

006792



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

NOV 2 1 2001

Purdue Research Foundation  
ATTN: Mr. Thomas B. Wright  
1063 Hovde Hall, Purdue University  
West Lafayette, IN 47907-1063

Dear Mr. Wright:

SUBJECT: MODIFICATION NO. 9 TO TASK ORDER NO. 8  
UNDER CONTRACT NO. NRC-04-97-046

This letter definitizes Modification No. 9 to Task Order No. 8. This modification extends the period of performance, at no additional cost to the Government, through January 15, 2002. Accordingly, the period of performance for Task Order No. 8 is from 06/01/98 through 01/15/02. Also, this task order shall be performed in accordance with the enclosed, modified pages of the Statement of Work that include new, estimated completion dates for Tasks 14, 17 and 21 under this effort.

The Contractor shall not incur costs for this task order which exceed the obligated amount of \$520,715. **All other terms and conditions, including the ceiling of \$8520,715 remain unchanged.** No FY02 funds are obligated with this modification.

Please indicate your acceptance of Modification No. 9 to Task Order No. 8 by having an official, authorized to bind your organization, execute three (3) copies of this document in the space provided and return two (2) copies to the Contract Specialist, Ms. Amy Siller, at the address listed below. You should retain the third copy for your records.

U.S. Nuclear Regulatory Commission  
ADM/DCPM/CMB1, Mail Stop T-7-I-2  
Washington, DC 20555

If you have any questions concerning this action, please contact Ms. Siller at (301) 415-6747.

Sincerely,

Mary H. Mace, Contracting Officer  
Contract Management Branch 1  
Division of Contracts and Property Management  
Office of Administration

Enclosure:  
As stated

NOV 26 2001

ACCEPTED: MODIFICATION NO. 9 TO TASK ORDER NO. 8



NAME

**Eric E. Fulkerson  
Sr. Contract Manager**

\_\_\_\_\_  
TITLE

NOV 28 2001

\_\_\_\_\_  
DATE

Modification (No. 9) to the Statement of Work for Task Order #8, "Improvements to PARCS," under Contract #NRC-04-97-046 and Job Code W6749, "Thermal-Hydraulic Research"

**Additional Work Requirements (10/1/00 - 1/15/02)**

This is a no-cost extension to extend the estimated completion dates of the following Tasks 14, 17, and 21 to January 15, 2002.

**Task 14. QA and Testing for Test problem automation**

Test problems will be consolidated for testing all the code functionality and will be executed using a script to automate the qualification of new code versions. The test problems will also demonstrate the code accuracy. The functionality described in Task 1.8 (Radial Discontinuity Factors) will also be included in one of the test problems as part of this task. An SQA document will be provided in both text and electronic format.

Estimated Level of Effort: 1.5 staff-months  
Estimated Completion Date: January 15, 2002 (new date)

**Task 17. Homogenization / Dehomogenization Methods**

This task consists of four subtasks. Upon the completion of all subtasks, an SQA document will be provided in both text and electronic format.

**Subtask 17.1 Steady State Homogenization**

The single most important approximation in nodal methods for MOX fuel analysis is fuel assembly homogenization. By using explicit pin representation and multiple energy groups, the homogenization error should be significantly reduced for mixed MOX / UO<sub>2</sub> core problems. This task will investigate in detail the number of energy groups and individual pin wise cross sections that must be used to provide the accuracy required.

Estimated Level of Effort: 2 staff-months  
Estimated Completion Date: September 30, 2001

**Subtask 17.2 Steady State Dehomogenization**

One of the advantages of the one-node method is that the pin-wise fluxes and powers are a natural part of the solution process and the traditional pin power reconstruction methods are not required. This subtask will verify the accuracy of the pin-wise powers for the steady-state solution.

Estimated Level of Effort: 1 staff-month  
Estimated Completion Date: October 31, 2001

**Subtask 17.3 Transient Homogenization**

During a reactor transient, the core will undergo large variations in the flux/power shape and an additional level of complexity is introduced in cross section homogenization. This subtask will continue the work of a(1) above and specifically address homogenization

methods that are appropriate for transient core conditions.

Estimated Level of Effort: 1 staff-month

Estimated Completion Date: September 30, 2001

#### **Subtask 17.4 Transient Dehomogenization**

The prediction of the pin-wise powers during a transient is one of the single most important results of a spatial kinetics calculation since it provides a direct input to the determination of core TH limits (e.g. DNBR, etc.). This subtask will continue the steady-state work of task with specific application to core transient analysis.

Estimated Level of Effort: 2 staff-months

Estimated Completion Date: January 15, 2002 (new date)

#### **Task 21. Provide Technical Assistance**

This task provides on-call technical assistance to the NRC and Penn State (under Task Order #10 of the same NRC contract) regarding the PARCS input decks, models, and documentation.

Estimated Level of Effort: 0.1 staff-month

Estimated Completion Date: January 15, 2002 (new date)