AWARD/CONTRA	CT	THIS CONTRACT IS RATED UNDER DPAS (15 CFR 350)		RATING N	/A	PAGE :	OF PAGES
2. CONTRACT NO. (Proc. Inst. Ident.)		3. EFFECTIVE DATE	4. RE	QUISITION/PURCHASE RE			
NRC-04-02-062	·	01-07-2002					
5. ISSUED BY			6. ADMINISTERED BY	(If other than Item 5)			
U.S. Nuclear Regulatory Com	CODE		Same as Block		CODE		<u> </u>
Division of Contracts and P Attn: T-7-I-2							
Contract Management Branch		•					
Washington DC 20535							
7. NAME AND ADDRESS OF CONTRACTOR	(No., street, city, cou	inty, State and ZIP Code)		8. DELIVERY			
Engineering Mechanics	Corp of Colum	ihus					
3518 Riverside Drive	corp. or corum	was		FOB ORIGIN	X	OTHER	(See below)
Suite 202				9. DISCOUNT FOR PROMP	T PAYMENT		
Columbus OH 43221-1735	5						
				Net 30 days			
				10. SUBMIT INVOICES	ITEM		
				(4 copies unless otherwise	-		
		· .		specified)	5		
CODE	FACILITY			TO THE ADDRESS SHOW	V IN:		
11. SHIP TO/MARK FOR	CODE		12. PAYMENT WILL BE MA		CODE		
U.S. Nuclear Regulatory Com Office of Nuclear Regulator				Regulatory Commi Chief Financial			
Mail Stop T 10E10	ry Kesearch			Acctng. Section			
Markington DC 20555			Washington DO	20555			
Washington DC 20555 13 AUTHORITY FOR USING OTHER THAN FULL)	AND OPEN COMPETITION	V:	Washington DC 14.ACCOUNTING AND AP		 		
			APPN: 31X0200.2	60 B&R: 2601511		ODE: Y	
10 U.S.C. 2304(c)()	X 41 U.S.C. 253((c)(1)	BOC: 252A RES	ID #: RES-02-30	1 Obligate	d Amt.	\$126,000
							
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PART I - THE SCHEDULE

SECTION B - SUPPLIES OR SERVICES AND PRICE/COSTS

B.1 PROJECT TITLE

The title of this project is as follows:

CRDM Cracking

B.2 BRIEF DESCRIPTION OF WORK (MAR 1987)

To develop a deterministic model for performing circumferential crack evaluations in CRDMs. This will provide a means for the NRC staff to make an independent assessment of industry submittals to the bulletin.

B.3 CONSIDERATION AND OBLIGATION--COST PLUS FIXED FEE (JUN 1988) ALTERNATE I (JUN 1991)

- (a) The total estimated cost to the Government for full performance of this contract is \$231,257.00, of which the sum of \$213,140 represents the estimated reimbursable costs, and of which \$18,117 represents the fixed fee.
- (b) There shall be no adjustment in the amount of the Contractor's fixed fee by reason of differences between any estimate of cost for performance of the work under this contract and the actual cost for performance of that work.
- (c) The amount currently obligated by the Government with respect to this contract is \$126,000.00, of which the sum of \$111,176.48 represents the estimated reimbursable costs, and of which \$14,823.52 represents the fixed fee.
- (d) It is estimated that the amount currently allotted will cover performance through February 15, 2002.

SECTION C - DESCRIPTION/SPECIFICATIONS/STATEMENT OF WORK

SEE ATTACHMENT NO. 1 FOR STATEMENT OF WORK

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.

SECTION E - INSPECTION AND ACCEPTANCE

E.1 NOTICE LISTING CONTRACT CLAUSES INCORPORATED BY REFERENCE

The following contract clauses pertinent to this section are hereby incorporated by reference (by Citation Number, Title, and Date) in accordance with the clause at FAR "52.252-2 CLAUSES INCORPORATED BY REFERENCE" in Section I of this contract. See FAR 52.252-2 for an internet address (if specified) for electronic access to the full text of a clause.

NUMBER TITLE DATE

FEDERAL ACQUISITION REGULATION (48 CFR Chapter 1)

52.246-5 INSPECTION OF APR 1984

SERVICES--COST-REIMBURSEMENT

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.

SECTION F - DELIVERIES OR PERFORMANCE

F.1 NOTICE LISTING CONTRACT CLAUSES INCORPORATED BY REFERENCE

The following contract clauses pertinent to this section are hereby incorporated by reference (by Citation Number, Title, and Date) in accordance with the clause at FAR "52.252-2 CLAUSES INCORPORATED BY REFERENCE" in Section I of this contract. See FAR 52.252-2 for an internet address (if specified) for electronic access to the full text of a clause.

NUMBER

TITLE

DATE

50 040 15 ST

FEDERAL ACQUISITION REGULATION (48 CFR Chapter 1)

STOP-WORK ORDER

AUG 1989

52.242-15

ALTERNATE I (APR 1984)

F.2 2052.211-70 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 List of Attachments).

F.3 2052.211-71 TECHNICAL PROGRESS REPORT (JAN 1993)

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, appropriate financial tracking code specified by the NRC Project Officer, 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 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.

