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

APR 2 3 2002

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

Dear Mr. Wright:

SUBJECT: MODIFICATION NO. 14 TO TASK ORDER NO. 6 ENTITLED "SNAP RUNTIME AND OUTPUT VISUALIZATION DEVELOPMENT" UNDER CONTRACT NO. NRC-04-97-046

In accordance with Section G.4, Task Order Procedures, of the subject contract, this letter definitizes Task Order No. 6 Modification No. 14. This effort shall be performed in accordance with the enclosed Statement of Work. The period of performance for Task Order No. 6 is extended from January 9, 1998 through December 31, 2002. The total estimated cost for performance of the task order is increased by $108,600 from $1,160,918 to $1,269,518. Funds in the amount of $108,600 are hereby obligated for performance of this task order bringing the total obligated funds from $1,169,918 to $1,269,518.

Accounting data for Task Order No. 6 MOD 14 is as follows:

B&R No.: 260-15-11-020-5
Job Code: W-6749
BOC Code: 252A
RES ID: RES-C02-416
Appropriation No.: 31X0200
Obligated Amount This Action: $108,600

TEMPLATE-ADM001   ADM02

The issuance of this task order does not amend any terms or conditions of the subject contract.

Your contacts during the course of this task order are:

Technical Matters: James Han, Project Officer
                (301) 415-6773

Contractual Matters: Stephen Pool, Contract Specialist
                (301) 415-8168

Please indicate your acceptance of this task order by having an official, authorized to bind your organization, execute three copies of this document in the space provided and return two copies to the Contract Specialist. You should retain the third copy for your records.

Sincerely,

Stephen M. Pool, Contracting Officer
Division of Contracts and Property
Management

Enclosure:
As stated

ACCEPTED: TASK ORDER NO. 6 MOD 14

_____   _____
NAME   DATE

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

_____
TITLE

<u>Modification (No. 14) to the Statement of Work for Task Order #6, "SNAP Runtime and Output Visualization Development," under Contract No. NRC-04-97-046, "Thermal-Hydraulic Research"</u>

Background

To meet the schedule for the consolidated thermal-hydraulics code, an interim approach was adopted for the translation of RELAP5 input models to TRAC-M input models. Under this approach, 1-D RELAP5 components are directly mapped to 1-D TRAC-M components, without using TRAC's 3-D modeling capability, via TPR files with the actual mapping performed within the TRAC code. While this approach satisfies short terms needs, long term goals require:

(1)   usage of the TRAC-M 3-D vessel model, and

(2)   migration of input model translation into SNAP so that online feedback for user guidelines can be implemented.

A new task is added to the SOW to address usage of the TRAC-M vessel model and to begin the process of migrating input model translation to SNAP. Specifically, SNAP assistants will be developed to aid in the translation of RELAP5 components into a 3-D TRAC vessel component.

Additional Work Requirements (4/15/02 - 12/31/02)

Add the following new Task 27 to the SOW.

Task 27.   Develop SNAP Input Assistants for 3-D Vessel Model

Develop SNAP input assistants for 3-D PWR and BWR vessels. These assistants shall be cognizant of the components expected to be present in a reactor vessel (e.g., including downcomer, lower plenum and internals, core, core bypass region, upper plenum and internals, and upper head as in a PWR) and provide a means for the user to identify which RELAP5 components should be mapped to the specific 3-D region. The process will involve the splitting of a 1-D component into several regions of a 3-D TRAC vessel model (radial & azimuthal segments), the distribution of flow area, and generation of heat structures. It should be handled by SNAP with the minimal user input.

Furthermore, the SNAP vessel assistants shall: (a) be flexible enough so that a user can edit the resulting input model using the SNAP model editor and provide for special features existing in an experimental facility but not expected in a plant model; (b) intelligently query the user to handle noding conflicts (e.g., the number of azimuthal segments specified for the core and downcomer must be the same in a TRAC vessel); (c) provide reasonable defaults for the additional input required for a 3-D component as opposed to a 1-D component (e.g., radial and azimuthal loss coefficients) and query the user for input when this provision is not possible; (d) provide a rudimentary capability for mapping of the control system, (e.g., if a control variable is defined for one axial cell of a 1-D component, it should be mapped to one cell of the corresponding 3-D component instead of generating new control variables for each 3-D region) and query the user for the acceptability of the mapping; and (e) begin implementation of a system to provide feedback to the user with respect to the TRAC user guidelines.

Future efforts are expected to bring all of the input model translation into SNAP, incorporate assistants to enforce modeling guidelines, and provide for a more sophisticated translation of the control system.

Estimated Level of Effort: 9 staff-months
Estimated Completion Date: December 31, 2002