

2. AMENDMENT/MODIFICATION NO. M001 3. EFFECTIVE DATE 11-21-2012 4. REQUISITION/PURCHASE REQ. NO. NSR-13-004 5. PROJECT NO. (If applicable) 11/1/2012

6. ISSUED BY CODE 3100 7. ADMINISTERED BY (If other than Item 6) CODE 3100
 U.S. Nuclear Regulatory Commission
 Division of Contracts
 Attn: Daniel App
 Mail Stop TWB-01B10M
 Washington, DC 20555

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code) (X) 9A. AMENDMENT OF SOLICITATION NO
 SOUTHWEST RESEARCH INSTITUTE
 S W R I
 6220 CULEBRA RD
 SAN ANTONIO TX 782385166
 CODE 007936842 FACILITY CODE X 9B. DATED (SEE ITEM 11)
 10A. MODIFICATION OF CONTRACT/ORDER NO. NRC-HQ-12-C-42-0057 NRCT001
 10B. DATED (SEE ITEM 13) 09-19-2012

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. Offers 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) Obligate: \$97,403.00
 B&R: 2013-11-17-4-186 JOB: N4128 BOC: 252A APPN: 31x0200.311
 PSC: R499 NAICS: 541990 FAIMIS: 130341

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

(X) 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 date, 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:
 D. OTHER (Specify type of modification and authority) 52.232-22 Limitation of Funds
 X :

E. IMPORTANT: Contractor is not, is required to sign this document and return 0 _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)
 The purpose of this modification is to add funds in the amount of \$97,403, therefore increasing the obligated amount from \$25,000 to \$122,403, hereby fully funding this task order. A.2 Consideration and Obligation-Cost-Plus-Fixed Fee is modified as follows on page 2. This modification also updates 3.0 Work Requirements, Schedule, and Deliverable of the Statement of Work per Rev 0 Chg 4 dated 10/22/2012 (see page 2).

Task Order Ceiling Amount: \$122,403
 Task Order Obligated Amount: \$122,403
 Period of Performance: 9/19/2012 - 9/18/2013

All other terms and conditions under this contract remains unchanged.

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) 16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)
 Daniel App
 Contracting Officer
 15B. CONTRACTOR/OFFEROR 15C. DATE SIGNED 16B. UNITED STATES OF AMERICA 16C. DATE SIGNED
 BY Daniel App 11/21/12
 (Signature of person authorized to sign) (Signature of Contracting Officer)

TEMPLATE - ADM001

SUNSI REVIEW COMPLETE

ADM002

A.2 Consideration and Obligation – Cost-Plus-Fixed-Fee (Aug 2011) Alternate I (Aug 2011) (c) is revised as follows:

(c) The amount currently obligated by the Government with respect to this contract is \$122,403, of which the sum of \$113,388 represents the estimated reimbursable costs, and of which \$9,016 represents the fixed-fee.

3.0 WORK REQUIREMENTS, SCHEDULE, AND DELIVERABLES

The Center shall provide the following deliverables associated with task order (TO) requirements per Table below:

| Tasks/Standards | Scheduled Completion* | Deliverables |
|---|---|--|
| <p>1. REQUIREMENT: Become familiar with NRC preparation and issuance of NUREG technical reports and general information currently available on the design of facilities for selected SMR technologies</p> <p>(iPWRs, HTGRs, and LMRs) as available on NRC's NRO ARP and design vendors' websites.</p> <p>STANDARD: Written confirmation that familiarization is complete. Familiarization is defined as sufficient knowledge of purpose and content guidance to facilitate performance of tasks and general working level knowledge of format and content for documenting information in NUREG technical reports.</p> | <p>Start: Start NLT 14 calendar days after authorization of work.</p> <p>End: Complete NLT 14 calendar days after receipt of provided information. 10/16/2012</p> | <p>E-mail documenting that assigned personnel have reviewed references</p> <p>and understand reporting required under NRO umbrella contract.</p> |
| <p>2. REQUIREMENT: Participate in kick-off conference call with the NRC staff to discuss the scope of the work, expectations, Task completion schedule, and contract management.</p> <p>STANDARD: Participate by travel to NRC HQ or teleconference call, by Project Manager and one Principal Investigator assigned to this task.</p> | <p>Start: Start NLT 14 calendar days after authorization work.</p> <p>End: Complete NLT than 14 calendar days after start date.</p> | <p>Participate in kick-off meeting with NRC staff.</p> |