F.4 2052.211-72 FINANCIAL STATUS REPORT (OCT 1999)

The contractor shall provide a monthly Financial Status Report (FSR) to the project officer and the contracting officer. The FSR shall include the acquisition of, or changes in the status of, contractor-held property acquired with government funds valued at the time of purchase at \$50,000 or more. Whenever these types of property changes occur, the contractor shall send a copy of the report to the Chief, Property and Acquisition Oversight Branch, Office of Administration. 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, the appropriate financial tracking code (e.g., Job Code Number or JCN) specified by the NRC Project Officer, project manager and/or principal investigator, the contract period of performance, and the period covered by the

NRC-04-02-062

SECTION F

report. Each report must include the following for each discrete task:

- (a) Total estimated contract amount.
- (b) Total ands obligated to date.
- (c) Total costs incurred this reporting period.
- (d) Total costs incurred to date.
- (e) 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.
 - (f) Balance of obligations remaining.
- (g) Balance of funds required to complete contract/task order.
- (h) Contractor Spending Plan (CSP) status: 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.
- (1) Projected percentage of completion cumulative through the report period for the project/task order as reflected in the current CSP.
- (2) Indicate significant changes in 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 "h".
 - (i) Property status:
- (1) List property acquired for the project during the month with an acquisition cost between \$500 and \$49,999. Give the item number for the specific piece of equipment.
- (2) Provide a separate list of property acquired for the project during the month with an acquisition cost of \$50,000 or more. Provide the following information for each item of property: item description or nomenclature, manufacturer, model number, serial number, acquisition cost, and receipt date. If no property was acquired during the month, include a statement to that effect. The same information must be provided for any component or peripheral equipment which is part of a "system or system unit."
- (3) For multi-year projects, in the September monthly financial status report provide a cumulative listing of property with an acquisition cost of \$50,000 or more showing the information specified in paragraph (i)(2) of this clause.
- (4) In the final financial status report provide a closeout property report containing the same elements as described above for the monthly financial status reports, for all property purchased with NRC funds regardless of value unless title has been vested in the contractor. If no property was acquired under the contract, provide a statement to that effect. The report should note any property requiring special handling for security, health, safety, or other reasons as part of the report.
- (j) Travel status: List the starting and ending dates for each trip, the starting point and destination, and the traveler(s) for each trip.
- (k) 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.

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)

Wallace Norris Office of Nuclear Regulatory Research Mail Stop T-10E10 Washington, DC 20555

(b) Contracting Officer (1 copy)

F.6 DURATION OF CONTRACT PERIOD (MAR 1987)

This contract shall commence on January 7, 2002 and will expire August 6, 2002.

F.7 DELIVERABLE

By March 31, 2002, a computer code shall be delivered to the NRC Project Officer that incorporates the Shack spreadsheet CRDM probabilistic analysis into the new format. P. day 15, 2002, the improved probabilistic model for performing time to failure from leakage relative to circumferential crack evaluations in CRDMs shall be provided to the NRC Project Officer.

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SECTION G - CONTRACT ADMINISTRATION DATA

G.1 2052.215-71 PROJECT OFFICER AUTHORITY

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

Name:

Wallace Norris

Address:

U.S. Nuclear Regulatory Commission

Office of Nuclear Regulatory Research, Mail Stop T10E10

Washington, DC 20555

Telephone Number:

301-415-6796

- (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, authorizes travel which was unanticipated in the Schedule (i.e., travel not contemplated in the Statement of Work or changes to specific travel identified in the Statement of Work), 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 reports, 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 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. A copy of NRC Form 445, Request for Approval of Official Foreign Travel, which has received final approval from the NRC 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 acting 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 thereto is subject to 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.
 - (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.
 - (4) Assist the contractor in obtaining the badges for the contractor personnel.
- (5) Immediately notify the Personnel Security Branch, Division of Facilities and Security (PERSEC/DFS) (via e-mail) when a contractor employee no longer requires access authorization and return the individual's badge to PERSEC/DFS within three days after their termination.

G.2 2052.215-78 TRAVEL APPROVALS AND REIMBURSEMENT -ALTERNATE 1 (OCT 1999)

- (a) Total expenditure for travel may not exceed \$13,265.00 without the prior approval of the contracting officer.
- (b) All foreign travel must be approved in advance by the NRC on NRC Form 445, Request for Approval of Official Foreign Travel, and must be in compliance with FAR 52.247-63 Preference for U.S. Flag Air Carriers. The contractor shall submit NRC Form 445 to the NRC no later than 30 days prior to the commencement of travel.
- (c) The contractor will be reimbursed only for those travel costs incurred that are directly related to this contract and which are allowable subject to the limitations prescribed in FAR 31.205-46. (d) It is the responsibility of the contractor to notify the contracting officer in accordance with the FAR Limitations of Cost clause of this contract when, at any time, the contractor learns that travel expenses will cause the contractor to exceed the travel ceiling amount identified in paragraph (a) of this clause.
- (e) Reasonable 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.

G.3 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:

INDIRECT COST POOL RATE

BASE

PERIOD

Overhead

Direct Labor

Effective date thru

Contract Expiration

(b) The contracting officer may adjust these 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.

G.4 ELECTRONIC PAYMENT

The Debt Collection Improvement Act of 1996 requires that all payments except IRS tax refunds be made by Electronic Funds Transfer. It is the policy of the Nuclear Regulatory Commission to pay vendors by the Automated Clearing House (ACH) electronic funds transfer payment system. The electronic system is known as Vendor Express. Payment shall be made in accordance with FAR 52.232-33, entitled "Mandatory Information for Electronic Funds Transfer Payment".

