

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

1. GRANT/AGREEMENT NO. NRC-HQ-12-G-38-0047	2. MODIFICATION NO. M001	3. PERIOD OF PERFORMANCE FROM: 4/1/2012 TO: 3/31/2014	4. AUTHORITY Pursuant to Section 31b and 141b of the Atomic Energy Act of 1954, as amended
5. TYPE OF AWARD <input checked="" type="checkbox"/> GRANT <input type="checkbox"/> COOPERATIVE AGREEMENT	6. ORGANIZATION TYPE Public State-Controlled Institution of Higher ED DUNS: 105300446 NAICS: 811310	7. RECIPIENT NAME, ADDRESS, and EMAIL ADDRESS Virginia Commonwealth University 800 East Leigh Street, Suite 113 Richmond, VA 23298	
8. PROJECT TITLE: Enhancement of the Radiation Detection and Measurement Laboratory in Support of the Nuclear Engineering			
9. PROJECT WILL BE CONDUCTED PER GOVERNMENT'S/RECIPIENT'S PROPOSAL(S) DATED See Program Description AND APPENDIX A-PROJECT GRANT PROVISIONS	10. TECHNICAL REPORTS ARE REQUIRED <input checked="" type="checkbox"/> PROGRESS AND FINAL <input type="checkbox"/> FINAL ONLY <input type="checkbox"/> OTHER (Conference Proceedings)	11. PRINCIPAL INVESTIGATOR(S) NAME, ADDRESS and EMAIL ADDRESS Virginia Commonwealth University Director of Nuclear Engineering Program Attn: Rosa Marina Bilbao y Leon, Ph.D Email: sbilbao@vcu.edu Phone: (804)828-2570	
12. NRC PROGRAM OFFICE (NAME and ADDRESS) NRC Attn: Tanya Parwani-Jaimes Office of Human Resources MS: GW5A06 (301) 492-2308 11545 Rockville Pike Rockville, Maryland 20852 Email: Tanya.Parwani-Jaimes@NRC.GOV	13. ACCOUNTING and APPROPRIATION DATA APPN. NO: 31X0200 B&R NO: 2012-84-51-K-164 JOB CODE: T8458 BOC NO: 4110 OFFICE ID NO: RFPA: HR-13-111	14. MTHOD OF PAYMENT <input type="checkbox"/> ADVANCE BY TREASURY CHECK <input type="checkbox"/> REIMBURSEMENT BY TREASURY CHECK <input type="checkbox"/> LETTER OF CREDIT <input checked="" type="checkbox"/> OTHER (SPECIFY) Electronic ASAP.gov (See Remarks in Item #20 "Payment Information")	
15. NRC OBLIGATION FUNDS THIS ACTION <u>\$0.00</u> PREVIOUS OBLIGATION <u>\$199,743.00</u> TOTAL <u>\$199,743.00</u>	16. TOTAL FUNDING AGREEMENT NRC <u>\$199,743.00</u> RECIPIENT <u>\$0.00</u> TOTAL <u>\$199,743.00</u> This action provides funds for Fiscal Year in the amount of See Page Two		
17. NRC ISSUING OFFICE (NAME, ADDRESS and EMAIL ADDRESS) U.S. Nuclear Regulatory Commission Div. of Contracts Attn: Shashi Malhotra Email: Shashi.Malhotra@NRC.GOV Mail Stop: TWB-01-B10M Rockville MD 20852			
18. Signature Not Required	19. NRC CONTRACTING OFFICER <u>Shashi Malhotra</u> 1/31/13 <hr/> <small>(Signature)</small> <small>(Date)</small> NAME (TYPED) <u>Shashi Malhotra</u> TITLE <u>Grants/Contracting Officer</u> TELEPHONE NO. <u>301-492-3604</u>		
20. PAYMENT INFORMATION Payment will be made through the Automated Standard Application for Payment (ASAP.gov) unless the recipient has failed to comply with the program objectives, award conditions, Federal reporting requirements or other conditions specified in 2 CFR 215 (OMB Circular A110).			
21. Attached is a copy of the "NRC General Provisions for Grants and Cooperative Agreements Awarded to Non-Government Recipients. Acceptance of these terms and conditions is acknowledged when Federal funds are used on this project.			
22. ORDER OF PRECEDENCE In the event of a conflict between the recipient's proposal and this award, the terms of the Award shall prevail.			
23. By this award, the Recipient certifies that payment of any audit-related debt will not reduce the level of performance of any Federal Program.			

JUNSI REVIEW COMPLETE

TEMPLATE - ADM001

ADM002

A. ATTACHMENT B – Program Description, Section: **d. Proposed Enhancements to the Radiation Detection and Measurement Laboratory-** paragraph 3 bullets 1

One High Purity Ge Well Detector (\$82,183.00) – Delete in its entirety and replace with the following pieces of equipment:

- Cryogenic Cooling system (\$27,317)
Liquid nitrogen (LN) cylinders is currently being used to achieve the cooling for the two High Purity Germanium Detectors (a Canberra 4-inch diameter stationary system and a Canberra ISOCS portable system). This is quite inconvenient as it requires the dewars to be refilled twice a week and consume a 168 liter LN tank each month. The compressor system would greatly reduce the cost and burn risk associated with biweekly LN refills by students.
- 7 Experimental stands (\$625 per unit, total \$4,375)
We are currently using very rudimentary wooden experimental stands for sources, shielding and detectors that were hand-made by the volunteers of the local section of the American Nuclear Society for their Science Teacher Workshops. At the same time, a team of our students in the Machine Shop have designed as a part of a senior design project, a rather sophisticated and durable experimental stand. We have been using and testing a prototype of this experimental stand in the lab for the last year with very satisfactory results. This experimental stand design is currently undergoing the patenting process, and can be manufactured in the VCU School of Engineering Machine Shop. We would like to obtain one of these experimental stands for each one of the laboratory sets in our lab, i.e. a total of seven. The cost of this experimental stand is competitive to similar ones offered commercially.
- Low Activity Liquid Scintillation Analyzer (Tri-Carb 3110TR Unit and accessories, total \$49,577)
This system would enhance our laboratory capabilities towards the measurement of very low-level radiation applications, thus providing us with the ability to include in our curriculum real life practical exercises of radiation detection and measurement, including drinking water analyses of radon, food control for 90Sr, radioactive effluent measurements at nuclear power plants, emergency preparedness for nuclear power and homeland security, and radiocarbon dating.

Base Period: April 1, 2012 – March 31, 2014

Assistance Award Ceiling: \$199,743.00

Total Obligated Amount: \$199,743.00

All other terms and conditions remain unchanged.