

1. GRANT/AGREEMENT NO. NRC-04-92-056		2. MODIFICATION NO. 19		3. PERIOD OF PERFORMANCE FROM: 8/24/98 TO: 08/31/2004		4. AUTHORITY Pursuant to Section 31a and 141b of the Atomic Energy Act of 1954, as amended	
5. TYPE OF AWARD <input type="checkbox"/> GRANT <input checked="" type="checkbox"/> COOPERATIVE AGREEMENT		6. ORGANIZATION TYPE		7. RECIPIENT NAME AND ADDRESS University of Maryland Department of Materials & Nuclear Engineering, Building 090 College Park, MD 20742			
8. PROJECT TITLE: Probabilistic Assessment and Applications							
9. PROJECT WILL BE CONDUCTED PER GOVERNMENT'S/RECIPIENT'S PROPOSAL(S) DATED		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 AND ADDRESS University of Maryland Materials & Nuclear Engineering Dept. ATTN: Prof. Mohammad Modarres 2100 Marie Mount Hall College Park, MD 20742 College Pa			
12. NRC PROGRAM OFFICE (NAME ADDRESS) U.S. Nuclear Regulatory Commission .. Office of Nuclear Regulatory Research ATTN: Roy Woods Washington, DC 20555 301-415-6622		13. ACCOUNTING APPROPRIATION DATA APPN. NO: 31X0200.260 BE NO: 26015110203 JOB CODE: K6007 BOC NO: 4110 OFFICE ID NO: RES-C02-050		14. METHOD 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) ACH (See Attach. 30 in Appendix A - "Electronic Payment")			
15. NRC OBLIGATION FUNDS THIS ACTION \$143,478.00 PREVIOUS OBLIGATION \$1,461,458.00 TOTAL \$1,604,936.00		16. TOTAL FUNDING AGREEMENT NRC \$1,602,740.00 RECIPIENT 0 TOTAL \$1,602,740.00		This action provides funds for Fiscal Year 02 in the amount of \$143,478.00			
17. NRC ISSUING OFFICE (NAME AND ADDRESS) U.S. Nuclear Regulatory Commission Division of Contracts Attn: I-7-I-2 Contract Management Center 2 Washington DC 20555							
18. RECIPIENT Monique Anderson, Contract Manager Research Administration & Advancement TITLE TELEPHONE NO. 301-405-6269				19. NRC CONTRACTING OFFICER Robert Webster 9/10/02 (Signature) (Date) NAME (TYPED) Gary H. Mace TITLE Contracting Officer TELEPHONE NO. 301-415-7314			
20. PAYMENT INFORMATION Payment will be made within thirty (30) days after receipt of the billing unless the bill is improper or the recipient has failed to comply with the program objectives, award conditions, Federal reporting requirements or other conditions specified in OMB Circular A-110. Payment will be made by: Vouchers should be submitted in an original and three (3) copies on form 270 to: U.S. Nuclear Regulatory Commission Office of the Chief Financial Officer Attn: GOV/COM Acctng. Section T-9H4 Washington, DC 20555							
21. Attached is a copy of the "NRC General Provisions for Grants and Cooperative Agreements Awarded to Institutions of Higher Education and Other Nonprofit Organizations". 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							

U.S. NUCLEAR REGULATORY COMMISSION
COOPERATIVE AGREEMENT NO. NRC-04-98-056
MODIFICATION NO. 19

The purpose of this modification is to: (1) incorporate Tasks 9 and 10 in accordance with the contractor's proposal dated July 29, 2002, which is hereby incorporated by reference; (2) increase the ceiling amount by \$341,282.00; (3) increase the obligated amount by \$143,478.00; (4) identify the period of performance for Tasks 9 and 10, which extends this agreement through August 31, 2004; and (5) correct Modification No. 16 to identify the modification as Task 8. Accordingly, the cooperative agreement is modified as follows:

1. Incorporate Task 9, "Principles and Techniques for Concurrent Uncertainty Analysis in Technical Assessments," and Task 10, Causal Modeling in PRAs for Risk Informed Regulatory Applications, which is in accordance with the contractor's proposal dated July 29, 2002. As a result, the ceiling amount is hereby increased by \$341,282.00 from \$1,461,458.00 to \$1,802,740.00 and the obligated amount is increased by \$143,478.00 from \$1,461,458.00 to \$1,604,936.00.
2. The period of performance for Tasks 9 and 10 from is September 1, 2002 through August 31, 2004.
3. Correction to Modification No. 16, dated April 23, 2002, to identify the modification as Task 8.

All other terms and conditions of this cooperative agreement remain unchanged.