To receive payment, the contractor shall complete the "Company Information" portion of the Standard Form 3881. entitled "ACH Vendor/Miscellaneous Payment Enrollment Form" found as an attachment to this document. The contractor shall take the form to the ACH Coordinator at the financial institution that maintains its company's bank account. The contractor shall discuss with the ACH Coordinator how the payment identification information (addendum record) will be passed to them once the payment is received by the financial institution. Further information concerning the addendum is provided at Attachment. The ACN Coordinator should fill out the "Financial Institution Information" portion of the form and return it to the Office of the Controller at the following address: Nuclear Regulatory Commission, Division of Accounting and Finance, Financial Operations Section, Mail Stop T-9-H-4, Washington, DC 20555, ATTN: ACH/Vendor Express. It is the responsibility of the contractor to ensure that the financial institution returns the completed form to the above cited NRC address. If the contractor can provide the financial information, signature of the financial institutions ACH Coordinator is not required. The NRC is under no obligation to send reminders. Only after the Office of the Controller has processed the contractor's sign-up form will the contractor be eligible to receive payments.

Once electronic funds transfer is established for payments authorized by NRC, the contractor needs to submit an additional SF 3881 only to report changes to the information supplied.

Questions concerning ACH/Vendor Express should be directed to the Financial Operations staff at (301) 415-7520."

SECTION H - SPECIAL CONTRACT REQUIREMENTS

H.1 2052.209-72 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.
- (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, that it does not have any organizational conflicts of interest as defined in 48 CFR 2009.570-2.
- (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

SECTION H

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 spectrum of activities. Consequently, if this is a task-order-type contract, the contractor—ees 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 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.

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not apply.

- (1) If the contractor, under this contract, prepares a complete or essentially complete statement of work or 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
- (2) Nothing in this paragraph precludes the contractor from offering or selling its standard commercial items to the

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

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



Principal Investigator Research Leader

Principal Research Engineer Principal Research Engineer

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 con-currence 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 and the project officer shall evaluate the contractor's request and the contracting officer shall promptly notify the contractor of his or her decision in writing.
- (d) If the contracting officer determines that suitable and timely 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.

H.3 2052.242-70 RESOLVING NRC CONTRACTOR DIFFERING PROFESSIONAL VIEWS (DPVS) (OCT 1999)

(a) The Nuclear Regulatory Commission's (NRC) policy is to support the contractor's expression of professional health and safety related concerns associated with the contractor's work for NRC that may differ from a prevailing NRC staff view, disagree with an NRC decision or policy position, or take issue with proposed or established agency practices. An occasion may arise when an NRC contractor, contractor's personnel, or subcontractor personnel believes that a conscientious expression of a competent judgement is required to document such concerns on matters directly associated with its performance of the contract. The NRC's policy is to support these instances as Differing Professional Views

(DPVs).

(b) The procedure that will be used provides for the expression and resolution of differing professional views (DPVs) of health and safety related concerns associated with the mission of the agency by NRC contractors, contractor personnel or subcontractor personnel on matters directly associated with its performant the contract. This procedure may be found in Attachments to this document. The contractor shall provide a copy of the NRC DPV procedure to all of its employees performing under this contract and to all subcontractors who shall, in turn, provide a copy of the procedure to its employees. The prime contractor or subcontractor shall submit all DPV's received but need not endorse them.

H.4 2052.242-71 PROCEDURES FOR RESOLVING NRC CONTRACTOR DIFFERING PROFESSIONAL VIEWS (DPVS) (OCT 1999)

- (a) The following procedure provides for the expression and resolution of differing professional views (DPVs) of health and safety related concerns of NRC contractors and contractor personnel on matters connected to the subject of the contract. Subcontractor DPVs must be submitted through the prime contractor. The prime contractor or subcontractor shall submit all DPV's received but need not endorse them.
- (b) The NRC may authorize up to eight reimbursable hours for the contractor to document, in writing, a DPV by the contractor, the contractor's personnel, or subcontractor personnel. The contractor shall not be entitled to any compensation for effort on a DPV which exceeds the specified eight hour limit.
- (c) Before incurring costs to document a DPV, the contractor shall first determine whether there are sufficient funds obligated under the contract which are available to cover the costs of writing a DPV. If there are insufficient obligated funds under the contract, the contractor shall first request the NRC contracting officer for additional funding to cover the costs of preparing the DPV and authorization to proceed.
- (d) Contract funds shall not be authorized to document an allegation where the use of this NRC contractor DPV process is inappropriate. Examples of such instances are: allegations of wrongdoing which should be addressed directly to the NRC Office of the Inspector General (OIG), issues submitted anonymously, or issues raised which have already been considered, addressed, or rejected, absent significant new information. This procedure does not provide anonymity. Individuals desiring anonymity should contact the NRC OIG or submit the information under NRC's Allegation Program, as appropriate.
- (e) When required, the contractor shall initiate the DPV process by submitting a written statement directly to the NRC Office Director or Regional Administrator responsible for the contract, with a copy to the Contracting Officer, Division of Contracts and Property Management, Office of Administration. Each DPV submitted will be evaluated on its own merits.
- (f) The DPV, while being brief, must contain the following as it relates to the subject matter of the contract:
- (1) A summary of the prevailing NRC view, existing NRC decision or stated position, or the proposed or established NRC practice.
 - (2) A description of the submitter's views and how they differ from any of the above items.
- (3) The rationale for the submitter's views, including an assessment based on risk, safety and cost benefit considerations of the consequences should the submitter's position not be adopted by NRC.
- (g) The Office Director or Regional Administrator will immediately forward the submittal to the NRC DPV Review Panel and acknowledge receipt of the DPV, ordinarily within five (5) calendar days of receipt.
- (h) The panel will normally review the DPV within seven calendar days of receipt to determine whether enough information has been supplied to undertake a detailed review of the issue. Typically, within 30 calendar days of receipt of the necessary information to begin a review, the panel will provide a written report of its findings to the Office Director or Regional Administrator and to the Contracting Officer, which includes a recommended course of action.
- (i) The Office Director or Regional Administrator will consider the DPV Review Panel's report, make a decision on the DPV and provide a written decision to the contractor and the Contracting Officer normally within seven calendar days after receipt of the panel's recommendation.

