

P1-24

AWARD/CONTRACT

1. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 350) RATING

2. CONTRACT NO. NRC-04-94-041 3. EFFECTIVE DATE DEC 10 1993 4. REQUISITION/PROJECT NO. RES-93-066

5. ISSUED BY Code: U.S. Nuclear Regulatory Commission Division of Contracts & Property Mgmt. Contract Negotiation Br. #2 Washington, D.C. 20555 6. ADMINISTERED BY Code: (If other than Item 5) U.S. Nuclear Regulatory Commission Div. of Contract & Property Mgmt. Contract Admin. Br. #3 Washington, D.C. 20555

7. NAME AND ADDRESS OF CONTRACTOR William Lettis and Associates, Inc. 1000 Broadway, Suite 216 Oakland, California 94607-4041 Principal Investigator/Technical Contact: William Lettis Telephone No: (510) 832-3710 8. DELIVERY [ ] FOB ORIGIN [X] OTHER (See below) 9. DISCOUNT FOR PROMPT PAYMENT n/a

10. SUBMIT INVOICES (4 cop. as unless otherwise specified) TO THE ADDRESS SHOWN IN ITEM: 6

11. SHIP TO/MARK FOR CODE U.S. Nuclear Regulatory Commission Division of Engineering, RES ATTN: Richard McMullen, MS NLS217A Washington, D.C. 20555 12. PAYMENT WILL BE MADE BY CODE U.S. Nuclear Regulatory Commission Division of Accounting & Finance GOV/COM Accounting Sec.; MNBB-11104 Washington, D.C. 20555

13. AUTHORITY FOR USING OTHER THAN FULL AND OPEN COMPETITION [ ] 10 U.S.C. 2304(c) [ ] [ ] 41 U.S.C. 253(c) [ ]

14. ACCOUNTING AND APPROPRIATION DATA APPN No.: 31X0200.460 B&R No.: 46019201100 JOB CODE: L2211 BOC: 255C RES I.D.: RES-C94-305 OBLIGATED AMOUNT: \$120,000

15A. ITEM NO. 15B. SUPPLIES/SERVICES 15C. QUANTITY 15D. UNIT 15E. UNIT PRICE 15F. AMOUNT The NRC hereby accepts the contractor's technical proposal dtd 6/1/93 and revised 9/2/93, which are incorporated herein by reference and made a part of this cost-reimbursement type contract to perform "Age Dating of Geologic Materials - State-of-the-Art Methodologies Applicable to Licensing of Nuclear Power Plants." 15G. TOTAL AMOUNT OF CONTRACT \$233,442.00

EXCEPTION TO STANDARD FORM SF26 (REV. 4-85) Prescribed by GSA

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Handwritten signature/initials

FAR(48 CFR) 53.214(a)

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CONTRACTING OFFICER WILL COMPLETE ITEM 17 OR 18 AS APPLICABLE

17.  CONTRACTOR'S NEGOTIATED AGREEMENT (Contractor is required to sign this document and return 3 copies to issuing office.) Contractor agrees to furnish and deliver all items or perform all the services set forth or otherwise identified above and on any continuation sheets for the consideration stated herein. The rights and obligations of the parties to this contract shall be subject to and governed by the following documents: (a) this award/contract, (b) the solicitation, if any, and (c) such provisions, representations, certifications, and specifications, as are attached or incorporated by reference herein. (Attachments are listed herein.)

18.  AWARD (Contractor is not required to sign this document.) Your offer on Solicitation Number \_\_\_\_\_, including the additions or changes made by you which additions or changes are set forth in full above, is hereby accepted as to the items listed above and on any continuation sheets. This award consummates the contract which consists of the following documents: (a) the Government's solicitation and your offer, and (b) this award/contract. No further contractual document is necessary.

19A. NAME AND TITLE OF SIGNER (Type or print)	20A. NAME OF CONTRACTING OFFICER
<i>William R Lettis, President</i>	Mary H. Mace
19B. NAME OF CONTRACTOR by <i>William R Lettis</i> (Signature of person authorized to sign)	20B. UNITED STATES OF AMERICA by <i>Mary H. Mace</i> (Signature of Contracting Officer)
19C. DATE SIGNED <i>12/5/93</i>	20C. DATE SIGNED <i>12/10/93</i>

EXCEPTION TO STANDARD FORM 26 (REV.4-85)

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## PART I - THE SCHEDULE

## SECTION B - SUPPLIES OR SERVICES AND PRICES/COSTS

## B.1 PROJECT TITLE

The title of this project is as follows:

Age Dating of Geologic Materials - State-of-the-Art  
Methodologies Applicable to Licensing of Nuclear Power  
Plants.

[End of Clause]

## B.2 BRIEF DESCRIPTION OF WORK (MAR 1987)

The contractor shall search out and gather information on all current methods for dating geologic materials that show potential for application to Nuclear Power Plant site evaluations. Particular importance is placed on those methods most appropriate for determining ages within the Quaternary. These methods should be described in detail and this description should also include a discussion of the methods for collecting, preserving, and testing samples, the age range for each method, degree of accuracy, and the materials to which each best apply. This information will be used by utilities as well as NRC staff.

[End of Clause]

B.3 CONSIDERATION AND OBLIGATION--COST REIMBURSEMENT  
(JUN 1988) ALTERNATE I (JUN 1988)

- (a) The total estimated cost to the Government for full performance under this contract is \$233,442.00.
- (b) The amount presently obligated by the Government with respect to this contract is \$120,000.00.
- (c) It is estimated that the amount currently allotted will cover performance through 6/30/94.

[End of Clause]

## SECTION C - DESCRIPTION/SPECIFICATIONS/WORK STATEMENT

## C.1 STATEMENT OF WORK

## C.1.1 INTRODUCTION

Proposed Appendix B to 10 CFR Part 100, "Seismic and Geologic Criteria for Siting Nuclear Power Plants" which, when finalized, will replace Appendix A as criteria for siting future nuclear power plants, requires that capable tectonic sources and seismogenic sources be identified and characterized as to their potential for generating earthquakes, and, with respect to capable tectonic structures, their potential for causing surface deformation, or demonstrate the absence of these potentials. Among other characteristics, a capable tectonic source is defined as one showing geologic evidence of undergoing a single displacement within the past 50,000 years or multiple displacements within the past 500,000 years. Satisfying these criteria will require the extensive use of techniques that have the capability to determine the ages of geologic materials with as much accuracy as possible.