| Tasks/Standards | Scheduled Completion* | Deliverables |
|--|---|--|
| | 10/16/2012 | |
| <p>3. REQUIREMENT:</p> <p>3.a. Prepare draft outline capturing the tasks indicated here and below, using NRC guidance on preparing NUREG technical report.</p> <p>3.b. Identify and review available information and analytical tools for characterizing the physical phenomenon on explosive effects on underground structures (e.g., pressure profiles, shockwaves propagation, cratering, etc.).</p> <p>STANDARD: Prepare and submit draft outline of technical report. Documentation includes, but not limited to, summary of references identified, discussions of the characteristics and profiles of blast waves through the underground, and describes computational calculations and analytical tools available to characterizing the resulting structural loads on underground structures.</p> <p>3.c. REQUIREMENT: Identify and review available information and analytical tools for design of structures underground to withstand explosive effects. Identify and review of available computational calculations and codes to model explosive effects, identify analytical tools available to evaluate structural response.</p> <p>STANDARD: Document and provide summary of referenced available standards and guidelines for design and analytical tools or code applied to design or assess structural response.</p> | <p>Start: Start NLT at the end date of Task 1 and 2. (Parallel tasks)</p> <p>End: Complete NLT 30 calendar days after the start date. 11/9/2012</p> | <p>Provide draft outline of technical report and descriptions of how the Center will proceed with tasks to characterize the explosive effects on underground structures.</p> |

| Tasks/Standards | Scheduled Completion* | Deliverables |
|--|--|---|
| <p>4. REQUIREMENT:</p> <p>4.a. Identify and describe key parameters that are of significance in determining the expected explosive blast effects and resulting structural loads on underground structures (e.g., independent and dependent variable such as substrates compositions, compactness, distances from detonation, etc.).</p> <p>4.b. Identify strengths and weaknesses for generic types of analytical tools available for characterizing explosive loads and structural response, without specific reference or identifying analytical code.</p> <p>4.c. Identify and describe the differences for the loads resulting from explosions and that of a seismic event and how the differences are considered for structural design and response.</p> <p>4.d. Perform parametric study using empirical and analytical tools to generically characterize the blast effects at distances below ground, based on independent variables (e.g., varying size of explosive in selected increments and characteristics of substrates).</p> <p>STANDARD: Document results from above in NUREG technical report format.</p> | <p>Start: Starts NLT the end date of Task 3.</p> <p>End: Complete Tasks 4.a through 4.c no later than 80 calendar days after the start date.</p> <p>Start: Task 4.d starts NLT the end date of Task 4.c.</p> <p>End: Complete Tasks 4.a through 4.d no later than 80 calendar days after the start date. 2/8/2013</p> | <p>Provide 60% draft report documenting Tasks 3.a., 3.b., and 3.c.</p> <p>Provide 80% draft report documenting Tasks 4.a through 4.c.</p> <p>Bi-Weekly project status telephone call at a mutually agreed upon time and based on need.</p> |
| <p>5. REQUIREMENT:</p> <p>5.a. Prepare draft final report in NUREG format and supplemental appendices on non-public information</p> <p>5.b. Resolve comments and provide final report to the NRC</p> <p>STANDARD: Information documented shall be treated public, with the exception of appendices that may be required to document non-public information (i.e., classified). The draft document shall be marked Official Use Only – Internal Use Only</p> | <p>Start: Starts NLT the end date of Task 4.</p> <p>End: Complete Task 5.a no later than 60 calendar days after the start date and 4/12/2013 Task 5.b no later than 90 calendar days after the start date. 5/10/2013</p> | <p>Provide 100% draft report documenting the performance of tasks 3 and 4.</p> <p>Bi-Weekly project status telephone call at a mutually agreed upon time and need.</p> |