(j) Subsequent to the decision made regarding the DPV Review Panel's report, a summary of the issue and its disposition will be included in the NRC Weekly Information Report submitted by the Office Director. The DPV file will be retained in the Office or Region for a minimum of one year thereafter. For purposes of the contract, the DPV shall be considered a deliverable under the contract. Based upon the Office Director or Regional Administrator's report, the matter will be closed.

H.5 2052.235-71 SAFETY, HEALTH, AND FIRE PROTECTION (JAN 1993)

The contractor shall take all reasonable precautions in the performance of the work under this contract to protect the health and safety of its employees and of members of the public, including NRC employees and contractor personnel, and to minimize danger from all hazards to life and property. The contractor shall comply with all applicable health, safety, and fire protection regulations and requirements (including reporting requirements) of the Commission and the Department of Labor. If the contractor fails to comply with these regulations or requirements, the contracting office may, without prejudice to any other legal or contractual rights of the Commission, issue an order stopping all or any part of the work. Thereafter, a start work order for resumption of work may be issued at the discretion of the contracting officer. The contractor may not make a claim for an extension of time or for compensation or damages by reason of, or in connection with, this type of work stoppage.

H.6 GOVERNMENT FURNISHED EQUIPMENT/PROPERTY - NONE PROVIDED (JUN 1988)

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

H.7 SEAT BELTS

Contractors, subcontractors, and grantees, are encouraged to adopt and enforce on-the-job seat belt policies and programs for their employees when operating company-owned, rented, or personally owned vehicles.

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PART II - CONTRACT CLAUSES SECTION I - CONTRACT-CLAUSES

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I.1 NOTICE LISTING CONTRACT CLAUSES INCORPORATED BY REFERENCE

The following contract clauses pertinent to this section are hereby incorporated by reference (by Citation Number, Title, and Date) in accordance with the clause at FAR "52.252-2 CLAUSES INCORPORATED BY REFERENCE" in Section I of this contract. See FAR 52.252-2 for an internet address (if specified) for electronic access to the full text of a clause.

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NUMBER	TITLE	DATE
	FEDERAL ACQUISITION REGULATION (48 CFR Cha	apter 1)
52.202-1	DEFINITIONS	MAY 2001
52.203-3	GRATUITIES	APR 1984
52.203-5	COVENANT AGAINST CONTINGENT FEES	APR 1984
52.203-6	RESTRICTIONS ON SUBCONTRACTOR SALES TO	J UL 1995
	THE GOVERNMENT	
52.203-7	ANTI-KICKBACK PROCEDURES	JUL 1995
52.203-8	CANCELLATION, RESCISSION, AND RECOVERY	JAN 1997
	OF FUNDS FOR ILLEGAL OR IMPROPER	
	ACTIVITY	
52.203-10	PRICE OR FEE ADJUSTMENT FOR ILLEGAL OR	JAN 1997
	IMPROPER ACTIVITY	
52.203-12	LIMITATION ON PAYMENTS TO INFLUENCE	JUN 1997
	CERTAIN FEDERAL TRANSACTIONS	
52.204-4	PRINTED OR COPIED DOUBLE-SIDED	AUG 2000
	ON RECYCLED PAPER	
52.209-6	PROTECTING THE GOVERNMENT'S INTEREST	JUL 1995
	WHEN SUBCONTRACTING WITH CONTRACTORS	
	DEBARRED, SUSPENDED, OR PROPOSED FOR	
	DEBARMENT	
52.215-2	AUDIT AND RECORDSNEGOTIATION	JUN 1999
52.215-8	ORDER OF PRECEDENCEUNIFORM CONTRACT	OCT 1997
	FORMAT	
52.215-17	WAIVER OF FACILITIES CAPITAL COST OF	OCT 1997
	MONEY	
52.216-7	ALLOWABLE COST AND PAYMENT	MAR 2000
52.216-8	FIXED-FEE	MAR 1997
52.219-8	UTILIZATION OF SMALL BUSINESS CONCERNS	OCT 2000
52.222-3	CONVICT LABOR	AUG 1996
52.222-19	CHILD LABOR - COOPERATION WITH	FEB 2001
	AUTHORITIES AND REMEDIES	
52.222-21	PROHIBITION OF SEGREGATED FACILITIES	FEB 1999
52.222-26	EQUAL OPPORTUNITY	FEB 1999
52.222-35	AFFIRMATIVE ACTION FOR DISABLED VETERANS	APR 1998
	AND VETERANS OF THE VIETNAM ERA	
52.222-36	AFFIRMATIVE ACTION FOR WORKERS WITH	JUN 1998
	DISABILITIES	
52.222-37	EMPLOYMENT REPORTS ON DISABLED VETERANS	JAN 1999
	AND VETERANS OF THE VIETNAM ERA	
52.223-6	DRUG-FREE WORKPLACE	MAY 2001
52.225-13	RESTRICTIONS ON CERTAIN FOREIGN	JUL 2000
	PURCHASES	
52.227-1	AUTHORIZATION AND CONSENT	JUL 1995
52.227-2	NOTICE AND ASSISTANCE REGARDING PATENT	AUG 1996
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SECTION I