The purpose of this procurement is to provide the means to (1) assemble all pertinent information on state-of-the-art methods for dating soils and rocks in a report. This document should not only contain descriptions and discussions of the various techniques, but also of the best methods for collecting, preserving and transporting samples for testing, levels of accuracy of each method, theories behind them, advantages and disadvantages, agencies or commercial organizations that provide age dating services, estimated costs and time required to perform the tests (special emphasis should be given to those methods most suited to dating Quaternary materials); and (2) perform limited research in the field and laboratory to confirm existing methods, test recent modifications of older methods, or to test and perfect methodologies that have not been completely validated. Results of these studies will be included in the final document.

This information will be published as a NUREG and will also be used as the basis for preparing a regulatory guide to guide industry and the regulatory staff in identifying and defining methods of collecting samples and age dating soils and rocks that are acceptable to the NRC and pertinent to determining the seismic and geologic hazards at a nuclear power plant site. Such information will be used to estimate the times of last displacements on faults and the recurrences of prehistoric earthquakes or fault offsets as part of paleoseismic studies.

## C.2 BACKGROUND

## C.1 (Continued)

## C.2.1 General Usage of Age Dating of Geologic Materials

Age dating of geologic materials has been one of the most important aspects in the past in applying Appendix A to CFR, Part 100, "Seismic and Geologic Siting Criteria for Nuclear Power Plant Sites." This is true because most nuclear plant sites that have been investigated in the past have been found to be in close proximity to faults or fault zones. At many sites, faults that were not discovered during the investigations were encountered during the excavations for plant structures. Geologic age dating has played a key role in demonstrating that these faults are sufficiently ancient that they do not pose a hazard to these sites.

The pertinent elements in the Appendix A definition of a capable fault are that a capable fault is a fault that has undergone a single displacement within the last 35,000 years or multiple displacements with a recurring nature within the last 500,000 years, or is associated with a capable fault such that movement on that fault could cause offset on the fault of interest. The fault is not capable if these criteria are satisfied, or if it can be demonstrated that the fault of interest is related to an ancient, no longer active tectonic event. In most cases, the only way that these criteria can be satisfied is through the use of one or more techniques to age date soils or rocks that exhibit some kind of constraint on the tectonic features time of last activity.

Sites underlain by faults in the central and eastern U.S. have been particularly troublesome because damaging earthquakes are relatively rare in most of the region, and documented Quaternary surface faulting is almost nonexistent. It has been very difficult to determine the absolute ages of last fault movements because the faults are in Paleozoic or Mesozoic rocks with overlying material that could not be dated by techniques available at that time.

In the Charleston, New Madrid, Cape Ann, Ferland (Quebec), and Wabash Valley seismic areas, paleoseismic evidence has been found for prehistoric moderate to large earthquakes. Accurate age dating of soils affected by these events, using modern techniques has been used to estimate recurrence intervals, sizes, and levels of ground motions of these earthquakes. This information will be factored into probabilistic hazard analyses for these regions.

Similar studies have been done in the Pacific Northwest where coseismic faulting related to the Cascadia Subduction Zone does not break ground surface, but causes secondary effects such as subsidence, liquefaction, and uplift. Blind faulting in other parts of western U.S. such as at Coalinga, and Whittier Narrows also caused surface deformation although they didn't rupture



## C.1 (Continued)

ground surface.

Geologic age dating techniques are used extensively to determine the prehistoric activity of faults that break ground surface. For example, by dating soils that were offset by the aseismic Meers Fault in southern Oklahoma it was determined that this fault had experienced 2 substantial displacements within the last 3000 years, the most recent one occurring 1200 years ago, and that it had been quiescent for several tens of thousands of years prior to 3000 years ago.

Geologic age dating of land forms such as marine or fluvial terraces, landslides, etc. has been used to bracket the ages of deformation of these features and determine times and rates of uplift or subsidence. This activity was instrumental in resolving the seismic and geologic issues relative to the Diablo Canyon Nuclear Power Plant site.

During the past two decades, age dating methods that were available at the time Appendix A was published have been improved, new applications of older methods have been discovered, and new methods have been developed. The importance of geologic age determination to the relatively new science of paleoseismicity has accelerated research and new findings in the field of age dating of geologic materials. It is now time to put all this information together so that it can be used consistently and efficiently in the licensing of nuclear power plant sites.

#### 17 C.2.2 Examples of Age Dating Methods as Used in Past Licensing Activities of Specific Sites

The most common method used in determining the upper limit of the times of last displacements on faults during past licensing activities has been the Carbon 14 (C 14) method. In fact, the criterion, single movement in the last 35,000 years, was arbitrarily based on the approximate upper limit of this dating technique. The C 14 method has been used at most sites where late Quaternary organic material was found preserved in strata showing a direct or indirect association with the tectonic structure of interest.

In the eastern and central U.S. the C 14 method has been used in dating glacial drift, such as at Indian Point, Byron, Beaver Valley, and Nine Mile Point, and Pleistocene coastal plain stratigraphy such as at South Texas, and Allens Creek. Most recently, this method has been used to date paleoliquefaction events in the New Madrid and Charleston seismic zones and in the Wabash Valley. In the western U.S. the C 14 method has been used to date fluvial and marine terrace deposits at Trojan, Diablo Canyon, and San Onofre and to date prehistoric subduction zone earthquakes in the Pacific Northwest. During the 1970's, however, the C 14 method had a maximum range of only about 40,000 years.

## C.1 (Continued)

Since that time the age limit back in time has been increased and the accuracy of age determination has been improved (example, AMS method).

Another much utilized method of dating soil and rock, particularly in the eastern U.S., has been the potassium argon method (K AR). The lower limit of age determinability for this method, several hundred thousand years, was the basis for the multiple movement within the last 500,000 years criterion in Appendix A. This method was used in numerous nuclear power plant licensing activities such as North Anna, V.C. Summer, Seabrook Indian Point, and others. There have been three basic problems in using this method in the past: (1) the critical gap between its lower limit of age determination and the upper limit of the C 14 method; (2) the most commonly available mineral in association with faults was found to be zeolite, which readily take on and give off argon gas, thus often giving erroneous results in the materials' ages; and (3) being unable to reliably date fault gouge. It is anticipated that the resolution of the potassium argon method has been improved and other techniques have been developed to better fill the gap between it and C 14.

Phenological techniques such as tephrochronology and paleomagnetism have been used at sites to support dates derived by other methods or where materials needed for other methods was not available. Tephrochronology was used to determine the latest activity of tectonic structures and to estimate the volcanic hazard for sites at Hanford, Washington (FFTF and WNP 1-4) and the Pebble Springs site near Arlington, Oregon. A common problem encountered was that even during laboratory analysis, significant variations of characteristics within the ash beds made it difficult to define a specific ash layer and thus to correlate with a layer of the same age and source in other parts of the region.

