach two new graduate courses, expected to be in the areas of "Advanced Reactor Design" and "Advanced Reactor Dynamics and Safety." Since the specific individual has not yet been selected, the option to support other courses or areas remains open to ensure alignment with his/her talents and areas of expertise.

New course development is encouraged by all faculty in the Nuclear Engineering Department, and support in these areas will help develop and optimize the teaching capabilities of our new faculty. In addition, course revision and new course creation will allow faculty to incorporate new, cutting edge research in their curricula by giving them the tools to utilize the strengths they bring to our department (see Section 2). This, in turn, will help to attract and retain top students in the NE program.

(c) Preparation of research papers

The publication of research papers is another key component in our faculty members' ability to attain tenure. Our department strongly encourages and helps our faculty to publish in the major journals and at high visibility international conferences, thereby increasing the visibility of the faculty and department in the nuclear science and engineering communities, as well as increasing our ability to attract and retain high-quality students as well as future faculty. The department will conduct an internal review of research papers, as appropriate, and the UT College of Engineering offers technical writing assistance in the preparation of those papers.

(d) Other developmental support

Other support is needed to allow our new faculty to become established in the scientific community in their areas of expertise, conduct research, and pass tenure review while alleviating the added pressure of having to produce full, externally funded support for themselves in the process. To this end, the NEFDP funds will be used for materials, texts, books and software for new faculty, as well as equipment needed by the faculty engaged in computational and/or experimental research. The NEFDP will also provide the support for new faculty members to attend professional conferences, summer schools, workshops in order to assist in their professional development as well as make important connections in government, industry, and academia, as deemed appropriate and productive toward their success.

(2) Faculty Evaluation Process

Because the new faculty member in the NEFDP will be on a tenure track during this funding period, the goal of the program is to aid in their retention by the Department of Nuclear Engineering. Our success in retaining our junior faculty depends greatly on how they perform in the evaluation process at the University of Tennessee. Junior faculty will be formally evaluated on an annual basis by the program administrator, [REDACTED]. The evaluation includes a rubric designed to both rate and track the performance of the junior faculty member through the probationary period before tenure review. Table 1 below shows the rubric for junior faculty, with scores of three or higher meaning that the performance in the particular area is satisfactory. Note that the graduate and undergraduate course evaluations are based on metrics determined from the course SAIS teaching evaluation forms. The goal of this evaluation is to provide feedback to junior faculty on their progress in meeting the high expectations for tenure in the College of Engineering. These expectations include consistent and demonstrated success in: **teaching**, measured by student evaluations and peer review; **research and scholarship**, measured by publications in highly respected peer reviewed journals, the ability of the faculty member to bring in external funded research projects; **research administration**, measured by the success in graduating Masters and Ph.D. students; and **service to the department, the university, the scientific community, and professional societies**. Furthermore, awards in teaching, research, and service are also considered.

Table 1. Tenure-Track Assistant Professor Annual Evaluation Rubric

	Score →	1	2	3	4	5
Teaching	Undergraduate Evaluations	<1	>1	>2	>3	>4
	Graduate Evaluations	<2	>2	>2.75	>3.5	>4.2
	# Courses taught during the year	0	1	2	3	4
Research	Proposals Submitted	1	2	3	4	5
	# Students Funded	0	1	1	2	3
	# Journal articles	0	1	2	3	4

Faculty retention in our program is remarkably high because faculty members choose to stay for the same reasons that attracted them to the department: academic reputation, synergistic opportunities in research at the nearby Oak Ridge National Laboratory, the many lures of the Knoxville-Oak Ridge area, a very positive working environment, and competitive faculty salaries. By retaining highly qualified, well developed professors, we achieve the goal of the NEFDP over the long-term: that UT will be prepared to meet the nation's need to train and equip a new generation of nuclear engineers and health physicists.

In addition, to better support our candidate pools, there are new activities at the departmental and university level that are being undertaken to help improve our recruitment of underrepresented candidates. For example, during the past few years UTK began a program named the "Future Faculty Program" to bring in early career female PhD students for seminars and engaging visits, post docs, and faculty to develop networks that may lead to future faculty. During this time, we have also invited recent female NE graduates to our University's Future Faculty program to again build and strengthen relationships with potential future female faculty. These activities and an emphasis on reaching out to underrepresented groups will result in a more robust and diverse candidate pool of excellent candidates from which to select.

