

CMBIRT

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1 CONTRACT ID CODE PAGE 1 OF PAGE 4

2 AMENDMENT/MODIFICATION NO 15
3 EFFECTIVE DATE 9-15-2000
4 REQUISITION/PURCHASE REQ. NO RES94049/RESC00477
5 PROJECT NO (if applicable)
6 ISSUED BY U.S. Nuclear Regulatory Commission
7 ADMINISTERED BY (If other than Item 6)

8 NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)
University of California - SB
Office of Research
Attn: David Mayo, Contracts Officer
Santa Barbara, CA 93106-2050
9A. AMENDMENT OF SOLICITATION NO.
9B. DATED (SEE ITEM 11)
10A. MODIFICATION OF CONTRACT/ORDER NO
Con# NRC-04-94-049
SBA#
10B. DATED (SEE ITEM 13)
10-01-1994

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 of 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) 31X0200 06015110105 W6212 252A \$33,999

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: FAR 52.243-2 Alt V Changes - Cost Reimbursement
D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor is not, (X) is required to sign this document and return two copies to the issuing office.

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

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) David J. Mayo, Assoc. Director, Sponsored Projects
15B. CONTRACTOR/OFFEROR (Signature of person authorized to sign) David J. Mayo
15C. DATE SIGNED 9/22/00
16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Stephen M. Pool
16B. UNITED STATES OF AMERICA BY (Signature of Contracting Officer) Stephen M. Pool
16C. DATE SIGNED 09-15-2000

CONTINUATION PAGE

The purpose of this modification is to incorporate a change to tasks 3 and of the contract Statement of Work and adjust the contract estimated cost accordingly. The contract is hereby modified as follows:

1. The attached Statement of Work is added to Section C.1.4 of the contract
2. As a result, the contract estimated cost set forth in Section B.3 is increase by \$33,999 from \$2,616,248 to \$2,650,247. In addition, \$33,999 in funding is hereby allotted to this contract. Section B.3 is replaced by the following new Section B.3:

B.3 CONSIDERATION AND OBLIGATION - COST REIMBURSEMENT

(a) The total estimated cost to the Governemnt for full performance of this contract is \$2,650,247.

(b) The amount currently obligated by the Government with respect to this contract is \$2,650,247.

3. A summary of obligations for this contract is provided below:

Total FY 94	\$213,000
Total FY 95	\$500,000
Total FY 96	\$425,000
Total FY 97	\$425,000
Total FY 98	\$253,000
Total FY 99	\$484,000
Total FY 00	\$350,247
Cumulative Total	\$2,650,247

4. All other terms and conditions remain unchanged.

OFFICE OF NUCLEAR REGULATORY RESEARCH
DIVISION OF ENGINEERING TECHNOLOGY
STATEMENT OF WORK MODIFICATION

PROJECT TITLE: RADIATION EMBRITTLEMENT DAMAGE
ANALYSIS AND PREDICTIONS

JOB CODE: W6212
CONTRACTOR: UCSB
SITE: UCSB
STATE: CALIFORNIA

NRC PROJECT MANAGER: Carolyn Fairbanks (301-415-6719)

PRINCIPAL INVESTIGATOR: [REDACTED]

PERIOD OF PERFORMANCE: 10/01/1994 to 12/31/2000

ORDER OF PERFORMANCE PERIOD: 08/15/00 TO 12/31/2000

LEVEL OF EFFORT
FOR THESE MODIFICATIONS: 2 staff months

BACKGROUND

The loss of fracture toughness and ductility during reactor operations must be predictable to assure that despite degradation, sufficient fracture toughness and ductility remain in the vessel material to preclude unstable crack propagation and to assure the integrity of the vessel. Embrittlement trend curves require reliable models which incorporate all of the important variables and variable combinations. Development of these models requires additional understanding and experiments to identify embrittlement mechanisms, significant variables and variable interactions to verify and calibrate the physical models. This approach also requires the detailed evaluation of existing reactor surveillance data, as well as material test reactor irradiation data using physical modeling as a supplement to the measurements.

A program of studies on mechanisms of irradiation embrittlement has been funded by the NRC at the University of California, Santa Barbara (UCSB) to attempt to mitigate the deficiencies in the empirical trend curve approach and to fill the gaps in the large-scale engineering tests. These studies are aimed at the development of physically based models for predicting radiation embrittlement and to provide a reliable basis for data extrapolation using ancillary experimental information from small controlled experiments. The use of small specimens greatly extends the range of accessible variables.

Modification to Task 3: Special Mechanism and Modeling Studies

Assist in development of tech bases document for Regulatory Guide 1.99, Rev. 3. Includes drafting of assigned sections and review of remaining sections.

Deliverables and Schedule:

Draft sections	10/01/00
Final sections	11/01/00
Written comments from reviewed sections	11/30/00

Modification to Task 4: Collaboration with International Groups

This task will be modified to include additional work of initiating a collaboration to represent NRC participation on the International Virtual Test Reactor (IVTR) project with Electricite de France and other international participants.

Deliverables and Schedule

Written description of IVTR status, progress, and future plans.

11/30/00