

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT		1. CONTRACT ID CODE	PAGE OF PAGES 1 9
2. AMENDMENT/MODIFICATION NO. 14	3. EFFECTIVE DATE See block 15c	4. REQUISITION/PURCHASE REQ. NO. RES-92-037	5. PROJECT NO. (If applicable)
6. ISSUED BY U.S. Nuclear Regulatory Commission Division of Contracts TAB#1 MS T-7-1-2 Washington, D.C. 20555	CODE	7. ADMINISTERED BY (If other than item 6)	CODE
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP code) Science Applications International Corporation (SAIC) 10260 Campus Point Drive San Diego, CA 92121 c/o SAIC, Technology Analysis and Applications Group 1710 Goodridge Drive, PO Box 1303 McLean, VA 22102		9A. AMENDMENT OF SOLICITATION NO.	
		9B. DATED (SEE ITEM 11)	
		10A. MODIFICATION OF CONTRACT/ORDER NO. NRC-04-92-037	
		10B. DATED (SEE ITEM 13) 8/18/92	
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. Offerors 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 on 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 76015232020 L1852 252A AMOUNT:\$637,000.00

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

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 data, 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: 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 sheets.

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NRC-04-92-037 PDR

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) J. Pierce Martin Senior Contract Representative	16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Mary H. Mace Contracting Officer
15B. CONTRACTOR/OFFEROR <i>[Signature]</i> (Signature of person authorized to sign)	16B. UNITED STATES OF AMERICA BY <i>[Signature]</i> (Signature of Contracting Officer)
15C. DATE SIGNED 01 NOV 1996	16C. DATE SIGNED 11/3/96

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The purpose for this contract modification is to modify and clarify the contract Statement of Work, Section C, to prescribe contractor activities for the completion of tasks 1 and 2, Literature Search and Development of Pathway Models and Task 3, the Options Paper and now an Issues Paper. This contract modification also adds for clarification a new quality assurance section in Section E and a delivery schedule in Part F. The contract modification also raises the contract estimated cost and fixed fee, allots incremental funding to the contract, and extends the period of performance. The principal work changes in this modification include:

1. Consistency, as much as is reasonable, with risk assessment results among NRC, EPA, and DOE in keeping with modification 12 of this contract. Peer review and consultation with an independent contractor of draft uncertainty analysis for iron and steel, including development of an overall plan for the uncertainty analysis, interface with modeling used in license termination for lands and structures as described in NUREG/CR-5512 and its addendum, and presentation of the results for critical materials flows and scenarios needed for the rulemaking decision. The independent peer reviewer and consultant shall have the minimum qualifications described in the "Work Requirements" section below.
2. Specific reuse pathway dose assessment analysis and presentation.
3. Comparison of the risk assessment results with the internationally applicable assessments of risk by the International Atomic Energy Agency (IAEA) and the Commission of the European Communities (CEC).
4. Preparation of an issues paper and a regulatory options paper under Task 3.

1. In accordance with FAR clause 52.243-2 Changes-Cost Reimbursement (AUG 1987) ALT V (APR 1984), the following new contract sections are added to Sections C, E and F of the contract as indicated below.

C.1.3 SCOPE OF WORK

1. An new emphasis on interagency consistency in dose assessment modeling requires more work to complete Task 1, literature and other information sources, and Task 2, conceptual models, bases, rationale, and results. The NRC requires the overall pathway dose assessments for an NRC recycling and reuse rulemaking in a timely manner, while achieving consistent approaches modeled by NRC, EPA, and DOE. Pathway dose assessments are to be expressed as modeled pathway dose conversion factors (PDCF) with their associated uncertainties. Task 3, the development of the issues paper and the regulatory options paper, requires an increase of work due to the addition of preparation, expected revisions of an Issues Paper on Recycle/Reuse.
2. The desired solution is that the information data base, approaches,

rationales, and PDCF's, with their associated uncertainties, are quantitatively the same or consistent for all common materials and scenarios modeled by NRC, EPA, and DOE. This consistency shall be the foundation of the assumptions underlying the all contract work.

3. The standard for solution is that common PDCF's with their associated uncertainties, as calculated by the contractors for NRC, EPA and DOE, are within about a factor of two of each other and analyses not in common are performed in a consistent manner as those that are in common.
4. The measurement of standard is the dose to the average member of the critical group (TEDE Sv) per activity concentration in scrap (Bq/kg or Bq/m²) and collective dose (person-TEDE Sv).