(4) Program Management and Administration

The [REDACTED] will be managed by [REDACTED], NE department head since January of 2012. As department head, he will be the direct supervisor of all Nuclear Engineering faculty, and so it is natural that he will manage the NEFDP as well. As supervisor, [REDACTED] will guide the supported faculty members through the development program. [REDACTED] will also be responsible for all reports required by the NRC, with assistance provided by [REDACTED], co-PI of this proposal, to help manage some of the project logistics and possibly the mentorship of this particular junior faculty who is likely to be in the reactor physics area. Each junior faculty member is assigned a faculty mentor in the NE department, who assists [REDACTED] in guiding the development of each junior faculty member. Overall, this departmental administrative structure creates an environment where junior faculty members are supported and directed where direction is needed.

The College of Engineering will provide support to the NEFDP through providing needed support to [REDACTED] and the faculty members of the NE department. One relevant, important function of college administrators is internal review of all proposals. In this review process, they assist and help train junior faculty in writing proposals that will be successful.

(5) Leveraging of non-Federal Funds (Cost Sharing)

The total amount of cost sharing provided by the University of Tennessee and the Department of Nuclear Engineering is \$150,000. The cost sharing is provided by matching startup funds (and F&A on those funds) from the University, College of Engineering, and the Department of Nuclear Engineering. *The direct startup cost each year is estimated at [REDACTED], and the F&A on that cost is [REDACTED]. The startup funds will be provided to the new faculty member for three years for a total of \$150,000.*

Institutional capability, support, and commitment to nuclear engineering and science

The Nuclear Engineering Department at the University of Tennessee is healthy, vibrant, and growing in its 59th year, having produced over 1400 graduates with B.S., M.S., and Ph.D. degrees since its inception. When many nuclear departments dwindled or closed completely in the last few decades, the UT department continued to prosper due to its commitment to excellence in teaching and in research innovation. Continued excellence in research has led to

consistent support from DOE and ORNL, as well as support from the NRC. The NE department is a responsive team player for the NRC and has continuously submitted proposals in response to recent and past calls by the NRC.

The UTK NE program has grown to 349 nuclear engineering students, the largest in the history of the program, making it the second largest NE program in the country as measured by student enrollment and reported to ASEE. It also has the largest PhD program and the third largest BS program. UT also has 30% of its students Pell Eligible and 25% first generation.

In parallel, the strong institutional support from the State of Tennessee, Oak Ridge National Laboratory (ORNL), and the University of Tennessee's administration toward nuclear engineering has been unquestionable; as the total number of faculty lines in NE has nearly tripled from 7 in 2007, to 18 in 2016 with an additional 5 full time research faculty, plus the noted additional faculty search currently ongoing. Moreover, out of the recent 11 hires, UT NE has hired two professors from underrepresented groups as well as three high-profile Tennessee Governor's Chaired professorships, with 5 of these new positions being joint faculty appointments with ORNL. Over that same basic time period, our research expenditures have grown from \$2.2 million in 2008 to \$10.8 million in 2016. This is nearly a quintupling of our research expenditures and scholastic engagement. During this time, our graduate program has risen to as high as the rank of #5 in the nation in the annual U.S. News and World Report's ranking of university programs. The University of Tennessee both welcomes and is fully capable to handle the current and expected Nuclear Engineering program growth. Over the past three years, the College of Engineering has provided additional space and other required support so that the quality of teaching and research is not hindered. In 2012, we were given an additional 5400 square feet of space, all of which is fully utilized. Furthermore, the College has recently welcomed program growth by adding new faculty positions. For these new positions, a substantial portion of the startup funds is coming directly from the University.

In recent times, approval was given to start the design process for a new building which will house the Nuclear Engineering Department, with possible completion in 3 to 4 years. The new building will more than triple all of our existing space, with new labs, classrooms, offices, and shops for our expanding program. The new building has the full support of the University and the State of Tennessee, showing their commitment to the nuclear engineering field and industry.

Moreover, the University's commitment to making nuclear an organizational focus extends beyond what it is doing in the Nuclear Engineering Department. The University is fully supportive of nuclear physics and engineering, demonstrated by their recent efforts to strengthen ties with Oak Ridge National Laboratory through creation of a host of joint faculty positions across many different disciplines that relate to nuclear engineering. Moreover, in the College of Engineering, researchers in many departments are involved in nuclear-related research, including Electrical and Computer Engineering, Materials Science Engineering, Mechanical Engineering, and Civil Engineering, where neutron imaging is being pursued as a major focus of the department head. The University of Tennessee is very excited about the opportunity to help lead the nation in the endeavor of expanding its nuclear capability.

