

<b>AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT</b>			1. CONTRACT ID CODE	PAGE OF PAGES 1
2. AMENDMENT/MODIFICATION NO. 3	3. EFFECTIVE DATE 8-13-2003	4. REQUISITION/PURCHASE REQ. NO. RES-C03-435	5. PROJECT NO. (If applicable)	
6. ISSUED BY U.S. Nuclear Regulatory Commission Div of Contracts Two White Flint North - MS T-7-I-2 Washington, DC 20555		7. ADMINISTERED BY (If other than Item 6) U.S. Nuclear Regulatory Commission Div of Contracts Two White Flint North - MS T-7-I-2 Washington, DC 20555		

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)  Dr. Brent Boyack  435 Camino Cereza Los Alamos NM 87544	(X)	9A. AMENDMENT OF SOLICITATION NO.
		9B. DATED (SEE ITEM 11)
		10A. MODIFICATION OF CONTRACT/ORDER NO. DR-04-02-078
	X	10B. DATED (SEE ITEM 13) 08-20-2002
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) 31X0200 36015115107 Y6704 252A \$5,588.89

**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).
X	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF: FAR 13.106-1(b)
	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.)  
 The purpose of this modification is to add a firm fixed price contract line item no. 5 for provision of the training workshop in accordance with the attached Statement of Work. Accordingly, CLIN 5 as shown on the attached OF 348 is hereby added to this contract as a firm fixed price line item. The contractor shall bill for the total amount of this line item separately after successful completion of the workshop. The total purchase order amount is increased by \$5588.89 from \$58,275.92 to \$63,864.81.

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) Brent E. Boyack, Owner	16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Stephen M. Pool
15B. CONTRACTOR/OFFEROR <i>Brent E. Boyack</i> (Signature of person authorized to sign)	16B. UNITED STATES OF AMERICA BY <i>Stephen M. Pool</i> (Signature of Contracting Officer)
15C. DATE SIGNED 8/19/2003	16C. DATE SIGNED 08-13-2003

TEMPLATE - ADM001

ADM002

**ORDER FOR SUPPLIES OR SERVICES  
SCHEDULE - CONTINUATION**

PAGE NO.  
2

**IMPORTANT:** Mark all packages and papers with contract and/or order numbers.

DATE OF ORDER

08-13-2003

CONTRACT NO.

ORDER NO.

DR-04-02-078

ITEM NO. (A)	SUPPLIES OR SERVICES (B)	QUANTITY ORDERED (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)	QUANTITY ACCEPTED (G)
0005	Training Workshop in accordance with attached Statement of Work - Firm Fixed Price	[REDACTED]			\$5,588.89	

TOTAL CARRIED FORWARD TO 1ST PAGE (ITEM 17(H))

# Phenomena Identification and Ranking Table (PIRT) for TRISO Coated Fuel Particles and CANDU Reactor Research

RES-02-078

## MODIFICATION TO STATEMENT OF WORK, (SOW)

### Background

The USNRC is anticipating that vendors will submit applications for licensing of construction and operation of advanced gas cooled reactors and CANDU reactors. It is necessary to understand the failure mechanisms of TRISO coated fuel particles contained in pebbles or fuel compacts in order to calculate fission product release during postulated accidents or transients. The understanding of failure mechanisms and phenomena leading to those mechanisms will be helpful in developing computer models. The codes will be used by the NRC staff in order to perform independent audit calculations for evaluation of vendor calculations. NRC will perform analyses of transients and accidents and evaluate emergency procedures and margins in order to reduce unnecessary regulatory conservatism.

### Objective

There are two objectives of this work. The first objective is to provide structured information with importance ranking 1) of the phenomena occurring during anticipated operational transients and postulated accidents affecting TRISO coated fuel particle performance in gas cooled reactors and 2) of the processes used in manufacturing of TRISO coated fuel particles. The results will help NRC establish regulatory limits and/or controls in operation of gas cooled reactors and develop analytical methods with which gas cooled reactors could be assessed to see if those regulatory limits will be met. Establishing limits and developing analytical methods, in turn, require a data base. Hence, this information will also help NRC to define and conduct experimental programs to obtain the data base and improve computer codes. The second objective is to provide recommendations on thermal hydraulic code modifications, if necessary, to calculate system transients which may occur in CANDU reactors.

### Modify Scope of Work as follows:

#### Scope of Work

Add following Task 3:

#### **Task 3: Conduct PIRT Workshop/Training for NRC**

Conduct a one-day PIRT Workshop/Training at NRC Headquarters for the NRC staff in the month of September 2003. Make an arrangement with the NRC project officer to establish the date of the workshop. Make a 9-step presentation explaining the process with examples selected from Task 1 or from other NRC projects. Provide Workshop/Training materials both in hardcopy and electronic form.

Completion Date:

October 31, 2003

**Modify Reporting Requirements as follows:**

**B. Technical Reports- Deliverables and Delivery Schedule**

Add following deliverable:

1. Workshop presentation and training materials both in hardcopy and electronic form in or before the month of October, 2003.

**Travel**

Conduct a PIRT training workshop at NRC Headquarters in Rockville, MD in the month of September 2003.

**Technical Direction**

The present NRC Project Officer is retiring. The new NRC Project Officer is Mr. Eugene Trager. However, Dr. Stuart Rubin will provide technical direction in this project. His E-Mail address is [sdr1@nrc.gov](mailto:sdr1@nrc.gov) and his telephone number is 301-415-7480. Mr. Trager's E-Mail address is [eat1@nrc.gov](mailto:eat1@nrc.gov) and his telephone number is 301-415-6350.