C.1.3.B CONTRACT TASKS 1 & 2

C.1.3.B2(c)(5)

1. As specified below, the contractor shall update the draft Task 1 literature and information report and the draft Task 2 materials flow and pathway modeling dose conversion factors report to revise modeling assumptions, bases, and input parameters in a mutually consistent, coordinated manner, consistent with the processes established in the implementation of Modification 12 of this contract as referenced in the April 22, 1996, Modification 12 letter report, the remaining letter report that is in progress under Modification 12, and with consultation and approval with the NRC Project Officer. Performance of this requirement shall include:
 2. The contractor shall report progress to and receive direction from the NRC Project Officer approximately biweekly and summarize these communications in the monthly status letter report
 3. The contractor shall exchange information specified in the April 22, 1996, letter report with the contractors for EPA and DOE, and similarly exchange applicable follow-up information directly. Summarize the results of the information exchanges in the monthly status letter report.
 4. The contractor shall identify, in coordination with the contractors for EPA and DOE, any remaining information needs for pathway dose conversion factor modeling that require a data call or data gathering from NRC sources. Industry professional contacts and with the assistance of the NRC Project Officer, develop a comprehensive questionnaire that the NRC Project Officer will approve and send to appropriate sources in compliance with the Paperwork Reduction Act.
 5. The contractor shall review the draft Task 1 report, more recent information gathered through information exchanges with EPA and DOE and their contractors, and the above mentioned questionnaire to identify

three additional materials besides iron and steel that would represent the greatest volumes and intrinsic market values of recyclable material generated by NRC licensees. The contractor shall submit a letter report summarizing the results of the above review to the NRC Project Officer.

6. The contractor shall benchmark and inter-calibrate with EPA and DOE the end-use scenarios for slag in a roadbed, automobile, and a large household appliance. Pathway dose conversion factors shall be calculated for both the average member of the public (non-worker) critical group and collective doses to the population for each of the three scenarios. Benchmarking and inter-calibration shall be performed in the manner described in the April 22, 1996, letter report. Deviations from this performance shall be approved in advance by the NRC Project Officer. Results of this benchmarking and inter-calibration shall be submitted as a letter report to the NRC Project Officer.
7. Upon the technical direction of the NRC Project Officer, the contractor shall model three other materials for recycle or reuse, based on the three materials, other than iron and steel, most likely to give the greatest economic benefit if recycled (identified above) and the six scenarios for each of the three materials (total of 18) judged by the NRC Project Officer to likely give the highest individual and collective doses. The input information, the model descriptions, and results shall be reported in the revised draft Task 1 and revised draft Task 2 reports in a format similar to that used to report the results for iron and steel. The modeling for the other materials shall use the work done for iron and steel to the extent appropriate and practical for those materials.
8. Upon the request from the NRC Project Officer, the contractor shall provide senior technical staff to report progress, receive direction, and participate in teleconferences, meetings and briefings with the Project Officer, other federal agencies, or sources of information. For the completion of Tasks 1 and 2, no more than five, three-hour teleconferences, two each, one week meetings, and two briefings are expected. Summaries of the above communications shall be reported in the monthly status letter report. The modeling changes and their bases or rationales shall be included in the revised Task 1 report on literature and other information sources, and the Task 2 report on conceptual models, bases, rationale, and results.
9. In parallel with the work described in #1. above, the contractor shall collect input data for uncertainty analyses. Those data shall establish the range and distribution of input parameters and the bases for the selection of those parameters and distributions. Upon the direction of and for the approval by the NRC Project Officer, prepare and submit a cost proposal and draft written plan, for the uncertainty analyses approach, implementation, and presentation (in the final report) specifically for iron and steel recycling and reuse and for other materials in general. The approach, where reasonably applicable, shall

include the interface with NUREG/CR-5512 modeling and its Addendum. The uncertainty analyses plan shall include a sensitivity analyses to screen the most important parameters and scenarios for the analyses. No more than twenty input parameters and distributions and six scenarios for each material are expected in these analyses. Consensus recycle parameter inputs agreed upon by NRC, EPA, and DOE in the inter-calibration activities shall be used if NUREG/CR-5512 parameters are different or inconsistent with the consensus recycle parameters. The NRC Project Officer may approve written requests for an exception to this hierarchy. Such written requests shall provide the basis for the exception and require pre-approval before implementation.