ATTACHMENT C – STANDARD TERMS AND CONDITIONS

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

Preface

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

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

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

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

I. Mandatory General Requirements

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

1. Applicability of 2 CFR Part 200

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

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

2. Award Package

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

The non-Federal entity alone must be responsible, in accordance with good administrative practice and sound business judgment, for the settlement of all contractual and administrative issues arising out of procurements related to its grant award. These issues include, but are not

limited to, source evaluation, protests, disputes, and claims. These standards do not relieve the non-Federal entity of any financial or fiduciary responsibilities or obligations arising under its grant, including sub-contracts and sub-awards, or any other contractual or financial obligation. The Federal awarding agency will not substitute its judgment for that of the non-Federal entity unless the matter is primarily a Federal concern. Violations of law will be referred to the local, State, or Federal authority having proper jurisdiction. See [2 CFR § 200.318\(k\)](#), General Procurement Standards.

Subawards

[Appendix II to Part 200](#) Contract Provisions for Non-Federal Entity Contracts Under Federal Awards

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

Nondiscrimination

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

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

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

- Any other applicable non-discrimination law(s).

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

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

Modifications/Prior Approval

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

Lobbying Restrictions

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

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

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

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

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

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

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

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

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

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

(5) The Recipient agrees that, unless authorized by the Grants Officer, it will not knowingly enter into any subaward or contracts under this grant/cooperative agreement with a person or entity that is not included on the System for Award Management (SAM) (<https://www.sam.gov>).

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

Debarment, Suspension, Ineligibility, and Voluntary Exclusion

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

Drug-Free Workplace

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

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

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

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

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

Procurement Standards - [2 CFR §§ 200.318-200.326](#)

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

Travel and Transportation

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

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

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

Federal funds may not be used to travel to countries identified as "Foreign Policy Restricted Countries", as identified by the U.S. Department of State or the U.S. Agency for International Development.

Property Standards

Property standards of this award shall follow provisions as established [2 CFR §§ 200.310-200.316](#).

Intangible Property

Intangible and intellectual property of this award shall generally follow provisions established in [2 CFR § 200.315](#).

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

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

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

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

Record Retention and Access

Recipient shall follow established provisions in [2 CFR §§ 200.333-337](#).

Conflict Of Interest

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

Dispute Review Procedures

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

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

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

Remedies for Noncompliance

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

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

Recipient Financial Management systems must comply with the provisions in [2 CFR § 200.302](#).

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

FEDERAL FINANCIAL REPORTS

Federal Financial Reports (SF-425) are semi-annually, for the periods ending March 31 and September 30. Reports are due within 30 calendar days following the end of the reporting period and must be emailed to the Project Officer at the email addressed indicated in the Notice of Award, and to the Grants Officer at:

Grants_FFR.Resource@nrc.gov. (NOTE: There is an underscore between Grants and FFR in the email address.) The SF-425 form and instructions are available at the following URL: http://www.whitehouse.gov/omb/grants_forms/.

PERFORMANCE PROGRESS REPORTS

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

Faculty Development

Performance reports must be submitted semi-annually, for the periods ending March 31 and September 30, or any portion thereof, regardless of the award date. Reports are due within 30 days following the end of each reporting period and must be emailed to the Project Officer at the email addressed indicated in the Notice of Award, and to the Grants Officer at: Grants_PPR.Resource@nrc.gov. (NOTE: There is an underscore between Grants and PPR in the email address.)

Final Reports - The Recipient is required to submit final reports, both Financial (SF-425) and Performance (SF-PPR, SF-PPR-B, SF-PPR-E) within 90 days of the grant expiration. In addition to these reports, a final SF-428, Tangible property report, is also required, if applicable. The final PPR (for Scholarship, Fellowship, and Trade School and Community College Scholarship awards) must include the names of all students with up to date contact information (mailing address, telephone/cell phone, email address). The reports must be emailed to the Project Officer at the email addressed indicated in the Notice of Award, and to the Grants Officer at: Grants_FFR.Resource@nrc.gov and Grants_PPR.Resource@nrc.gov. (NOTE: There is an underscore between Grants and FFR and Grants and PPR in the email addresses.)

For grant awards that are modified to add additional Program Descriptions, the recipient is required to address the applicable grant performance metrics associated with all programs. Further, these metrics should be broken out by individual program (e.g. Program A and Program B). This can be done utilizing Block 10, Performance Narrative, of the SF-PPR form. If this block does not have sufficient space, additional pages will be accepted. Sf-PPR-B and SF-PPR-E should be used to address both programs as well.

Period of Performance – 2 CFR § 200.309

The recipient may charge to the Federal award only allowable costs incurred during the period of performance and any costs incurred before the NRC or pass-through entity made the Federal award that was authorized by the NRC or pass through entity.