Paleomagnetism was used at several sites such as the San Joaquin site, California to demonstrate, along with other data, that strata truncating suspected capable faults were several hundred thousand years old. It is anticipated that research with respect to phenological methods has improved the resolution of the results since they were last used to validate nuclear power plant sites.

The Rubidium-Strontium, Uranium-Thorium-Lead, and lead isotope methods of dating geologic materials have been used for sites in the eastern U.S. located on Paleozoic and Mesozoic bedrock terranes. Their application has been limited in that the upper limit of age dating potential is millions to tens of millions of years ago (pre Pleistocene). Uranium series methodologies do have the capability to date Pleistocene materials. They were not used to a large extent because during the period of heavy licensing in

## C.1 (Continued)

the 1970's and early 1980's the only applicability was to fossilized corals. Because it is possible to date certain materials as young as 5,000 years old and it is potentially applicable to other rocks, the uranium series methods are important in possibly helping to fill the void between 35,000 and 500,000 years in certain types of rocks.

The fission track method of dating rocks, although not used directly by the nuclear industry, has been used by others such as the USGS to date young igneous rocks that lay near nuclear power plant sites. These results sometimes were used to establish an upper limit of offset on faults truncated by the rock (Pebble Springs and Stanislaus). Because of relative accuracy and ability to date rocks within a wide range of dates it is important to include consideration of this method. Other techniques (like fission track) in which cell lattice properties are used to calculate ages of Quaternary material, are thermoluminescence and electron spin resonance (ESR).

Dendrochronology (tree ring analysis) has recently been used by NRC supported contractors in the New Madrid seismic zone and the Pacific Northwest to estimate the time of occurrences and recurrence intervals of large to great prehistoric, Holocene earthquakes. In the Pacific Northwest this method was used to fine-tune dates derived by the C 14 method.

Another biological process is racemization of amino acid, which has been important in age dating marine terraces along the Pacific coast by the USGS. Age dates determined by this and other methods have been used in licensing activities relative to San Onofre, Diablo Canyon, and Washington Nuclear 3.

Evolutionary processes such as palynology, paleontology, and archaeology have been important in licensing and research activities. In glaciated regions where till and lakebed deposits are common, palynology has been important in age dating late Quaternary deposits that are not offset by underlying bedrock faults (Byron). Archaeological sites have most recently been used to develop an age date range and estimate a recurrence interval of a large prehistoric earthquake in the Wabash Valley of southern Illinois and Indiana.

Chemical rate processes (weathering and the development of pedogenic soils) have been utilized in nuclear power licensing for the past two decades (McGuire, WNP-3, Byron, Diablo Canyon, etc.).

Most recently, these methods were used in the NRC supported paleoliquefaction investigations along with C 14, to interpret the ages of seismically induced paleoliquefaction features caused by prehistoric earthquakes in the Charleston seismic zone and other seismic zones within the Atlantic Seaboard. These methods are evolving and are being constantly improved. Due to their

## C.1 (Continued)

importance in determining the seismic and surface deformation hazard, they should be given careful consideration in this research.

Finally, analysis of geologic rate processes such as sedimentation, erosion, subsidence, uplift, development and deformation of landforms, have been important in past licensing activities (Diablo Canyon, Allens Creek, South Texas, Hanford sites, WNP-3, San Onofre, etc.) and should also be considered and an updated presentation provided.

Many of the methods discussed above have been modified and improved. It is also likely that new methods have been or are being developed. It is the intent of this procurement to acquire an updated presentation of all existing and new methods of age dating geologic materials.

## C.2.3 Summary

Age dating of geologic materials is one of the most important aspects in determining the potential for surface deformation at a site and the seismic potential of a local capable tectonic source.

It is also especially useful in the eastern U.S. and the Pacific Northwest, in assessing the age of indirect surface or near surface deformation such as subsidence, uplift, paleoliquefaction, caused by buried tectonic structures.

The purpose of this procurement is to obtain a report describing current methods of dating soils and rocks, including methods of obtaining and preserving samples, the theories behind the methods, accuracies of results, materials in which they are the most effective, age range of dates determinable, advantages and disadvantages of each, estimated costs, possible sources of services, and appropriate multi-technique approaches.

Although age dating of Paleozoic, Mesozoic, and Tertiary materials continues to be important, the greatest need is for a detailed discussion of current methods that can date Quaternary materials with the greatest amount of accuracy, especially to fill the gap between 40,000 and 500,000 years, such as latest improvements in the C 14 method; relatively new methods such as dendrochronology, electron spin resonance, etc.; latest information regarding geological rate processes such as sedimentation and erosion; chemical rate processes such as weathering and the development of pedogenic soils; and any new methods not mentioned herein that have the potential of accomplishing the goals of this procurement.

Finally, it is important to keep in mind that the basis and final authority for geological age dating is stratigraphic chronology,

## C.1 (Continued)

and a summary discussion of the latest concepts of stratigraphic nomenclature with the latest definitions of terms should be included in the report (Task 3).

## C.3 CONTRACT OBJECTIVES

The goal of this procurement is to search out and gather information on all current methods that show potential for dating geologic materials. Particular importance is placed on those methods most appropriate for determining ages within the Quaternary. These methods should be described in detail and this description should also include a discussion of the methods for collecting, preserving and testing samples, the age range for each method, degree of accuracy, and the materials to which each best apply. This information will be the basis for a regulatory guide to be used by utilities in validating potential nuclear power plant sites and by the NRC staff in reviewing that evaluation.

## C.4 SCOPE OF WORK

The contractor shall provide all labor, equipment, and services to conduct the Tasks described below. When conducting field work such as collecting and geologic mapping the contractor is: (1) responsible for obtaining the necessary permission from the individual land owners in order to conduct field investigations, (2) responsible for returning the field area to original status, and (3) is liable for any damages to the field. During this project, the contractor shall verbally, within 2 days of occurrence, notify the NRC Project Officer regarding any developments or findings that the contractor considers to be unusual.

The scope of the research should include information regarding all techniques that are currently used to determine the ages of geologic materials and any new methods that have the potential for accomplishing this purpose. Primary emphasis should be placed on those methods that are most appropriate for age dating geologic materials within the age range of the Quaternary system, however, methods that determine older ages are important. Most of this research will be a literature search and interviews with those who are knowledgeable about specific methods. However, the contractor shall perform limited field work to collect samples and conduct supportive geologic mapping, and perform laboratory experiments to test or confirm the appropriateness of new methods or modifications of old methods.

The essential parts of the program can be summarized as follows:

1. Establish a database for age dating soils and rocks by literature search and interviews with those who have expertise in the various techniques.