10. The contractor shall conduct a 3-day program review and planning meeting on site upon completion of the draft written plan, with the NRC Project Officer and the independent reviewer, described in item #12 below. The objective of this meeting will be to provide comprehensive technical direction for the completion of Tasks 1 and 2, including direction to finalize the written plan. A summary of the meeting and the directions for proceeding shall be reported in the monthly status letter report.
11. The contractor shall finalize the written plan, and, as approved by the NRC Project Officer, implement it for the completion of Task 1, and Task 2, in consultation with the NRC Project Officer for coordination and consistency with the analyses conducted by the EPA and DOE.
12. The contractor shall as part of the quality control of Tasks 1) and 2, and in parallel with items 1. and 2. above, the contractor shall enlist an independent reviewer to evaluate the overall rationale and presentation logic. The minimum qualifications for this reviewer are as follows: a nationally and internationally recognized authority on development, evaluation, testing, and uncertainty analysis of mathematical models for environmental transfer and human risk assessment as demonstrated by active participation or membership in nationally and internationally recognized advisory organizations such as the National Council on Radiation Protection and Measurement, the International Commission on Radiation Protection, etc.; authorship of significant publications on uncertainty analysis and environmental pathway modeling and testing; familiarity with NUREG/CR-5512 modeling. If necessary, the contractor may subcontract for the independent peer reviewer and consultant. Upon enlistment of the independent reviewer, an orientation and planning, two-day meeting shall be conducted on site, i.e., Idaho SAIC offices, with the NRC Project Officer, the independent reviewer, and the principal SAIC technical staff.
13. The contractor shall complete the revised draft Task 2 report, resolve review comments and complete the final Task 1 and Task 2 reports.
14. The independent reviewer shall submit an independent letter report summarizing the technical strengths and weaknesses of the Task 1 and Task 2 reports.

15. The contractor shall participate in independent peer review meetings by providing written and oral summaries of technical details as directed by the NRC Project Officer. Such meetings are likely to be held by agency advisory organizations such as the NRC's Advisory Committee on Nuclear Waste (ACNW) or joint meetings with the EPA's Science Advisory Board. Planning costs for such participation shall include two each, four-day trips for two senior contractor staff in the Washington, D.C. area.

C.1.3C(1) TASK 3

1. The contractor shall prepare a regulatory issues paper, under Task 3, that in a neutral, and very concise manner presents the issues and concerns, and their pros and cons, of stakeholders regarding recycle or reuse. The contractor shall provide personnel highly familiar with the issues of stakeholders and interested parties on the subject of recycling and reuse of materials and equipment with associated radionuclides. This personnel shall also be very familiar with the NRC issues paper that was developed for the rulemaking on radiological criteria for license termination and the associated issues paper on the proposal for site specific advisory boards (SSABs).
2. The contractor shall provide technical support to evaluate issues and alternatives raised by the EPA with respect to reuse and recycle, evaluate the reuse/recycle cost/benefit analysis to be published by the EPA in December 1996, and participate in coordinating meetings with the NRC, EPA and EPA contractors. The contractor's personnel working on this effort shall be located in the Washington, DC metropolitan area, so that attendance at planning and public meetings will be economical.
3. Upon the technical direction of the NRC Project Officer, the contractor shall prepare a draft and final issues paper, and a draft and final regulatory options paper, based on the information gathered from various appropriate sources, including the aforementioned planning and public meetings.

C.1.4.1 REPORTING REQUIREMENTS

The contractor shall submit all written text deliverables electronically in WordPerfect, version 6.1 for windows and in hard copy all spread sheets shall be submitted electronically in Excel 5.0.

C.1.5.1 MEETING AND TRAVEL - MOD 14

The following meetings and travel are anticipated in support of the changes in modification no. 14:

1. Two staff persons on one trip to industrial information sources.
2. Two senior technical SAIC project staff for two separate 40 hour weeks while meeting in the Rockville, Maryland area with the technical staffs

of Federal agencies and their respective contractors.