Unless otherwise authorized in [2 CFR Part 200](#) or by special award condition, any extension of the award period can only be authorized by the Grants Officer in writing. Assurances of funding from other than the Grants Officer shall not constitute authority to obligate funds for programmatic activities beyond the expiration date.

The NRC Grant Officer may authorize a no cost extension of the period of performance. The recipient must submit a no cost extension request no less than 30 days prior to the award end date. Any request for a no cost extension after the grant has expired will not be approved. However, the NRC has no obligation to provide any additional prospective or incremental funding. Any modification of the award to increase funding and/or to extend the period of performance is at the sole discretion of the NRC.

Automated Standard Application For Payments (ASAP) Procedures

Unless otherwise stated, Recipient payments are made using the Department of Treasury's Automated Standard Application for Payment (ASAP) system, ASAP.gov, through preauthorized electronic funds transfers. To receive payments, Recipients are required to enroll with the Department of Treasury, Financial Management Service, and Regional Financial Centers, which allows them to use the on-line method of withdrawing funds from their ASAP established accounts. The following information is required to make ASAP withdrawals: (1) ASAP account number – the award number found on the cover sheet of the award; (2) Agency Location Code (ALC) – 31000001; and Region Code. Recipients enrolled in the ASAP system do not need to submit a "Request for Advance or Reimbursement" (SF-270).

II. Audit Requirements

Audits

Organization-wide or program-specific audits are performed in accordance with the Single Audit Act of 1996, as amended, and as implemented by [2 CFR Part 200, Subpart F—AUDIT REQUIREMENTS](#). Recipients are subject to the provisions of this subpart if they expend \$750,000 or more in a year in Federal awards. See [2 CFR 200.501](#).

The Form SF-SAC and the Single Audit Reporting packages for fiscal periods ending on or after January 1, 2008 are submitted online, as follows:

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

Organizations expending less than \$750,000 a year are not required to have an annual audit for that year but must make their grant-related records available to NRC or other designated officials for review or audit.

III. Programmatic Requirements

The recipient is responsible for providing documentation to the NRC that tracks each student's progress in achievement of the academic program for which federal funds were provided. This includes: (1) ensuring the service agreement is signed by the student prior to providing support; (2) providing the NRC with student contact information upon student entry into the program, upon completion or withdrawal from the program, and upon request by the NRC; and (3) monitoring the student's fulfillment of the service agreement for the duration of the award. The NRC shall be notified immediately if a student is not fulfilling the academic program or the service agreement.

Grant Performance Metrics

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

As part of the OMB requirements indicated above (for metric reporting), the recipient shall address the following questions and submit responses with the required progress reports:

Faculty Development Metrics:

1. How many Faculty have been sponsored by NRC funding?
 - a. Response is the number of faculty sponsored, for this reporting period and cumulative to the grant.

2. How many items have the sponsored faculty produced, for example, Professional Journal articles, publications, patents, or conference reports?
 - a. Response is the type and number of items (not a bibliography), for this reporting period and cumulative to the grant.

Unsatisfactory Performance

Failure to perform the work in accordance with the terms of the award and maintain at least a satisfactory performance rating may result in designation of the Recipient as high risk and the assignment of special award conditions. Further action may be required as specified in the standard term and condition entitled "Remedies for Noncompliance."

Failure to comply with the award provisions may result in a negative impact on future NRC funding. In addition, the Grants Officer may withhold payments; change the method of payment from advance to reimbursement; impose special award conditions; suspend or terminate the grant.

Other Federal Awards With Similar Programmatic Activities

The Recipient will immediately notify the Project Officer and the Grants Officer in writing if after award, other financial assistance is received to support or fund any portion of the program description stated in the NRC award. NRC will not pay for costs that are funded by other sources.

Prohibition Against Assignment By The Recipient

The Recipient will not transfer, pledge, mortgage, or otherwise assign the award, or any interest to the award, or any claim arising under the award, to any party, banks, trust companies, or other financing or financial institutions without the written approval of the Grants Officer.

Site Visits

The NRC, through authorized representatives, has the right to make site visits to review project accomplishments and management control systems and to provide technical assistance as required. If any site visit is made by the NRC on the premises of the Recipient or contractor under an award, the Recipient shall provide and shall require his/her contractors to provide reasonable access to all facilities and provide necessary assistance for the safety and convenience of the Government representative in the performance of his/her official duties.

IV. Additional Requirements

Criminal and Prohibited Activities

The Program Fraud Civil Remedies Act ([31 U.S.C. §§ 3801-3812](#)), provides for the imposition of civil penalties against persons who make false, fictitious, or fraudulent claims to the Federal government for money (including money representing grant/cooperative agreements, loans, or other benefits).