## C.1 (Continued)

2. Perform limited laboratory tests to verify the applicability of new methods or modifications of older methods for use in the assessments of the seismic and geologic hazards for potential nuclear power plant sites.
3. Prepare a report summarizing the activities and the results of Tasks 1 and 2 and the basis for these findings.

## C.4.1 Task 1: Collection of Information

The contractor shall conduct a literature review and a series of interviews with knowledgeable scientists to assemble the most up-to-date information regarding techniques to age date geologic materials, particularly those best suited for determining Quaternary ages. A report summarizing these findings shall be submitted to the NRC Project Officer (see Section F). The specific information required is: a detailed description of each method and the materials and ages to which each method is most applicable; a discussion of the theory behind each method; discussions of the resolution or levels of accuracy of each procedure; advantages and disadvantages of each technique; a list of possible sources of age dating services (agencies or commercial laboratories); and an estimated costs for each method. The contractor shall not commence work on Task 2 and 3 without prior written approval of the NRC Project Officer.

Estimated Completion Date: 6 months from contract initiation.

## C.4.2 Task 2: Testing of New Methods

The contractor shall identify modifications and improvements or possible improvements in previously used methods and new techniques that may have application in dating geologic materials with respect to nuclear power plant site validation. Where the contractor determines it necessary to demonstrate that applicability, the contractor shall carefully plan and perform field and laboratory tests, and experiments with the goal of validating the method. For example, assume that a new method to date fault gouge has been proposed but its applicability to dating the last displacements on faults identified in excavations for a nuclear power plant has not been demonstrated. The contractor shall conduct a field experiment to validate this method at a site that is analogous to a nuclear power plant site.

Estimated Completion Date: 4 months from initiation of Task 2 (10 months from contract initiation).

## C.4.3 Task 3: Preparation of a Report

The contractor shall prepare a report containing the results of

## C.1 (Continued)

the literature search, the interviews with experts, and the field and laboratory tests (see Section F, Deliverables). The report shall contain an analysis of this information on age dating geologic materials described in Task 1, and recommendations as to how the information should be applied in licensing nuclear power plant sites (Task 2). The report shall be prepared in a NUREG format (Attachment 3). The report may also serve as the primary basis for a regulatory guide. This guide will be used to guide the nuclear industry and the regulatory staff in state-of-the-art methods to date geologic materials used in defining the seismic and geologic hazard for nuclear power plant sites.

Estimated Completion Date: 2 months from initiation of Task 3 (12 months from contract initiation).

## C.6 MEETINGS AND TRAVEL

In addition to travel to conduct the work needed to fulfill the requirements of this contract, the following trips/meetings will be held during the period of performance.

1. A kickoff meeting within 30 days from the effective date of the contract.
2. A meeting at the conclusion of Task 1 to discuss the report submitted for Task 1 and the plans for Task 2.
3. A meeting to discuss field and laboratory work results (Task 2).
4. One or two meetings for technical information exchange such as the Water Safety Research Meeting, scheduled for late October, 1995 or 1996, to present the results of the research to a peer audience.
5. A meeting at the conclusion of Task 3 to discuss the report.

NOTE: It is estimated that each meeting will be for one day at the NRC Headquarters Office in Rockville, Maryland.

[End of Clause]

## C.2 NRCAR 2052.215-83 TRAVEL APPROVALS (JAN 1993)

- (a) All domestic travel requires the prior approval of the project officer.
- (b) All foreign travel must be approved in advance by the NRC on

## SECTION D - PACKAGING AND MARKING

## D.1 PACKAGING AND MARKING (MAR 1987)

The Contractor shall package material for shipment to the NRC in such a manner that will ensure acceptance by common carrier and safe delivery at destination. Containers and closures shall comply with the Interstate Commerce Commission Regulations, Uniform Freight Classification Rules, or regulations of other carriers as applicable to the mode of transportation. On the front of the package, the Contractor shall clearly identify the contract number under which the product is being provided.

[End of Clause]



## SECTION E - INSPECTION AND ACCEPTANCE

## E.1 52.252-2 CLAUSES INCORPORATED BY REFERENCE (JUN 1988)

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available.

## I. FEDERAL ACQUISITION REGULATION (48 CFR CHAPTER 1) CLAUSES

NUMBER	TITLE	DATE
52.246-5	INSPECTION OF SERVICES - COST-REIMBURSEMENT	APR 1984

[End of Clause]

## E.2 PLACE OF INSPECTION AND ACCEPTANCE (MAR 1987)

Inspection and acceptance of the deliverable items to be furnished hereunder shall be made by the Project Officer at the destination.

[End of Clause]

## SECTION F - DELIVERIES OR PERFORMANCE

## F.1 52.252-2 CLAUSES INCORPORATED BY REFERENCE (JUN 1988)

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available.

## I. FEDERAL ACQUISITION REGULATION (48 CFR CHAPTER 1) CLAUSES

NUMBER	TITLE	DATE
52.212-13	STOP-WORK ORDER Alternate I (APR 1984)	AUG 1989

[End of Clause]

## F.2 NRCAR 2052.212-70 PREPARATION OF TECHNICAL REPORTS (JAN 1993)

All technical reports required by Section C and all Technical Progress Reports required by Section F are to be prepared in accordance with the attached Management Directive 3.8, "Unclassified Contractor and Grantee Publications in the NUREG Series." Management Directive 3.8 is not applicable to any Contractor Spending Plan (CSP) and any Financial Status Report that may be included in this contract. (See Section J for List of Attachments).

[End of Clause]

## F.3 NRCAR 2052.212-71 TECHNICAL PROGRESS REPORT

The contractor shall provide a monthly Technical Progress Report to the project officer and the contracting officer. The report is due within 15 calendar days after the end of the report period and must identify the title of the project, the contract number, Financial Identification Number (FIN), project manager and/or principal investigator, the contract period of performance, and the period covered by the report. Each report must include the following for each discrete task/task order:

- (a) A listing of the efforts completed during the period, and milestones reached or, if missed, an explanation provided;
- (b) Any problems or delays encountered or anticipated and recommendations for resolution. If the recommended resolution involves a contract modification, e.g., change in work

**F.3 (Continued)**

requirements, level of effort (cost) or schedule delay, the contractor shall submit a separate letter to the contracting officer identifying the required change and estimated cost impact.

- (c) A summary of progress to date; and
- (d) Plans for the next reporting period.