3. Two independent peer reviewers for two separate 40 hour weeks while meeting in the Rockville, Maryland area, and four on-site trips for program review and consultation.
4. One trip for two people for 2 days to industrial information sources.
5. Two trips for two people for 2 days to consult with the Project Officer.

E.3 QUALITY ASSURANCE PROGRAM

A quality control program shall be established by the contractor to ensure that the thoroughness and bases and rationales of analyses, models, and regulatory products are readily traceable and reproducible.

(End of Clause)

Section F.7 DELIVERY SCHEDULE

The contractor shall adhere to the following schedule in performing the work under this contract modification:

Tasks 1. Literature search and information; and 2, dose assessment modeling:

- | | | |
|---|-------------------|--|
| - | October 21, 1996 | Enlist peer reviewer-consultant |
| - | November 5, 1996 | Conduct uncertainty analysis orientation and planning meeting |
| - | November 22, 1996 | Submit draft plan for approach, implementation, and presentation of uncertainty analysis and peer review |
| - | January 10, 1997 | Submit final uncertainty analysis and peer review plan; begin implementation |
| - | January 21, 1997 | Conduct program review and planning meeting |
| - | March 6, 1997 | Complete revised draft Task 2 report and conduct briefing at NRC |
| - | March 18, 1997 | Submit independent summary letter report by peer reviewer-consultant on technical strengths and weaknesses |
| - | April 18, 1997 | Submit final Task 1 and Task 2 reports with comments resolved |

Task 3. Issues and Options Papers:

- November 22, 1996 Submit outline for draft issues paper
- March 8, 1997 Submit draft issues paper
- April 22, 1997 Submit resolution of comments and revised draft issues paper
- May 22, 1997 Submit final issues paper
- June 8, 1997 Submit draft regulatory options paper
- September 30, 1997 Submit final regulatory paper

(End of Clause)

2. As a result of the above changes to Sections C, E, and F, the contract estimated cost and fixed fee are increased as follows:

	FROM:	BY:	TO:
Est Cost:	\$1,707,240	\$689,691	\$2,396,931
Fixed Fee:	117,969	58,623	176,592
CPFF	\$1,825,209	\$748,314	\$2,573,523

3. This contract modification obligates FY 96 funds in the amount of \$637,000. As a result of this allotment and items #1 and #2 above, Section B.3., CONSIDERATION AND OBLIGATION - COST PLUS FIXED FEE (JUN 1988) ALTERNATE I (JUN 1991) paragraphs a., c. and d. are hereby deleted in their entirety and substituted with the following in lieu thereof:

"a. The total estimated cost to the Government for full performance of this contract is \$2,573,523 of which the sum of \$2,396,931 represents the total estimated reimbursable costs, and of \$176,592 represents the fixed fee.

c. The amount currently obligated by the Government with respect to this contract is \$2,344,000, of which the sum of \$2,183,158 represents the total estimated reimbursable costs, and of which \$160,842 represents the fixed fee.

d. It is estimated that the amount currently allotted will cover performance through September 30, 1997."

4. Section F.6 "Duration of Contract" is hereby revised to read

"F.6 DURATION OF CONTRACT

This contract shall commence on August 18, 1992 and will expire on December 31, 1998.

(End of Clause)"

5. FAR 52.215-31 "Waiver of Facilities Capital Cost of Money (SEP 1987)" is hereby incorporated into this contract by reference at Section I.1. This clause was inadvertently omitted in the basic contract.

6. In accordance with FAR 52.244-2 "Subcontracts (Cost Reimbursement and Letter Contracts - JUL 1985)," the Government hereby grants consent for the Contractor to increase its subcontract with Jupiter Corporation to an amount not to exceed \$364,948 for the performance of work under task three of this contract as modified herein and to enter into a subcontractor with SENES Oak Ridge, Inc. in an amount not to exceed \$36,494 for the performance of work under this contract as modified herein.

7. A summary of obligations for this contract from award date through the date of this action is provided below:

Total FY92 Obligation Amount:	\$200,000.00
Total FY93 Obligation Amount:	\$200,000.00
Total FY94 Obligation Amount:	\$200,000.00
Total FY95 Obligation Amount:	\$577,000.00
Total FY96 Obligation Amount:	\$530,000.00
Total FY97 Obligation Amount:	\$637,000.00

Cumulative Total of NRC Obligations: \$2,344,000.00

8. All other terms and conditions remain unchanged.