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	AND COPYRIGHT INFRINGEMENT	
52.228-7	INSURANCELIABILITY TO THIRD PERSONS	MAR 1996
52.232 - 17	INTEREST	JUN 1996
52.232-17	LIMITATION OF FUNDS	APR 1984
52.232 - 22	ASSIGNMENT OF CLAIMS	JAN 1986
3 2.2 5	DISPUTES	DEC 1998
52.233-1	PROTEST AFTER AWARD	AUG 1996
52.233-3	ALTERNATE I (JUN 1985)	
62.242.1	NOTICE OF INTENT TO DISALLOW COSTS	APR 1984
52.242-1	BANKRUPTCY	JUL 1995
52.242-13	CHANGESCOST REIMBURSEMENT	AUG 1987
52.243-2		1100 1707
	ALTERNATE I (APR 1984)	AUG 1998
52.244-2	SUBCONTRACTS	AUG 1990
	ALTERNATE II (AUG 1998)	DEC 1996
52.244-5	COMPETITION IN SUBCONTRACTING	
52.244-6	SUBCONTRACTS FOR COMMERCIAL ITEMS AND	MAY 2001
	COMMERCIAL COMPONENTS	EDD 1007
52.246-25	LIMITATION OF LIABILITYSERVICES	FEB 1997
52.249-6	TERMINATION (COST-REIMBURSEMENT)	SEP 1996
52.249-14	EXCUSABLE DELAYS	APR 1984
52.253-1	COMPUTER GENERATED FORMS	JAN 1991

I.2 52.232-25 PROMPT PAYMENT (MAY 2001) ALTERNATE I (OCT 2001)

Notwithstanding any other payment clause in this contract, the Government will make invoice payments and contract financing payments under the terms and conditions specified in this clause. Payment shall be considered as being made on the day a check is dated or the date of an electronic funds transfer. Definitions of pertinent terms are set forth in sections 2.101 and 32.902 of the Federal Acquisition Regulation. All days referred to in this clause are calendar days, unless otherwise specified. (However, see subparagraph (a)(4) of this clause concerning payments due on Saturdays, Sundays, and legal holidays.)

- (a) Invoice payments (1) Due Date. (i) Except as indicated in subparagraph (a)(2) and paragraph (c) of this clause, the due date for making invoice payments by the designated payment office shall be the later of the following two events:
- (A) The 30th day after the designated billing office has received a proper invoice from the Contractor (except as provided in subdivision (a)(1)(ii) of this clause).
- (B) The 30th day after Government acceptance of supplies delivered or services performed by the Contractor. On a final invoice where the payment amount is subject to contract settlement actions, acceptance shall be deemed to have occurred on the effective date of the contract settlement.
- (ii) If the designated billing office fails to annotate the invoice with the actual date of receipt at the time of receipt, the invoice payment due date shall be the 30th day after the date of the Contractor's invoice; provided a proper invoice is received and there is no disagreement over quantity, quality, or Contractor compliance with contract requirements.
- (2) Certain food products and other payments. (i) Due dates on Contractor invoices for meat, meat food products, or fish; perishable agricultural commodities; and dairy products, edible fats or oils, and food products prepared from edible fats or oils are--
- (A) For meat or meat food products, as defined in section 2(a)(3) of the Packers and Stockyard Act of 1921 (7 U.S.C. 182(3)), and as further defined in Pub. L. 98-181, including any edible fresh or frozen poultry meat, any perishable poultry meat food product, fresh eggs, and any perishable egg product, as close as possible to, but not later than, the day after product delivery.
- (B) For fresh or frozen fish, as defined in section 204(3) of the Fish and Seafood Promotion Act of 1986 (16 U.S.C. 4003(3)), as close as possible to, but not later than, the day after product delivery.
- (C) For perishable agricultural commodities, as defined in section 1(4) of the Perishable Agricultural Commodities Act of 1930 (7 U.S.C. 499a(4)), as close as possible to, but not later than, the 10th day after product delivery, unless

another date is specified in the contract.

