

2. AMENDMENT/MODIFICATION NO. 1	3. EFFECTIVE DATE AUG 18 2003	4. REQUISITION/PURCHASE REQ. NO.
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6. ISSUED BY U.S. Nuclear Regulatory Commission Division of Contracts Attn: T-7-I-2 Contract Management Center 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
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8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code) Applied Programming Technology, Inc. ATTN: Mr. Kenneth Jones, President 84 Long View Drive Bloomsburg, PA 17815	(X)	9A. AMENDMENT OF SOLICITATION NO.
		9B. DATED (SEE ITEM 11)
		10A. MODIFICATION OF CONTRACT/ORDER NO. NRC-04-03-057
		10B. DATED (SEE ITEM 13) 04-23-2003

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)

31X0200.360	252A	Y6667
36015110205	Amount Obligated: \$69,925.20	

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:
X	D. OTHER (Specify type of modification and authority) Changes - Cost Reimbursement Alternate I (APR 1984) FAR 52.243-2

E. IMPORTANT: Contractor is not, is required to sign this document and return 2 copies to the issuing office.

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

(see page 2)

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) <i>Kenneth R Jones</i> President	16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Mary Mace Contracting Officer
15B. CONTRACTOR/OFFICER <i>Kenneth R Jones</i> (Signature of person authorized to sign)	16B. UNITED STATES OF AMERICA BY <i>Mary Mace</i> (Signature of Contracting Officer)
15C. DATE SIGNED 8/17/03	16C. DATE SIGNED 08-06-2003

This modification is issued to (1) revise the contract in accordance with the attached Statement of Work (ATTACHMENT 1) and incorporate the contractor's proposal dated 7/7/03, (2) increase the contract ceiling by \$69,925.20 from \$275,095.62 to \$345,020.82, (3) revise the obligated amount under the subject contract, and (4) add copyright clause under the contract as shown below. Accordingly, the contract is hereby modified as follows:

- (1) Section B.3, Consideration and Obligation-Cost Plus Fixed Fee (JUN 1988), paragraphs (a) and (c) are deleted in their entirety and the following paragraphs are substituted in lieu thereof:

"a. The total estimated cost to the Government for full performance of this contract for the base period is \$345,020.82, of which the sum of \$313,655.29 represents the estimate reimbursable costs, and of which \$31,365.53 represents the fixed fee.

"c. The amount presently obligated by the Government with respect to this contract is \$287,925.20, of which the sum of \$259,768.36 represents the estimated reimbursable costs, and of which \$28,156.84.

- (2) Copyright Clause

The NRC may, pursuant to Section (c) of FAR Clause 52.227-14, direct the contractor to claim a copyright in computer software and associated data first produced in the performance of this contract. In addition to the general government license rights identified in Section (c) of FAR Clause 52.227-14, such copyright shall be subject to the following Special Nuclear Purpose License rights:

In addition to the license rights granted the government under Section I of the contract, 52.227-14 - Rights in Data-General, paragraph (c), the contractor grants the NRC and others acting on its behalf an exclusive, paid up, worldwide, irrevocable license to distribute the code for nuclear health and safety purposes, which may include analyses of operational, decommissioned, or designs of nuclear reactor systems and other facilities involving nuclear technology performed by parties which may include but are not limited to licensees, vendors, contractors, educational institutions, public interest groups, participants in NRC international agreement programs and other government agencies. Further, consistent with NRCAR 2052.209-73 - Contractor Organizational Conflicts of Interest, the contractor agrees that it will not sell or distribute the code to or for the use of such parties or participants and that it will not provide technical services relating to the code of such parties or participants, unless authorized by NRC. In addition, NRC retains the right to improvements made to the code resulting from the contractor's commercial activity that the NRC Contracting Officer determines are of use for nuclear health and safety purposes. Further, the contractor agrees to include in any licensing agreement that it may enter into with a third party such limitations as are necessary to preserve the rights of the government, and limit the sale and distribution of the software as described above and as limited by the U.S. Departments of Commerce and State concerning foreign sales.

A summary of obligations for this contract, from date of award through the date of this action, is given below:

Total FY2003 Obligations:	\$287,925.20
Cumulative Total of NRC Obligations:	\$287,925.20

This modification obligates \$69,925.20 in FY2003 funds.

All other terms and conditions remain the same.

STATEMENT OF WORK

SCOPE OF WORK

Add the following tasks (all to be completed in the base year of the contract):

TASK 25.. TRACE TPR Extended Support

Currently, the contractor is responsible for changes to the TPR format specifically excluding changes necessary to the TRACE code itself. At this point, TRACE has no specialized support of the TPR format but changes are still needed to the TPR code in TRACE due to ongoing TRACE testing and other TRACE modifications. Specific work required to support TPR in TRACE includes (but may not be limited to):

- a. Make changes to the TPR XML definition file in response to TRACE developer requirements.
- b. Make changes to the TRACE code to reflect TPR format changes.