[End of Clause]

**F.4 NRCAR 2052.212-72 FINANCIAL STATUS REPORT**

The contractor shall provide a monthly Financial Status Report to the project officer and the contracting officer. The report is due within 15 calendar days after the end of the report period and must identify the title of the project, the contract number, Financial Identification Number (FIN), project manager and/or principal investigator, the contract period of performance, and the period covered by the report. Each report must include the following for each discrete task:

- (a) Provide total estimated cost (value) of the project as reflected in the contract, the amount of funds available in the contract to date, and the balance of funds required to complete the work as follows:
  - (1) Total estimated contract amount.
  - (2) Total funds obligated to date.
  - (3) Total costs incurred this reporting period.
  - (4) Total costs incurred to date.
  - (5) Provide a detail of all direct and indirect costs incurred during the reporting period for the entire contract or each task, if it is a task ordering contract.
  - (6) Balance of obligations remaining.
  - (7) Balance of funds required to complete contract/task order.
  - (8) Contractor Spending Plan (CSP) status:
    - (i) Projected percentage of completion cumulative through the report period for the project/task order as reflected in the current CSP.
    - (ii) Indicate if there has been a significant change in

## F.4 (Continued)

the original CSP projection in either dollars or percentage of completion. Identify the change, the reasons for the change, whether there is any projected overrun, and when additional funds would be required. If there have been no changes to the original NRC-approved CSP projections, a written statement to that effect is sufficient in lieu of submitting a detailed response to item 8.

- (9) A revised CSP is required with the Financial Status Report whenever the contractor or the contracting officer has reason to believe that the total cost for performance of this contract will be either greater or substantially less than what had been previously estimated.
- (b) If the data in this report indicates a need for additional funding beyond that already obligated, this information may only be used as support to the official request for funding required in accordance with the Limitation of Cost (LOC) Clause (FAR 52.232-20) or the Limitation of Funds (LOF) Clause FAR 52.232-22.

[End of Clause]

## F.5 PLACE OF DELIVERY--REPORTS (JUN 1988)

The items to be furnished hereunder shall be delivered, with all charges paid by the Contractor, to:

- (a) Project Officer (3 copies)

U.S. Nuclear Regulatory Commission  
Division of Engineering  
Office of Nuclear Regulatory Research  
Mail Stop NLS-217A  
Washington, D.C. 20555

- (b) Contracting Officer (1 copy)

[End of Clause]

## F.6 DURATION OF CONTRACT PERIOD (MAR 1987)

This contract shall commence on the effective date and will expire one year thereafter.

[End of Clause]

## F.7 DELIVERABLES

**F.7 (Continued)**

The following is the schedule in which reports shall be submitted:

- o Task 1 - Due 5 1/2 months from contract initiation.
- o Task 3 - Due 30 days prior to task expiration (11 months from contract initiation).

NOTE: All task reports listed above shall be prepared in accordance with Directive 3.8 (Attachment 3).

**F.8 ADDITIONAL REPORTING REQUIREMENTS****Quarterly Reports**

The contractor shall provide quarterly progress reports in five(5) copies to the NRC Project Officer and one copy to the Contracting Officer. The report shall cover each three month period beginning with the effective date of the contract and be submitted within 15 days after close of the period.

The report shall enable the reviewers and other readers to grasp the main ideas and findings.

## SECTION G - CONTRACT ADMINISTRATION DATA

G.1 NRCAR 2052.215-71 PROJECT OFFICER AUTHORITY  
(JAN 1993)

- (a) The contracting officer's authorized representative hereinafter referred to as the project officer for this contract is:

Name: Richard McMullen

Address: U.S. Nuclear Regulatory Commission  
Division of Engineering  
Office of Nuclear Regulatory Research  
Mail Stop NLS-217A  
Washington, D.C. 20555

Telephone Number: (301) 492-3808

- (b) Performance of the work under this contract is subject to the technical direction of the NRC project officer. The term technical direction is defined to include the following:

- (1) Technical direction to the contractor which shifts work emphasis between areas of work or tasks, fills in details, or otherwise serves to accomplish the contractual statement of work.
- (2) Provide advice and guidance to the contractor in the preparation of drawings, specifications, or technical portions of the work description.
- (3) Review and, where required by the contract, approval of technical drawings, specifications, and technical information to be delivered by the contractor to the Government under the contract.

- (c) Technical direction must be within the general statement of work stated in the contract. The project officer does not have the authority to and may not issue any technical direction which:

- (1) Constitutes an assignment of work outside the general scope of the contract.
- (2) Constitutes a change as defined in the "Changes" clause of this contract.
- (3) In any way causes an increase or decrease in the total

## G.1 (Continued)

estimated contract cost, the fixed fee, if any, or the time required for contract performance.

- (4) Changes any of the expressed terms, conditions, or specifications of the contract.
  - (5) Terminates the contract, settles any claim or dispute arising under the contract, or issues any unilateral directive whatever.
- (d) All technical directions must be issued in writing by the project officer or must be confirmed by the project officer in writing within ten (10) working days after verbal issuance. A copy of the written direction must be furnished to the contracting officer.
  - (e) The contractor shall proceed promptly with the performance of technical directions duly issued by the project officer in the manner prescribed by this clause and within the project officer's authority under the provisions of this clause.
  - (f) If, in the opinion of the contractor, any instruction or direction issued by the project officer is within one of the categories as defined in paragraph (c) of this section, the contractor may not proceed but shall notify the contracting officer in writing within five (5) working days after the receipt of any instruction or direction and shall request the contracting officer to modify the contract accordingly. Upon receiving the notification from the contractor, the contracting officer shall issue an appropriate contract modification or advise the contractor in writing that, in the contracting officer's opinion, the technical direction is within the scope of this article and does not constitute a change under the "Changes" clause.
  - (g) Any unauthorized commitment or direction issued by the project officer may result in an unnecessary delay in the contractor's performance and may even result in the contractor expending funds for unallowable costs under the contract.
  - (h) A failure of the parties to agree upon the nature of the instruction or direction or upon the contract action to be taken with respect there to is subject to FAR 52.233-1 - Disputes.
  - (i) In addition to providing technical direction as defined in paragraph (b) of the section, the project officer shall:
    - (1) Monitor the contractor's technical progress, including surveillance and assessment of performance, and recommend to the contracting officer changes in requirements.

## G.1 (Continued)

- (2) Assist the contractor in the resolution of technical problems encountered during performance.
- (3) Review all costs requested for reimbursement by the contractor and submit to the contracting officer recommendations for approval, disapproval, or suspension of payment for supplies and services required under this contract.