- (D) For dairy products, as defined in section 111(e) of the Dairy Production Stabilization Act of 1983 (7 U.S.C. 4502(e)), edible fats or oils, and food products prepared from edible fats or oils, as close as possible to, but not later than, the 10th day after the date on which a proper invoice has been receited. Liquid milk, cheese, certain processed cheese products, butter, yogurt, ice cream, mayonnaise, salad dressings, and other similar products, fall within this classification. Nothing in the Act limits this classification to refrigerated products. When questions arise regarding the proper classification of a specific product, prevailing industry practices will be followed in specifying a contract payment due date. The burden of proof that a classification of a specific product is, in fact, prevailing industry practice is upon the Contractor making the representation.
- (ii) If the contract does not require submission of an invoice for payment (e.g., periodic lease payments), the due date will be as specified in the contract.
- (3) Contractor's invoice. The Contractor shall prepare and submit invoices to the designated billing office specified in the contract. A proper invoice must include the items listed in paragraph (a)(3)(i) through (a)(3)(viii) of this clause. If the invoice does not comply with these requirements, it shall be returned within 7 days after the date the designated billing office received the invoice (3 days for meat, meat food products, or fish; 5 days for perishable agricultural commodities, edible fats or oils, and food products prepared from edible fats or oils), with a statement of the reasons why it is not a proper invoice. Untimely notification will be taken into account in computing any interest penalty owed the Contractor in the manner described in subparagraph (a)(5) of this clause.
 - (i) Name and address of the Contractor.
- (ii) Invoice date. (The Contractor is encouraged to date invoices as close as possible to the date of the mailing or transmission.)
- (iii) Contract number or other authorization for supplies delivered or services performed (including order number and contract line item number).
 - (iv) Description, quantity, unit of measure, unit price, and extended price of supplies delivered or services performed.
- (v) Shipping and payment terms (e.g., shipment number and date of shipment, prompt payment discount terms). Bill of lading number and weight of shipment will be shown for shipments on Government bills of lading.
- (vi) Name and address of Contractor official to whom payment is to be sent (must be the same as that in the contract or in a proper notice of assignment).
- (vii) Name (where practicable), title, phone number, and mailing address of person to be notified in the event of a defective invoice.
 - (viii) Any other information or documentation required by the contract (such as evidence of shipment).
 - (ix) While not required, the Contractor is strongly encouraged to assign an identification number to each invoice.
- (4) Interest penalty. An interest penalty shall be paid automatically by the designated payment office, without request from the Contractor, if payment is not made by the due date and the conditions listed in paragraphs (a)(4)(i) through (a)(4)(iii) of this clause are met, if applicable. However, when the due date falls on a Saturday, Sunday, or legal holiday when Federal Government offices are closed and Government business is not expected to be conducted, payment may be made on the following business day without incurring a late payment interest penalty.
 - (i) A proper invoice was received by the designated billing office.
- (ii) A receiving report or other Government documentation authorizing payment was processed, and there was no disagreement over quantity, quality, or Contractor compliance with any contract term or condition.
- (iii) In the case of a final invoice for any balance of funds due the Contractor for supplies delivered or services performed, the amount was not subject to further contract settlement actions between the Government and the Contractor.
- (5) Computing penalty amount. The interest penalty shall be at the rate established by the Secretary of the Treasury under section 12 of the Contract Disputes Act of 1978 (41 U.S.C. 611) that is in effect on the day after the due date,

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except where the interest penalty is prescribed by other governmental authority (e.g., tariffs). This rate is referred to as the "Renegotiation Board Interest Rate," and it is published in the Federal Register semiannually on or about January 1 and July 1. The interest penalty shall accrue daily on the invoice principal payment amount approved by the Government until the payment date of such approved principal amount; and will be compounded in 30-day increments inclusive from the first day after the due date through the payment date. That is, interest accrued at the end of any 30-day period will be added to the approved invoice principal payment amount and will be subject to interest penalties if not paid in the succeeding 30-day period. If the designated billing office failed to notify the Contractor of a defective invoice within the periods prescribed in subparagraph (a)(3) of this clause, the due date on the corrected invoice will be adjusted by subtracting from such date the number of days taken beyond the prescribed notification of defects period. Any interest penalty owed the Contractor will be based on this adjusted due date. Adjustments will be made by the designated payment office for errors in calculating interest penalties.

- (i) For the sole purpose of computing an interest penalty that might be due the Contractor, Government acceptance shall be deemed to have occurred constructively on the (unless otherwise specified in this contract) after the Contractor delivered the supplies or performed the services in accordance with the terms and conditions of the contract, unless there is a disagreement over quantity, quality, or Contractor compliance with a contract provision. In the event that actual acceptance occurs within the constructive acceptance period, the determination of an interest penalty shall be based on the actual date of acceptance. The constructive acceptance requirement does not, however, compel Government officials to accept supplies or services, perform contract administration functions, or make payment prior to fulfilling their responsibilities.
 - (ii) The following periods of time will not be included in the determination of an interest penalty:
- (A) The period taken to notify the Contractor of defects in invoices submitted to the Government, but this may not exceed 7 days (3 days for meat, meat food products, or fish; 5 days for perishable agricultural commodities, dairy products, edible fats or oils, and food products prepared from edible fats or oils).
 - (B) The period between the defects notice and resubmission of the corrected invoice by the Contractor.
 - (C) For incorrect electronic funds transfer (EFT) information, in accordance with the EFT clause of this contract.
- (iii) Interest penalties will not continue to accrue after the filing of a claim for such penalties under the clause at 52.233-1, Disputes, or for more than 1 year. Interest penalties of less than \$1 need not be paid.
- (iv) Interest penalties are not required on payment delays due to disagreement between the Government and the Contractor over the payment amount or other issues involving contract compliance or on amounts temporarily withheld or retained in accordance with the terms of the contract. Claims involving disputes, and any interest that may be payable, will be resolved in accordance with the clause at 52.233-1, Disputes.
- (6) Prompt payment discounts. An interest penalty also shall be paid automatically by the designated payment office, without request from the Contractor, if a discount for prompt payment is taken improperly. The interest penalty will be calculated as described in subparagraph (a)(5) of this clause on the amount of discount taken for the period beginning with the first day after the end of the discount period through the date when the Contractor is paid.
- (7) Additional interest penalty. (i) a penalty amount, calculated in accordance with paragraph (a)(7)(iii) of this clause. shall be paid in addition to the interest penalty amount if the Contractor--
 - (A) Is owed an interest penalty of \$1 or more;
 - (B) Is not paid the interest penalty within 10 days after the date the invoice amount is paid; and
- (C) Makes a written demand to the designated payment office for additional penalty payment, in accordance with paragraph (a)(7)(ii) of this clause, postmarked not later than 40 days after the invoice amount is paid.
- (ii)(A) Contractors shall support written demands for additional penalty payments with the following data. No additional data shall be required. Contractors shall--
- (1) Specifically assert that late payment interest is due under a specific invoice, and request payment of all overdue late payment interest penalty and such additional penalty as may be required;