False statements ([18 U.S.C. § 287](#)), provides that whoever makes or presents any false, fictitious, or fraudulent statements, representations, or claims against the United States shall be subject to imprisonment of not more than five years and shall be subject to a fine in the amount provided by 18 USC §287.

False Claims Act ([31 U.S.C. § 3729 et seq.](#)), provides that suits under this Act can be brought by the government, or a person on behalf of the government, for false claims under federal assistance programs.

Copeland “Anti-Kickback” Act ([18 U.S.C. § 874](#)), prohibits a person or organization engaged in a federally supported project from enticing an employee working on the project from giving up a part of his compensation under an employment contract.

American-Made Equipment and Products

Recipients are encouraged to purchase American-made equipment and products with funding provided under this award.

Increasing Seat Belt Use in the United States

E.O. 13043, amended by E.O. 13652, requires Recipients to encourage employees and contractors to enforce on-the-job seat belt policies and programs when operating company-owned, rented or personally-owned vehicle.

Federal Leadership of Reducing Text Messaging While Driving

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

Federal Employee Expenses

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

Minority Serving Institutions (MSIs) Initiative

Pursuant to E.O.s 13230 and 13270, [amended by E.O. 13316](#) and [13385](#), 13532, 13592, 13555, 13515, and 13621, NRC is strongly committed to broadening the participation of MSIs in its financial assistance program. NRC’s goals include achieving full participation of MSIs in order to advance the development of human potential, strengthen the Nation’s capacity to provide high-quality education, and increase opportunities for MSIs to participate in and benefit from Federal financial assistance programs. NRC encourages all applicants and Recipients to include meaningful participations of MSIs. Institutions eligible to be considered MSIs are listed

on the Department of Education website: <http://www.ed.gov/about/offices/list/ocr/edlite-minorityinst.html>

Research Misconduct

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

Publications, Videos, and Acknowledgment of Sponsorship

Publication of the results or findings of a research project in appropriate professional journals and production of video or other media is encouraged as an important method of recording and reporting scientific information. It is also a constructive means to expand access to federally funded research. The Recipient is required to submit a copy to the NRC and when releasing information related to a funded project include a statement that the project or effort undertaken was or is sponsored by the NRC. The Recipient is also responsible for assuring that every publication of material (including Internet sites and videos) based on or developed under an award, except scientific articles or papers appearing in scientific, technical or professional journals, contains the following disclaimer:

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

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

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

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

EXECUTIVE COMPENSATION REPORTING

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

Reporting Subawards and Executive Compensation.

a. Reporting of first-tier subawards.

1. *Applicability.* Unless you are exempt as provided in paragraph d. of this award term, you must report each action that obligates \$25,000.00 or more in Federal funds that does not include Recovery funds (as defined in section 1512(a)(2) of the American Recovery and Reinvestment Act of 2009, Pub. L. 111–5) for a subaward to an entity (see definitions in paragraph e. of this award term).

2. *Where and when to report.*

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

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

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

b. Reporting Total Compensation of Recipient Executives.

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

i. the total Federal funding authorized to date under this award is \$25,000.00 or more;

ii. in the preceding fiscal year, you received—

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

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

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

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

- i. As part of your registration profile at <http://www.sam.gov>.
- ii. By the end of the month following the month in which this award is made, and annually thereafter.

c. Reporting of Total Compensation of Subrecipient Executives.

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

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

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

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

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

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

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

d. Exemptions

If, in the previous tax year, you had gross income, from all sources, under \$300,000.00, you are exempt from the requirements to report:

- i. Subawards,

and

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

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

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

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

ii. A foreign public entity;

iii. A domestic or foreign nonprofit organization;

iv. A domestic or foreign for-profit organization;

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

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

3. *Subaward:*

i. This term means a legal instrument to provide support for the performance of any portion of the substantive project or program for which you received this award and that you as the recipient award to an eligible subrecipient.

ii. The term does not include your procurement of property and services needed to carry out the project or program (for further explanation, see Sec. __.210 of the attachment to OMB Circular A-133, "Audits of States, Local Governments, and Non-Profit Organizations")

iii. A subaward may be provided through any legal agreement, including an agreement that you or a subrecipient considers a contract.

4. *Subrecipient* means an entity that:

i. Receives a subaward from you (the recipient) under this award; and

ii. Is accountable to you for the use of the Federal funds provided by the subaward.

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

i. *Salary and bonus.*

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

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

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

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

vi. Other compensation, if the aggregate value of all such other compensation (e.g., severance, termination payments, value of life insurance paid on behalf of the employee, perquisites or property) for the executive exceeds \$10,000.00.