

| | | | |
|---|---|---|--|
| AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT | | 1. CONTRACT ID CODE | PAGE OF PAGES 1 OF 3 |
| 2. AMENDMENT/MODIFICATION NO. 221 | 3. EFFECTIVE DATE (M/D/Y) See Block 16C | 4. REQUISITION/PURCHASE REQ. NO. 11EM002655 | 5. PROJECT NO. (If applicable) |
| 6. ISSUED BY U.S. Department of Energy Office of River Protection P. O. Box 450, MS H6-60 Richland, WA 99352 | CODE | 7. ADMINISTERED BY (If other than Item 6) | CODE |
| 8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP code) Bechtel National, Inc. 2435 Stevens Center Place Richland, WA 99354 | | <input type="checkbox"/> | 9A. AMENDMENT OF SOLICITATION NO. |
| CODE 396A5 FACILITY CODE 153392068 | | <input type="checkbox"/> | 9B. DATED (SEE ITEM 11) |
| | | <input checked="" type="checkbox"/> | 10A. MODIFICATION OF CONTRACT/ ORDER NO. DE-AC27-01RV14136 |
| | | | 10B. DATED (SEE ITEM 13) December 11, 2000 |

11. THIS ITEM 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 ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE DATE AND HOUR 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 amendment and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

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


| | |
|--------------------------|--|
| CHECK ONE | 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. <input checked="" type="checkbox"/> Clause I.82, FAR 52.243-2 Changes – Cost Reimbursement (AUG 1987) – Alternate III (APR 1984) |
| <input type="checkbox"/> | B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO AUTHORITY OF FAR 43.103(b). |
| <input type="checkbox"/> | C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO THE AUTHORITY OF: |
| <input type="checkbox"/> | D. OTHER (Specify type of modification and authority) |

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.)

Reference Continuation Page(s)

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) Ashley T. Morris Contracting Officer | |
| 15B. CONTRACTOR/OFFEROR <i>(Signature of person authorized to sign)</i> | 15C. DATE SIGNED | 16B. UNITED STATES OF AMERICA BY  ORIGINAL SIGNED BY | 16C. DATE SIGNED 6/17/2011 |

Modification Purpose:

A. The purpose of this modification is three-fold:

1. Direct BNI to proceed with the performance of large scale testing (LST) to substantiate the committed design, reduce risk, and support design confirmation of pulse jet mixed vessels;
2. Authorize a not-to-exceed amount of \$15,000,000 (\$4,900,000 rolled over from M199 plus an additional \$10,100,000) ; and
3. Definitize the change order as stated in Contract Modification M199.

B. BNI shall submit within 60 days of date of this modification a detailed technical and price proposal.

C. A bi-lateral modification definitizing this change order shall be executed no later than 180 days after receipt of an acceptable proposal for this action.

D. This modification does not add additional funds to the contract. Accordingly, work under the contract, such as that described herein, must be performed within the amount of funds which have been incrementally allotted to the contract in accordance with clause B.2 "Obligation and Availability of Funds and Contract Value", and clause I.66,"FAR 52.232-22 Limitation of Funds (Apr 1984)."

Modification Description:

A. BNI is directed to proceed with the performance of large scale testing (LST). The following changes are hereby incorporated into Section C, Statement of Work, Standard 2 Research, Technology, and Modeling, (a) Research and Technology Testing Program (3) Required Research and Technology Testing as follows:

(x) Vessel Mixing: The Contractor shall plan and perform large scale testing of pulse jet mixed vessels for both non-Newtonian and Newtonian vessel designs. Scope to be addressed includes planning, preparation, and performance of testing, including completion of test reports that supports:

- 1) Substantiation of the committed design;
- 2) Engineering, procurement, and construction risk reduction;
- 3) Design confirmation including benchmarking or validating Computational Fluid Dynamic models and low order models; and
- 4) Waste Treatment and Immobilization Plant (WTP) commissioning risk reduction.

Key equipment such as test vessels used in this work shall be designed such that reuse in potential future post commissioning testing to support continued WTP operations is not precluded.

Detailed objectives for testing shall include:

1. Confirmation of scaling parameters for both non-Newtonian and Newtonian vessels. If scaling is not confirmed, alternate methods, such as full scale testing shall be performed as needed. Simulants shall include non-Newtonian and Newtonian slurries as applicable;
2. Confirmation of mixing performance with complex simulants including Newtonian and non-Newtonian that challenge the range of expected tank waste physical properties;
3. Definition and demonstration of heel removal system capability;
4. Determination and demonstration of mixing system limiting conditions of design including safety limits and operating limits;
5. Confirmation of prototypic level and density instrument function;
6. Confirmation of integrated pulse jet fluidics, mixing, sampling, and transfer system operations; and
7. Demonstrating the PJM control strategy including logic and transition with prototypic equipment through the range of operating conditions.

Large scale test objectives shall be documented and substantiated in a formal Request for Technology Development (RTD). The RTD shall be provided to DOE for review and comment. The results of test work shall be subject to error analysis prior to use in the final design. Simulant design and analysis requirements shall be specified. Simulant preparation shall be governed by a procedure, and the simulant shall be verified and validated to meet requirements before testing is initiated. **(221)**

E. No contract change is necessary as a result of change order M199. Further, Contract Modification No. 221 has since superseded modification M199. As a result of Contract Modification No.221, Contract Modification No. M199 requires no further action and is considered definitized with issuance of this modification.

C. All other terms and conditions remain unchanged.

(End of Modification)