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(2) Attach a copy of the invoice on which the unpaid late payment interest was due; and

- (3) State that payment of the principal has been received, including the date of receipt.
- (B) Demands must be postmarked on or before the 40th day after payment was made, except that--
- (1) If the postmark is illegible or nonexistent, the demand must have been received and annotated with the date of receipt by the designated payment office on or before the 40th day after payment was made; or
- (2) If the postmark is illegible or nonexistent and the designated payment office fails to make the required annotation, the demand's validity will be determined by the date the Contractor has placed on the demand; provided such date is no later than the 40th day after payment was made.
 - (iii)(A) The additional penalty shall be equal to 100 percent of any original late payment interest penalty, except-
 - (1) The additional penalty shall not exceed \$5,000;
 - (2) The additional penalty shall never be less than \$25; and
 - (3) No additional penalty is owed if the amount of the underlying interest penalty is less than \$1.
- (B) If the interest penalty ceases to accrue in accordance with the limits stated in paragraph (a)(5)(iii) of this clause, the amount of the additional penalty shall be calculated on the amount of interest penalty that would have accrued in the absence of these limits, subject to the overall limits on the additional penalty specified in paragraph (a)(7)(iii)(A) of this clause.
- (C) For determining the maximum and minimum additional penalties, the test shall be the interest penalty due on each separate payment made for each separate contract. The maximum and minimum additional penalty shall not be based upon individual invoices unless the invoices are paid separately. Where payments are consolidated for disbursing purposes, the maximum and minimum additional penalty determination shall be made separately for each contract therein.
- (D) The additional penalty does not apply to payments regulated by other Government regulations (e.g., payments under utility contracts subject to tariffs and regulation).
- (b) Contract financing payments--(1) Due dates for recurring financing payments. If this contract provides for contract financing, requests for payment shall be submitted to the designated billing office as specified in this contract or as directed by the Contracting Officer. Contract financing payments shall be made on the day after receipt of a proper contract financing request by the designated billing office. In the event that an audit or other review of a specific financing request is required to ensure compliance with the terms and conditions of the contract, the designated payment office is not compelled to make payment by the due date specified.
- (2) Due dates for other contract financing. For advance payments, loans, or other arrangements that do not involve recurring submissions of contract financing requests, payment shall be made in accordance with the corresponding contract terms or as directed by the Contracting Officer.
- (3) Interest penalty not applicable. Contract financing payments shall not be assessed an interest penalty for payment delays.
- (c) Fast payment procedure due dates. If this contract contains the clause at 52.213-1, Fast Payment Procedure, payments will be made within 15 days after the date of receipt of the invoice.
- (d) Invoices for interim payments. For interim payments under this cost-reimbursement contract for services-
 - (1) Paragraphs (a)(2), (a)(3), (a)(4)(ii), (a)(4)(iii), and (a)(5)(i) do not apply;
- (2) For purposes of computing late payment interest penalties that may apply, the due date for payment is the 30th day after the designated billing office receives a proper invoice; and
- (3) The Contractor shall submit invoices for interim payments in accordance with paragraph (a) of FAR 52.216-7, Allowable Cost and Payment. If the invoice does not comply with contract requirements, it will be returned within 7 days after the date the designated billing office received the invoice.

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I.3 52.252-2 CLAUSES INCORPORATED BY REFERENCE (FEB 1998)

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. Also, the full text of a clause may be accessed electronically at this/these address(es):

www.arnet.gov

PART III - LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACHMENTS SECTION J - LIST OF ATTACHMENTS

- 1 Statement of Work
- 2 Billing Instructions Cost Reimbursement

Attachment 1

STATEMENT OF WORK

TITLE: CRDM CRACKING

I. INTRODUCTION

Circumferential cracks in Inconel 600 reactor vessel control rod drive nozzles at several pressurized water reactors have recently been reported. Questions have been raised relative to material behavior, and the potential for control rod drive ejection and possible effects on surrounding control rod drives or adjacent components. Due to the potentially serious consequences of the cracking, the NRC staff must make a determination regarding public health and safety relative to the continued operation of these nuclear power plants within the next few weeks. In addition, a determination must be made regarding the scope of the problem relative to the PWR fleet. Before a judgment is made, the NRC staff requires assistance relative to leakage detection and quantification. Specifically, it must be determined whether nuclear power plant detection systems are adequate for detecting the type and size cracks that were reported. If not, recommendations are needed for improving the detection and quantification abilities of these systems. In addition, on August 3, 2001, the NRC issued Bulletin 2001 -01, "Circumferential Cracking of Reactor Pressure Vessel Head Penetration Nozzles." This program will provide some of the tools required by the NRC staff to adequately disposition the industry responses to the bulletin.

II. OBJECTIVE

Develop an improved probabilistic model for performing time to failure from leakage relative to circumferential crack evaluations in CRDMS. This will provide a means for the NRC staff to make an independent assessment of industry submittals to the NRC bulletin.

III. SCOPE OF WORK

The contractor shall provide technical assistance to the NRC in reviewing industry responses to the recent NRC Bulletin on CRDM circumferential cracking. This shall involve an improved probabilistic analysis for justification of continued operation. The NRC staff does not presently have a code, which can independently verify these submittals. An independent assessment capability shall be submitted by the end of March 2002 when these submittals begin to arrive.

