

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE NRC-04-98-041		PAGE 1	OF PAGES 4
2. AMENDMENT/MODIFICATION NO. 008	3. EFFECTIVE DATE 6-19-2001	4. REQUISITION/PURCHASE REQ. NO. RES-C01-434	5. PROJECT NO. (If applicable)
6. ISSUED BY U.S. Nuclear Regulatory Commission Division of Contracts and Property Mgt. Attn: T-7-I-2 Contract Management Branch 1 Washington DC 20555	CODE	7. ADMINISTERED BY (If other than Item 6) U.S. Nuclear Regulatory Commission Division of Contracts and Property Mgt. Attn: T-7-I-2 Contract Management Branch 1 Washington DC 20555	CODE

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code) Pennsylvania State University Office of Sponsored Programs Attn: Ms. Danelle Kissell 110 Technology Center University Park PA 16802	(X)	9A. AMENDMENT OF SOLICITATION NO.
		9B. DATED (SEE ITEM 11)
		10A. MODIFICATION OF CONTRACT/ORDER NO. NRC-04-98-041
	X	10B. DATED (SEE ITEM 13) 11-03-1997
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. 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.


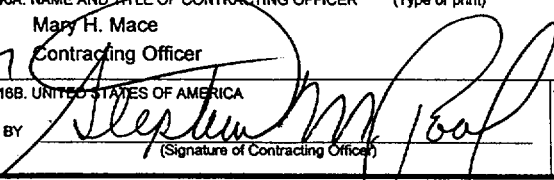
12. ACCOUNTING AND APPROPRIATION DATA (If required) RES-C01-334 31X0200 160115110135 W6855 252A \$400,000 (c)

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(p).
X	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, 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.

15A. NAME AND TITLE OF SIGNER (Type or print) Robert Killoren Asst. V.P. for Research	15B. CONTRACTOR OFFICER  (Signature of person authorized to sign)	15C. DATE SIGNED JUL 13 2001	16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Mary H. Mace Contracting Officer	16B. UNITED STATES OF AMERICA BY  (Signature of Contracting Officer)	16C. DATE SIGNED 06-28-2001
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TEMPLATE-ADM001

ADM02

CONTINUATION PAGE

The purpose of this modification is (1) to designate a new NRC Project Officer, (2) to change the Statement of Work for completion of this contract (3) to extend the period of performance and (4) adjust the estimated cost of the contract for the stop work period and remainder of the contract. Accordingly, the contract is modified as follows:

1. The stop work order issued 3/16/01 is hereby lifted effective 6/19/01. The contractor shall resume work in accordance with the new SOW set forth below. Section C of the contract is modified by the following language:

The contractor shall complete Task 1 through 13 and delete Tasks 14 through 16 from this contract.

With regard to Task 9 on test matrix, the following tests should be included:

- a. 15 forced-flow reflood tests varying pressure, flow rate, subcooling, and heat input to the bundle,
- b. 8 tests of steam cooling only, and
- c. 8 tests of steam cooling with liquid injections.

The contractor shall prepare detailed test conditions and obtain NRC approval before conducting the tests.

As part of Task 11, the contractor shall prepare a report combining facility descriptions and characterizations such as cross-sectional area as a function of height, pressure drops, and heat losses to the surroundings. The rod surface characterizations such as roughness, oxide thickness, and emissivity shall be provided based on measurements taken from a rod sample which has undergone multiple heating cycles. At the end of the test series, the rod surface characterization results from the rod sample should be compared with the measurements taken from a rod actually used in the tests.

Regarding Task 13 on data qualification, a data consistency and mass balance check should be included. The qualified data should be in engineering units. In addition, the data to be delivered to the NRC should include the following derived quantities given as a function of time:

- (1) void fractions calculated from measured pressure drops taking into account frictional (due to spacer grid and wall) and acceleratory losses (if necessary),
- (2) heat flux from the rods to the fluid at each thermocouple elevation,
- (3) heat transfer coefficient calculated at each thermocouple elevation,
- (4) liquid drop diameters, distributions, and interfacial areas at camera locations,
- (5) liquid carry-over rates from the test vessel,
- (6) quench front location, velocity, and heat release,
- (7) housing heat release at each segment where void fractions are calculated, and
- (8) bundle-average quality versus time at each thermocouple elevation (all

heat sources to fluid should be included for quality calculation).

Sample pictures taken from digital camera should also be provided.

A quick-look report shall be submitted by April 30, 2002 after the first test in order for the NRC to review the test results and decide if any changes should be made for subsequent tests.

Other deliverable reports are set forth as follows:

- By December 31, 2001, a facility description and characterization report.
- By July 1, 2002, a forced reflood test data transmission report.
- By August 30, 2002, a steam cooling testdata transmission report.
- By October 31, 2002 a data transmission report for tests of steam cooling with liquid injections.

2. Section F.7 of the contract is changed to read as follows:

Section F.7 DURATION OF CONTRACT

The contract commenced on 11/3/97 and will expire on 11/2/2002.

3. As a result of the above and as a result of an equitable adjustment for the stop work period 3/19/2001 to 6/18/2001, the estimated cost of the contract is increased by \$647,743 from \$2,707,558 to \$3,355,301. This increase is calculated as shown below. Cost for the stop work period 3/19/01 to 6/19/01 are capped at \$30,566. \$400,000 in incremental funding is hereby allotted to this contract. Section B.3 of the contract of the contract is replaced with the following section:

Current cost incurred and ratified:	\$2,468,676
Add Cost of work to complete:	\$ 856,059
Add Stop work period costs:	\$ 30,566
New contract ceiling amount:	\$3,355,301
Less old ceiling amount:	\$2,707,558
Net increase over old ceiling:	\$ 647,743

B.3 CONSIDERATION AND OBLIGATION

(a) The total estimated cost of performance cost to the Government for full performance under this contract is \$3,355,301.

(b) The amount presently obligated by the Government under this contract is \$2,870,000.

(c) It is estimated that the amount currently allotted will cover performance through 12/31/2001.

4. The name and address of the NRC Project Officer in Section G.1 is replaced with the following:

Gene Rhee
 Safety Margins and Systems Analysis Branch
 Division of Systems Analysis and Regulatory Effectiveness
 Office of Nuclear Regulatory Research
 Mail Stop: T-10-K-8
 Washington, DC 20555
 Tele: (301) 415-6489

5. A summary of obligations follows:

FY 98 Obs \$900,000
FY 99 Obs \$600,000
FY 00 Obs \$820,000
FY 01 Obs \$550,000
Total \$2,870,000

6. All other terms and conditions remain unchanged.