[End of Clause]

G.2 NRCAR 2052.215-82 TRAVEL REIMBURSEMENT  
- ALTERNATE 1 (JAN 1993)

- (a) The contractor is encouraged to use Government contract airlines, AMTRAK rail services, and discount hotel/motel properties in order to reduce the cost of travel under this contract. The contracting officer shall, upon request, provide each traveler with a letter of identification which is required in order to participate in this program. The Federal Travel Directory (FTD) identifies carriers, contract fares, schedules, payment conditions, and hotel/motel properties which offer their services and rates to Government contractor personnel traveling on official business under this contract. The FTD, which is issued monthly, may be purchased from the U.S. Government Printing Office, Washington, DC 20402.
- (b) The contractor will be reimbursed for reasonable travel costs incurred directly and specifically in the performance of this contract. The cost limitations for travel costs are determined in accordance with the specific travel regulations cited in FAR 31.205-46, as are in effect on the date of the trip. Travel costs for research and related activities performed at State and nonprofit institutions, in accordance with Section 12 of Pub. L. 100-679, shall be charged in accordance with the contractor's institutional policy to the degree that the limitations of Office of Management and Budget (OMB) guidance are not exceeded. Applicable guidance documents include OMB Circular A-87, Cost Principles for State and Local Governments; OMB Circular A-122, Cost Principles for Nonprofit Organizations; and OMB Circular A-21, Cost Principles for Educational Institutions.
- (c) When the Government changes the Federal Travel Regulations, or other applicable regulations, it is the responsibility of the contractor to notify the contracting officer in accordance with the Limitations of Cost clause of this contract if the contractor will be unable to make all of the approved trips and remain within the cost and fee limitations of this contract due to the changes.



## G.2 (Continued)

(End of Clause)

## G.3 NRCAR 2052.216-71 INDIRECT COST RATES (JAN 1993)

- (a) Pending the establishment of final indirect rates which must be negotiated based on audit of actual costs, the contractor shall be reimbursed for allowable indirect costs as follows:

Category	Rate	Base	Applicable Period
Overhead/Fringe Benefit	138%	Total Direct Labor	Effective Date thru Expiration Date
G&A	4.39%	Total Direct Cost & Overhead	Effective Date thru Expiration Date

- (b) The contracting officer may adjust the above rates as appropriate during the term of the contract upon acceptance of any revisions proposed by the contractor. It is the contractor's responsibility to notify the contracting officer in accordance with FAR 52.232-20, Limitation of Cost, or FAR 52.232-22, Limitation of Funds, as applicable, if these changes affect performance of work within the established cost or funding limitations.

[End of Clause]

## SECTION H - SPECIAL CONTRACT REQUIREMENTS

H.1 NRCAR 2052.209-73 CONTRACTOR ORGANIZATIONAL  
CONFLICTS OF INTEREST (JAN 1993)

- (a) Purpose. The primary purpose of this clause is to aid in ensuring that the contractor:
- (1) Is not placed in a conflicting role because of current or planned interests (financial, contractual, organizational, or otherwise) which relate to the work under this contract; and
  - (2) Does not obtain an unfair competitive advantage over other parties by virtue of its performance of this contract.
- (b) Scope. The restrictions described apply to performance or participation by the contractor, as defined in 48 CFR 2009.570-2 in the activities covered by this clause.
- (c) Work for others.
- (1) Notwithstanding any other provision of this contract, during the term of this contract the contractor agrees to forego entering into consulting or other contractual arrangements with any firm or organization, the result of which may give rise to a conflict of interest with respect to the work being performed under this contract. The contractor shall ensure that all employees under this contract abide by the provision of this clause. If the contractor has reason to believe with respect to itself or any employee that any proposed consultant or other contractual arrangement with any firm or organization may involve a potential conflict of interest, the contractor shall obtain the written approval of the contracting officer before the execution of such contractual arrangement.
  - (2) The contractor may not represent, assist, or otherwise support an NRC licensee or applicant undergoing an NRC audit, inspection, or review where the activities that are the subject of the audit, inspection or review are the same as or substantially similar to the services within the scope of this contract (or task order as appropriate), except where the NRC licensee or applicant requires the contractor's support to explain or defend the contractor's prior work for the utility or other entity which NRC questions.

## H.1 (Continued)

- (3) When the contractor performs work for the NRC under this contract at any NRC licensee or applicant site, the contractor shall neither solicit nor perform work in the same or similar technical area for that licensee or applicant organization for a period commencing with the award of the task order or beginning of work on the site (if not a task order contract) and ending one year after completion of all work under the associated task order, or last time at the site (if not a task order contract).
  - (4) When the contractor performs work for the NRC under this contract at any NRC licensee or applicant site,
    - (i) The contractor may not solicit work at that site for that licensee or applicant during the period of performance of the task order or the contract, as appropriate.
    - (ii) The contractor may not perform work at that site for that licensee or applicant during the period of performance of the task order or the contract, as appropriate, and for one year thereafter.
    - (iii) Notwithstanding the foregoing, the contracting officer may authorize the contractor to solicit or perform this type of work (except work in the same or similar technical area) if the contracting officer determines that the situation will not pose a potential for technical bias or unfair competitive advantage.
- (d) Disclosure after award.
- (1) The contractor warrants that to the best of its knowledge and belief, and except as otherwise set forth in this contract, it does not have any organizational conflicts of interest as defined in 48 CFR 209.570-2.
  - (2) The contractor agrees that, if after award, it discovers organizational conflicts of interest with respect to this contract, it shall make an immediate and full disclosure in writing to the contracting officer. This statement must include a description of the action which the contractor has taken or proposes to take to avoid or mitigate such conflicts. The NRC may, however, terminate the contract if termination is in the best interest of the government.
  - (3) It is recognized that the scope of work of a task-order-type contract necessarily encompasses a broad

## H.1 (Continued)

spectrum of activities. Consequently, if this is a task-order-type contract, the contractor agrees that it will disclose all proposed new work involving NRC licensees or applicants which comes within the scope of work of the underlying contract. Further, if this contract involves work at a licensee or applicant site, the contractor agrees to exercise diligence to discover and disclose any new work at that licensee or applicant site. This disclosure must be made before the submission of a bid or proposal to the utility or other regulated entity and must be received by the NRC at least 15 days before the proposed award date in any event, unless a written justification demonstrating urgency and due diligence to discover and disclose is provided by the contractor and approved by the contracting officer. The disclosure must include the statement of work, the dollar value of the proposed contract, and any other documents that are needed to fully describe the proposed work for the regulated utility or other regulated entity. NRC may deny approval of the disclosed work only when the NRC has issued a task order which includes the technical area and, if site-specific, the site, or has plans to issue a task order which includes the technical area and, if site-specific, the site, or when the work violates paragraphs (c)(2), (c)(3) or (c)(4) of this section.

(e) Access to and use of information.

