

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

BPA NO.

1. CONTRACT ID CODE

PAGE 1

OF PAGE 3

2. AMENDMENT/MODIFICATION NO.
M004

3. EFFECTIVE DATE
SEP 03 2008

4. REQUISITION/PURCHASE REQ. NO.
RES-04-083

5. PROJECT NO.(If applicable)

6. ISSUED BY CODE 3100
U.S. Nuclear Regulatory Commission
Div. of Contracts
Attn: Danielle Emche
Mail Stop TWB-01-B10-M
Washington, DC 20555

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

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)

UNIVERSITY OF WISCONSIN SYSTEM
RESEARCH & SPONSORED PROGRAMS

21 N PARK ST STE 6401
MADISON WI 537151218

(X) 9A. AMENDMENT OF SOLICITATION NO.

9B. DATED (SEE ITEM 11)

10A. MODIFICATION OF CONTRACT/ORDER NO.
NRC-04-04-083

10B. DATED (SEE ITEM 13)
X 09/30/2004

CODE 161202122

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.

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)

B&R 86015171277; JC N6022; BOC 252A; APPN 31X0200.860
FFS RES-C08-165; OBLIGATION \$60,000; DUNS: 161202122

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.

X 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)

E. IMPORTANT: Contractor is not, is required to sign this document and return 2 copies to the issuing office.

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

SEE PAGE TWO FOR THE DETAILS OF THIS MODIFICATION

SEE CONTINUATION PAGE

TOTAL OBLIGATED AMOUNT: **\$464,450.00 (CHANGED)**
TOTAL CONTRACT AMOUNT: **\$469,450.00 (CHANGED)**
PERIOD OF PERFORMANCE: **09/30/2004 THROUGH 03/31/2009 (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)
Charles L. Hoffman, Admin. Officer
Research & Sponsored Programs

16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)
Stephen Pool
CONTRACTING OFFICER

15B. CONTRACTOR/OFFEROR
C. L. Hoffman
(Signature of person authorized to sign)

15C. DATE SIGNED
9/3/08

16B. UNITED STATES OF AMERICA
BY *Stephen Pool*
(Signature of Contracting Officer)

16C. DATE SIGNED
8/28/08

The purpose of this modification is to: 1) revise the statement of work, 2) increase the total ceiling amount of the contract by \$65,000.00, from \$404,495.00 to \$469,495, 3) increase the total obligated amount by \$60,000.00 from 404,495 to 464,495, and 4) extend the period of performance, and thereby revise the terms and conditions in accordance with the statement of work changes incorporated by this modification.

Accordingly, this modification hereby revised the terms and conditions of this contract as follows:

1. Revise the Statement of work Section "**J.1, Statement of Work**" to extend the deliverable due dates for tasks 5 and 6, incorporate new tasks 7 and 8 and their commensurate deliverables, and revise the NRC Furnished Material, as follows:

Task 5. Analysis of Other ACR-700 Server Accident Issues

Revised: Estimated Completion Date: 03/31/2009

Task 6. Expert Technical Support

Revised: Estimated Completion Date: 03/31/2009

Task 7. FCI Calculations for SERENA Phase II

The contractor shall perform reactor FCI calculations for the Organization for Economic Cooperation and Development (OECD) coordinated Steam Explosion Resolution for Nuclear Applications (SERENA) Phase II Program and shall assist the NRC technical staff in this activity. The Phase II activity will continue through FY 2011, however, the contractor assistance is sought through March 2009.

Deliverable: Letter report on SERENA Phase II FCI calculations

Estimated Completion Date: 03/31/2009

Estimated level of Effort: 2 person-months

Task 8. VHTR Accident Analysis:

The contractor shall perform scoping (simplified engineering type) calculations of postulated accidents in very high temperature reactor (VHTR) designs such as the Next Generation Nuclear Plant (NGNP) focusing on loss-of-coolant and depressurization. The purpose is to provide a first order evaluation of the safety significance of NGNP-unique design features in relation to core, vessel, and cavity cooling when the pressurized helium is lost via a break in the cooling circuit. This evaluation will help formulate the scope of detailed computational fluid dynamics (CFD) calculations that will be performed in the future. Preliminary CFD work has been initiated elsewhere under separate contracts, and the proposed analysis in this task will provide benchmark for the preliminary CFD work.

One of the key safety issues that need to be considered is the operation of the Reactor Cavity Cooling System (RCCS). RCCS behavior is generally very important in these events, since it becomes the only effective means of removing afterheat from the core and vessel. The processes are generally the same for variations in these accidents (loss-of-flow as well as loss-of-coolant), but some differences exist, such as the heat redistribution in the core and vessel for the pressurized loss of forced cooling (hotter at the top), potential for "gray gas" (particulates) in the air cavity between the vessel and RCCS that reduces the effective emissivity, and potential mode changes (e.g., to boiling) in a water-cooled RCCS. For depressurized loss of forced cooling, air ingress is of concern since such an event may lead to rapid oxidation of fuel and core

structural elements leading to severe core damage. These issues have been identified in the recently concluded Phenomena Identification and Ranking Tables (PIRT). The contractor shall further analyze the high-importance low-knowledge VHTR accident issues, identified in PIRT, and provide expert advise to NRC so analytical tools can be developed to address these issues.

Deliverable: Letter report on VHTR accident analysis
Estimated Completion Date: 03/31/2009
Estimated level of Effort: 7 person-months

NRC FURNISHED MATERIAL is hereby deleted in its entirety and replaced with the following:

NRC will provide the contractor relevant documents related to the SERENA Phase II program and relevant VHTR documents. Documents, marked proprietary and official use only, shall be treated as such by the contractor, and shall not be re-distributed to personnel other than the contractor's staff involved in the project, and the information shall not be disclosed without prior approval from the NRC.

2. Revise the total ceiling and obligated amount:

Sections "**B.3 CONSIDERATION AND OBLIGATION—COST REIMBURSEMENT (JUN 1988) ALTERNATE I (JUN 1988)**" is hereby deleted in its entirety and replaced with the following language, which increases the ceiling and obligated amounts:

- (a) The total estimated cost to the Government for full performance under this contract is **\$469,450.00**.
- (b) The amount presently obligated by the Government with respect to this contract is **\$464,450.00**.
- (c) It is estimated that the amount currently allotted will cover performance through **March 10, 2009**.

3. Extend the period of performance.

Section "**F.6 DURATION OF CONTRACT PERIOD (MAR 1987)**" is hereby deleted in its entirety and replaced with the following language, which extends the period of performance:

This contract shall commence on the effective date of the contract award and will expire on **March 31, 2009**.

Summary of total FY Obligations to date:

FY05: \$100,000.00
FY06: \$100,000.00
FY07: \$140,000.00
FY08: +\$124,450.00
Total: \$464,450.00