Estimated Completion Date: December 31, 2003

TASK 26, Develop a TPR binary difference tool

The contractor shall develop a tool that will allow direct comparison of two TPR binary files. This difference tool is required so that "null testing" can be performed between two different TRACE runs. This is an essential verification tool useful to the entire TRACE development team.

As a minimum, this tool shall have the following properties

1. Run from the command line in a batch mode. The user interface shall be similar to the UNIX "diff" tool, with similar command line arguments.
2. Report exactly which PIB attributes in which PIB blocks are different for which timesteps.
3. Be relatively fast. The contractor shall strive to make this tool run as fast as possible so that its use in the automated TRACE testing environment is not prohibitive.

Integration of this capability within pibEdit would be a preferred but is not a requirement.

Standard code development procedures shall be used. SRS and SDID documents are to be prepared and submitted to the USNRC project manager. After the SRS and SDID are approved by the USNRC, the contractor shall develop the binary difference tool in accordance with these documents.

Estimated Completion Date: December 31, 2003

TASK 27. Integrate the ECI (External Communications Interface) driver software functionality into SNAP's Calculation Server component.

The external communications interface in TRACE has recently been redesigned. The PVM based approach has been replaced by a highly efficient direct process to process communication approach. A driver program, written in C++, was developed to support this effort. The ECI driver program functions as a system daemon responsible for process creation and initialization of interprocess communication. This task involves incorporating the functionality of the ECI driver program into the CalculationServer component.

Standard code development procedures shall be used. SRS and SDID documents are to be prepared and submitted to the USNRC project manager. After the SRS and SDID are approved by the USNRC, the contractor shall develop the binary difference tool in accordance with these documents.

Estimated Completion Date: December 31, 2003

TASK 28. Modify SNAP ModelEditor to use SVG (Scalable Vector Graphics) format for graphic file output

Currently, the SNAP ModelEditor uses the java 1.4 VM raster method for producing printed output of any views offered by the ModelEditor. The raster method of obtaining a printout is very slow and produces large amounts of data. The raster method of output is essentially producing a bitmap of the viewed image and sending that to the printout device. An alternative method for producing output lies with the SVG format. SVG is a structured language format similar in concept to postscript relying on geometric primitives (vectors) rather than bitmaps to represent the data view. As a consequence of the vector approach the output produced is of much smaller quantity and therefore faster to print. SVG graphics is becoming very popular and support for SVG to bitmap formats conversion is already widely available.

The contractor shall convert the printout capabilities of the SNAP ModelEditor to use SVG graphics rather than raster or bitmap image dumps. The contractor shall also convert the SNAP VEDA program to use SVG as well so that users can save SVG files containing the VEDA masks.

Standard code development procedures shall be used. SRS and SDID documents are to be prepared and submitted to the USNRC project manager. After the SRS and SDID are approved by the USNRC, the contractor shall develop the binary difference tool in accordance with these documents.

Estimated Completion Date: September 30, 2003

TASK 29. Vessel user interface improvements in the SNAP modeeditor

1. Currently, the SNAP modeeditor only supports cylindrical vessel components for the TRACE analysis code. The contractor shall add the ability to edit Cartesian vessels in the SNAP modeeditor. This capability shall be added in a generalized fashion to permit code reuse for analyses codes other than TRACE.
2. Currently, the SNAP modeeditor does not allow editing of the nodalization for the vessel component, it only supports the creation of a fixed geometry vessel which once created cannot be edited inside the modeeditor. The contractor shall design and implement the ability for the SNAP modeeditor to re-nodalize vessel components. This capability shall be added in a generalized fashion to permit code reuse for analyses codes other than TRACE.

Estimated Completion Date: December 31, 2003

TASK 30. Add parametric variable capabilities to the SNAP modeeditor

The contractor shall extend the modeeditor so as to permit users to specify generalized parameters for code models. Desired features include:

1. User can specify a value, such as a pipe volume or friction factor, to be a generalized parameter so that many components may reference this common parameter at the same time.
2. Such parameters shall be available to the SNAP macro language so that scripts can be built to allow parametric studies to be easily generated.

Estimated Completion Date: December 31, 2003

In addition to adding the above tasks, modify Task 5 to add 3 staff weeks for testing purposes.

REPORTING REQUIREMENTS

The reporting requirements are unchanged.

DELIVERABLES AND DELIVERY SCHEDULE

Add the following deliverables:

- | | | |
|----|--------------------------|--------------------|
| 3. | SRS and SDID for task 26 | September 30, 2003 |
| 4. | SRS and SDID for task 27 | October 30, 2003 |
| 5. | SRS and SDID for task 28 | August 31, 2003 |
| 6. | SRS and SDID for task 29 | October 30, 2003 |
| 7. | SRS and SDID for task 30 | November 30, 2003 |

MEETINGS AND TRAVEL REQUIREMENTS

The travel requirements are unchanged.

PERIOD OF PERFORMANCE

The Period of Performance is unchanged.