- (1) If in the performance of this contract, the contractor obtains access to information, such as NRC plans, policies, reports, studies, financial plans, internal data protected by the Privacy Act of 1974 (5 U.S.C. Section 552a (1988)), or the Freedom of Information Act (5 U.S.C. Section 552 (1986)), the contractor agrees not to:
  - (i) Use this information for any private purpose until the information has been released to the public;
  - (ii) Compete for work for the Commission based on the information for a period of six months after either the completion of this contract or the release of the information to the public, whichever is first;
  - (iii) Submit an unsolicited proposal to the Government based on the information until one year after the release of the information to the public; or
  - (iv) Release the information without prior written approval by the contracting officer unless the information has previously been released to the

## H.1 (Continued)

public by the NRC.

- (2) In addition, the contractor agrees that, to the extent it receives or is given access to proprietary data, data protected by the Privacy Act of 1974 (5 U.S.C. Section 552a (1988)), or the Freedom of Information Act (5 U.S.C. Section 552 (1986)), or other confidential or privileged technical, business, or financial information under this contract, the contractor shall treat the information in accordance with restrictions placed on use of the information.
- (3) Subject to patent and security provisions of this contract, the contractor shall have the right to use technical data it produces under this contract for private purposes provided that all requirements of this contract have been met.
- (f) Subcontracts. Except as provided in 48 CFR 2009.570-2, the contractor shall include this clause, including this paragraph, in subcontracts of any tier. The terms contract, contractor, and contracting officer, must be appropriately modified to preserve the Government's rights.
- (g) Remedies. For breach of any of the above restrictions, or for intentional nondisclosure or misrepresentation of any relevant interest required to be disclosed concerning this contract or for such erroneous representations that necessarily imply bad faith, the Government may terminate the contract for default, disqualify the contractor from subsequent contractual efforts, and pursue other remedies permitted by law or this contract.
- (h) Waiver. A request for waiver under this clause must be directed in writing to the contracting officer in accordance with the procedures outlined in 48 CFR 2009.570-9.
- (i) Follow-on effort. The contractor shall be ineligible to participate in NRC contracts, subcontracts, or proposals therefor (solicited or unsolicited), which stem directly from the contractor's performance of work under this contract. Furthermore, unless so directed in writing by the contracting officer, the contractor may not perform any technical consulting or management support services work or evaluation activities under this contract on any of its products or services or the products or services of another firm if the contractor has been substantially involved in the development or marketing of the products or services.
- (1) If the contractor, under this contract, prepares a complete or essentially complete statement of work or

## H.1 (Continued)

specifications, the contractor is not eligible to perform or participate in the initial contractual effort which is based on the statement of work or specifications. The contractor may not incorporate its products or services in the statement of work or specifications unless so directed in writing by the contracting officer, in which case the restrictions in this paragraph do not apply.

- (2) Nothing in this paragraph precludes the contractor from offering or selling its standard commercial items to the Government.

[End of Clause]

## H.2 NRCAR 2052.215-70 KEY PERSONNEL (JAN 1993)

- (a) The following individuals are considered to be essential to the successful performance of the work hereunder:

Dr. William R. Lettis  
Dr. Jay S. Noller  
Dr. Janet M. Sowers  
Mr. Keith I. Kelson

The contractor agrees that personnel may not be removed from the contract work or replaced without compliance with paragraphs (b) and (c) of this section.

- (b) If one or more of the key personnel, for whatever reason, becomes, or is expected to become, unavailable for work under this contract for a continuous period exceeding 30 work days, or is expected to devote substantially less effort to the work than indicated in the proposal or initially anticipated, the contractor shall immediately notify the contracting officer and shall, subject to the concurrence of the contracting officer, promptly replace the personnel with personnel of at least substantially equal ability and qualifications.
- (c) Each request for approval of substitutions must be in writing and contain a detailed explanation of the circumstances necessitating the proposed substitutions. The request must also contain a complete resume for the proposed substitute and other information requested or needed by the contracting officer to evaluate the proposed substitution. The contracting officer or his/her authorized representative shall evaluate the request and promptly notify the contractor of his or her approval or disapproval in writing.
- (d) If the contracting officer determines that suitable and timely

## H.2 (Continued)

replacement of key personnel who have been reassigned, terminated, or have otherwise become unavailable for the contract work is not reasonably forthcoming, or that the resultant reduction of productive effort would be so substantial as to impair the successful completion of the contract or the service order, the contract may be terminated by the contracting officer for default or for the convenience of the Government, as appropriate. If the contracting officer finds the contractor at fault for the condition, the contract price or fixed fee may be equitably adjusted downward to compensate the Government for any resultant delay, loss, or damage.

[End of Clause]

H.3 GOVERNMENT FURNISHED EQUIPMENT/PROPERTY - NONE PROVIDED  
(JUN 1988)

The Government will not provide any equipment/property under this contract.

[End of Clause]

## PART II - CONTRACT CLAUSES

## SECTION I - CONTRACT CLAUSES

## I.1 52.252-2 CLAUSES INCORPORATED BY REFERENCE (JUN 1988)

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available.

## I. FEDERAL ACQUISITION REGULATION (48 CFR CHAPTER 1) CLAUSES

NUMBER	TITLE	DATE
52.202-1	DEFINITIONS	SEP 1991
52.203-1	OFFICIALS NOT TO BENEFIT	APR 1984
52.203-3	GRATUITIES	APR 1984
52.203-5	COVENANT AGAINST CONTINGENT FEES	APR 1984
52.203-6	RESTRICTIONS ON SUBCONTRACTOR SALES TO THE GOVERNMENT	JUL 1985
52.203-7	ANTI-KICKBACK PROCEDURES	OCT 1988
52.203-10	PRICE OR FEE ADJUSTMENT FOR ILLEGAL OR IMPROPER ACTIVITY	SEP 1990
52.203-12	LIMITATION ON PAYMENTS TO INFLUENCE CERTAIN FEDERAL TRANSACTIONS	JAN 1990
52.209-6	PROTECTING THE GOVERNMENT'S INTEREST WHEN SUBCONTRACTING WITH CONTRACTORS DEBARRED, SUSPENDED, OR PROPOSED FOR DEBARMENT	NOV 1992
52.215-1	EXAMINATION OF RECORDS BY COMPTROLLER GENERAL	FEB 1993
52.215-2	AUDIT - NEGOTIATION	FEB 1993
52.215-22	PRICE REDUCTION FOR DEFECTIVE COST OR PRICING DATA	JAN 1991
52.215-24	SUBCONTRACTOR COST OR PRICING DATA	DEC 1991
52.215-27	TERMINATION OF DEFINED BENEFIT PENSION PLANS	SEP 1989
52.215-33	ORDER OF PRECEDENCE	JAN 1986
52.215-39	REVERSION OR ADJUSTMENT OF PLANS FOR POSTRETIREMENT BENEFITS OTHER THAN PENSIONS (PRB)	JUL 1991
52.216-7	ALLOWABLE COST AND PAYMENT	JUL 1991
52.216-11	COST CONTRACT - NO FEE	APR 1984
52.219-8	UTILIZATION OF SMALL BUSINESS CONCERNS AND SMALL DISADVANTAGED BUSINESS CONCERNS	FEB 1990



