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AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT		1. CONTRACT ID CODE	PAGE OF PAGES 1
2. AMENDMENT/MODIFICATION NO. Nine (9)	3. EFFECTIVE DATE AUG 25 1998	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. (If applicable)
6. ISSUED BY U.S. Nuclear Regulatory Commission Division of Contracts and Property Management Mail Stop: T-712 Washington, DC 20555	7. ADMINISTERED BY (If other than Item 6)	CODE	
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP code) Risk Engineering, Inc. 4155 Darley Avenue, Suite A Boulder, CO 80303 Prin. Investigator: Robin McGuire Telephone No.: (303) 499-3000		9A. AMENDMENT OF SOLICITATION NO. 9B. DATED (SEE ITEM 11) 10A. MODIFICATION OF CONTRACT/ORDER NO. NRC-04-96-037 10B. DATED (SEE ITEM 13) 4/4/96	
CODE		FACILITY CODE	

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of offers ☐ is extended, ☐ is not extended. Offerors must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

N/A

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS,
IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation data, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
X D. OTHER (Specify type of modification and authority) Changes - Cost Reimbursement - Alternate V (Apr. 1984)

E. IMPORTANT: Contractor ☐ is not, ☒ is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

(see page 2)

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Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print) ROBIN K MCGUIRE, PRESIDENT	16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Mary Mace, Contracting Officer
15B. CONTRACTOR/OFFEROR Rob McGuire (Signature of person authorized to sign)	15C. DATE SIGNED 8/25/98
16B. UNITED STATES OF AMERICA BY Mary Mace (Signature of Contracting Officer)	16C. DATE SIGNED 6/19/98

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The purpose of this modification is to (1) incorporate the within-scope work to the subject contract as referenced in the Statement of Work (ATTACHMENT 1). The contractor's proposal dated 5/21/98 and responses to questions also dated 5/21/98 are incorporated herein, (2) decrease the contract ceiling amount by \$2,325.00 from \$861,974.00 to \$859,649.00 (due to elimination of travel and incorporation of the additional within-scope work as noted in the attached SOW), and (3) extend the period of performance of the contract through 9/30/99 to allow time for the remaining work. NOTE: The submittal of the final report is to be provided by 8/1/99 as stated in the Contractor's proposal. The period from 8/2/99 through 9/30/99 is to allow time for NRC to provide comments to the Contractor.

Accordingly, the contract is hereby modified as follows:

1. Section B.3. CONSIDERATION AND OBLIGATION--COST PLUS FIXED FEE (JUNE 1988) ALTERNATE I (JUNE 1991), paragraph a is deleted in their entirety and the following paragraphs are substituted in lieu thereof:
 - "a. The total estimated cost to the Government is reduced by \$2,464 from \$858,761 to \$856,297 for elimination of the travel as noted. The fixed fee remains at \$3,213 plus \$139 for the additional within-scope work for a total fixed fee of \$3,352. The total estimated cost plus fixed fee for full performance of this contract is reduced by \$2,325 from \$861,974 to \$859,649.00, of which the sum of \$856,297.00 represents the estimated reimbursable costs, and of which \$3,352.00 represents the fixed fee."

All other terms and conditions under this contract remain unchanged.

A summary of obligations for this contract, from award date through the date of this action, is given below:

Total FY 96 Obligation Amount:	\$ 275,000.00
Total FY 97 Obligation Amount:	\$ 260,000.00
Total FY 98 Obligation Amount:	\$ 250,000.00

Cumulative Total of NRC Obligations: \$785,000.00

SECTION C - DESCRIPTION/SPECIFICATIONS/WORK STATEMENT

1 BACKGROUND

The third meeting of the technical team (Risk Engineering, Inc., et al) with the peer review panel, and the fourth meeting of the technical team and peer review panel with the NRC staff were held on March 12-13, 1998, and April 2, 1998, respectively. At these meetings the peer review panel recommended additional refinements to the Task 2 scope (as revised per Contract Modification No. 1) pertaining to the development of spectral shapes for soil categories.

The NRC staff agrees with the peer review panel recommendation and has concluded that their advice can be accommodated within the scope characterized by the second project objective (providing seismic design response spectra to be used for nuclear power plants considering engineering characteristics and different site and geographical conditions).

2 CONTRACT OBJECTIVES

The goal of this procurement is to (1) collect an earthquake strong motion time history database for use in developing response spectra and analyses, (2) develop recommendations for seismic design response spectra to be used for nuclear power plants considering engineering characteristics and different site and geographical conditions, and (3) develop recommendations for minimum power spectral density (or equivalent) requirements for the proposed spectral shapes. These results will be used by the NRC staff in its revision of Regulatory Guide 1.60, "Design Response Spectra for Seismic Design of Nuclear Power Plants."

3 SCOPE OF WORK

Task 2 (Develop Design Response Spectra) as revised per Contract Modification No. 1, explains that spectral shapes would not be developed for all soil categories, but instead guidelines would be written for conducting dynamic response analyses on a site-specific basis. An example would be presented of soil response analysis at a deep soil site, showing the choice of control motion at rock level and showing comparisons with empirical data that illustrate the characterization of uncertainties and their effects on ground motion spectra.

Modify Task 2 to describe the number of profiles and associated steps (e.g., develop attenuation relations for each profile, develop uniform hazard spectra at soil surface) that are required to assure the general applicability of the guidelines to achieve soil surface motions which are consistent with the desired hazard levels as well as uncertainty and randomness in material properties. The selected profiles should represent ranges in stiffness, nonlinear soil properties, and depth to basement material.

4 MEETINGS AND TRAVEL

No additional travel is anticipated for this modification; however, two modifications are recommended to the existing travel plans. First, eliminate meeting N5 (technical team and NRC staff) scheduled for September 1998, in Rockville, MD. It is believed that the material can be adequately covered in meeting N6, a two-day meeting in Rockville, MD, with the technical team, peer review panel, and NRC staff (scheduled for October 1998). Second, eliminate the second

of the foreign trips that were anticipated. The first trip to UK and France took place on May 6 - 12, 1997. The second trip, scheduled for Japan, is cancelled because of timeliness and foreign travel limitations.

5 PERIOD OF PERFORMANCE

The period of performance will be extended through 9/30/99 to allow for the remaining work and NRC comments. NOTE: The final report is to be completed by 8/1/99.