## I.1 (Continued)

NUMBER	TITLE	DATE
52.219-13	UTILIZATION OF WOMEN-OWNED SMALL BUSINESSES	AUG 1986
52.220-3	UTILIZATION OF LABOR SURPLUS AREA CONCERNS	APR 1984
52.222-3	CONVICT LABOR	APR 1984
52.222-26	EQUAL OPPORTUNITY	APR 1984
52.222-35	AFFIRMATIVE ACTION FOR SPECIAL DISABLED AND VIETNAM ERA VETERANS	APR 1984
52.222-36	AFFIRMATIVE ACTION FOR HANDICAPPED WORKERS	APR 1984
52.222-37	EMPLOYMENT REPORTS ON SPECIAL DISABLED VETERANS AND VETERANS OF THE VIETNAM ERA	JAN 1988
52.223-2	CLEAN AIR AND WATER	APR 1984
52.223-6	DRUG-FREE WORKPLACE	JUL 1990
52.225-11	RESTRICTIONS ON CERTAIN FOREIGN PURCHASES	MAY 1992
52.227-1	AUTHORIZATION AND CONSENT	APR 1984
52.227-2	NOTICE AND ASSISTANCE REGARDING PATENT AND COPYRIGHT INFRINGEMENT	APR 1984
52.228-7	INSURANCE - LIABILITY TO THIRD PERSONS	APR 1984
52.232-17	INTEREST	JAN 1991
52.232-22	LIMITATION OF FUNDS	APR 1984
52.232-23	ASSIGNMENT OF CLAIMS	JAN 1986
52.232-25	PROMPT PAYMENT	SEP 1992
52.232-28	ELECTRONIC FUNDS TRANSFER PAYMENT METHODS	APR 1989
52.233-1	DISPUTES	DEC 1991
52.233-3	PROTEST AFTER AWARD Alternate I (JUN 1985)	JUN 1985
52.242-1	NOTICE OF INTENT TO DISALLOW COSTS	APR 1984
52.242-13	BANKRUPTCY	APR 1991
52.243-2	CHANGES - COST-REIMBURSEMENT Alternate I (APR 1984)	AUG 1987
52.244-2	SUBCONTRACTS (COST-REIMBURSEMENT AND LETTER CONTRACTS)	JUL 1985
52.246-25	LIMITATION OF LIABILITY - SERVICES	APR 1984
52.249-6	TERMINATION (COST-REIMBURSEMENT)	MAY 1986
52.253-1	COMPUTER GENERATED FORMS	JAN 1991

[End of Clause]

I.2 52.203-9 REQUIREMENT FOR CERTIFICATE OF PROCUREMENT  
INTEGRITY--MODIFICATION (NOV 1990)

(a) Definitions. The definitions set forth in FAR 3.104-4 are hereby incorporated in this clause.

## I.2 (Continued)

- (b) The Contractor agrees that it will execute the certification set forth in paragraph (c) of this clause when requested by the Contracting Officer in connection with the execution of any modification of this contract.
- (c) Certification. As required in paragraph (b) of this clause, the officer or employee responsible for the modification proposal shall execute the following certification:

CERTIFICATE OF PROCUREMENT INTEGRITY--  
MODIFICATION (NOV 1990)

(1) I, [Name of certifier] \_\_\_\_\_, am the officer or employee responsible for the preparation of this modification proposal and hereby certify that, to the best of my knowledge and belief, with the exception of any information described in this certification, I have no information concerning a violation or possible violation of subsection 27(a), (b), (d), or (f) of the Office of Federal Procurement Policy Act, as amended\* (41 U.S.C. 423), (hereinafter referred to as "the Act"), as implemented in the FAR, occurring during the conduct of this procurement (contract and modification number).

(2) As required by subsection 27(e)(1)(B) of the Act, I further certify that to the best of my knowledge and belief, each officer, employee, agent, representative, and consultant of [Name of Offeror] \_\_\_\_\_ who has participated personally and substantially in the preparation or submission of this proposal has certified that he or she is familiar with, and will comply with, the requirements of subsection 27(a) of the Act, as implemented in the FAR, and will report immediately to me any information concerning a violation or possible violation of subsections 27(a), (b), (d), or (f) of the Act, as implemented in the FAR, pertaining to this procurement.

(3) Violations or possible violations: (Continue on plain bond paper if necessary and label Certificate of Procurement Integrity--Modification (Continuation Sheet), ENTER NONE IF NONE EXISTS)

I.2 (Continued)

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[Signature of the officer or employee responsible for the modification proposal and date]

[Typed name of the officer or employee responsible for the modification proposal]

\* Subsections 27(a), (b), and (d) are effective on December 1, 1990. Subsection 27(f) is effective on June 1, 1991.

THIS CERTIFICATION CONCERNS A MATTER WITHIN THE JURISDICTION OF AN AGENCY OF THE UNITED STATES AND THE MAKING OF A FALSE, FICTITIOUS, OR FRAUDULENT CERTIFICATION MAY RENDER THE MAKER SUBJECT TO PROSECUTION UNDER TITLE 18, UNITED STATES CODE, SECTION 1001.

- (d) In making the certification in paragraph (2) of the certificate, the officer or employee of the competing Contractor responsible for the offer or bid, may rely upon a one-time certification from each individual required to submit a certification to the competing Contractor, supplemented by periodic training. These certifications shall be obtained at the earliest possible date after an individual required to certify begins employment or association with the contractor. If a contractor decides to rely on a certification executed prior to the suspension of section 27 (i.e., prior to December 1, 1989), the Contractor shall ensure that an individual who has so certified is notified that section 27 has been reinstated. These certifications shall be maintained by the Contractor for a period of 6 years from the date a certifying employee's employment with the company ends or, for an agency, representative, or consultant, 6 years from the date such individual ceases to act on behalf of the contractor.
- (e) The certification required by paragraph (c) of this clause is a material representation of fact upon which reliance will be placed in executing this modification.

[End of Clause]

PART III - LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACHMENTS

SECTION J - LIST OF ATTACHMENTS

J.1 ATTACHMENTS (MAR 1987)

<u>Attachment Number</u>	<u>Title</u>
1	Billing Instructions
2	NRC Contractor Organizational Conflicts of Interest
3	NRC Handbook 3.8