Develop Improved Probabilistic CRDM Model

The contractor shall develop an improved probabilistic model, which shall include the following:

Task 1: Determination of Fabrication and In-service Stress States

A. Model the weld residual stress analyses through a thermal-plastic finite element simulation of RPV nozzles to provide more realistic stress state for crack-driving force determination.

- B. Different interference fits on residual stress calculations, (zero interference fit, average (around 0.0015 inch), and greatest anticipated (0.009 inch) as per MRP-44 Part 2, are to be accounted for in the weld simulation analyses.
- C. The effect of different operating temperatures on stress-state condition (cold or hot head conditions) shall be included in the FE analysis. Different temperatures (between 550F and 650F) are to be used to assess if there is a nonlinear relationship of operating temperature on the stress-state at potential crack locations.
- D. Multiple nozzles shall affect the RPV head compliance and hence the interference fit (or annular gap opening) at temperature. This effect in turn changes the annular leakage area and the crack-driving force at the root of the J-weld. The head compliance effects from multiple nozzles shall be handled in an approximate manner in the FE analysis.
- E. From the above steps the contractor shall determine the hoop stresses on the ID surface for axial crack initiation, and stress intensity at the root of J-weld for circumferential crack initiation.

Coordination with Oak Ridge National Laboratory is required.

- Task 2: The following step shall be used in determining the circumferential through-wall crack driving-force relationships:
 - A. The circumferential-through-wall-crack stress intensity values versus crack-length relationship shall be determined. Crack growth in the length direction is to be accounted for. The cracks shall be centered on the highest stress location. Since the longitudinal residual stress field may decay through the thickness, the stress intensity at the highest location (along the OD surface) as well as the average value shall be determined. The combination of crack lengths shall encompass the acceptable crack sizes for the stress fields calculated in the thermal analyses.
- Task 3: Incorporate the results of Tasks 1 and 2 to perform a probabilistic calculation of the failure of a leaking CRDM tube. A simplistic PWSCC crack growth model was written by Dr. William Shack at Argonne National Laboratory (ANL). A more complete probabilistic code is to be developed to predict the probability of CRDM failure for the available solutions and be adaptive enough to accept solutions to be generated in the future. The probabilistic code shall be able to handle distributions of weld sequencing effects, interference fits, material yield strengths, hole location, and operating temperatures. Each stress-intensity curve-fit equation generated is to be included.

Coordination with ANL is required.

Task 4: Expert Panel Assistance

Dates to be determined, there will be one ACRS meeting and one meeting with NRC staff and industry representatives to discuss the industry efforts underway to resolves CRDM issues.

Deliverables: By March 31, 2002, a computer code shall be delivered to the NRC Project Officer that incorporates the Shack spreadsheet CRDM probabilistic analysis into the new format. By May 15, 2002, the improved probabilistic model for performing time to failure from leakage relative to circumferential crack evaluations in CRDMs shall be provided to the NRC Project Officer.

Level of Effort

The estimated level of effort for this project is 1,420 man-hours with a period of performance of 7 months.

IV. MEETINGS AND TRAVEL REQUIREMENTS

One trip to NRC Headquarters in Rockville, Maryland for two days shall be required at a date to be determined to meet with the ACRS.

One trip to NRC Headquarters in Rockville, Maryland for two days shall be required at a date to be determined to meet with the NRC staff and industry representatives.

One trip to FTI in Lynchburg, VA, for two days shall be required after the contract is finalized to determine the welding procedures, which were used for construction of RPV heads.

One trip to B&W Ontario, Canada, for three days shall be required at a date to be determined to coincide with the fabrication of new RPV heads.

One trip to Framatome-Paris, France, for four days shall be required at a date to be determined to coincide with the fabrication of new RPV heads.

One trip to Chicago Illinois, for two days shall be required at a date to be determined to work on CRDM Probabilistic Models.

One trip to Oak Ridge, TN, for two days shall be required to date to be determined Head Compliance Analyses at ORNL.

V. PUBLICATIONS

RES encourages the publication of the scientific results from RES sponsored programs in refereed scientific and engineering journals as appropriate. If the contractor proposes to publish in the open literature or present the information at meetings in addition to submitting the required technical reports, approval of the proposed article or presentation shall be obtained from the NRC Project Officer.

BILLING INSTRUCTIONS FOR COST REIMBURSEMENT TYPE CONTRACTS

General: The contractor shall prepare vouchers/invoices for reimbursement of costs in the manner and format described herein. FAILURE TO SUBMIT VOUCHERS/INVOICES IN ACCORDANCE WITH THESE INSTRUCTIONS WILL RESULT IN REJECTION OF THE VOUCHER/INVOICE AS IMPROPER.

Number of Copies: An original and three copies, including supporting documentation shall be submitted. A copy of all supporting documents must be attached to each copy of your voucher/invoice. Failure to submit all the required copies will result in rejection of the voucher/invoice as improper.

<u>Designated Agency Billing Office:</u> Vouchers/invoices shall be submitted to the following address:

U.S. Nuclear Regulatory Commission Division of Contracts - T-7-I-2 Washington, DC 20555

HAND DELIVERY OF VOUCHERS/INVOICES IS DISCOURAGED AND WILL NOT EXPEDITE PROCESSING BY NRC. However, should you choose to deliver vouchers/invoices by hand, including delivery by any express mail services or special delivery services which use a courier or other person to deliver the voucher/invoice in person to the NRC, such vouchers/invoices must be addressed to the above Designated Agency Billing Office and will only be accepted at the following location:

U.S. Nuclear Regulatory Commission One White Flint North 11555 Rockville Pike - Mail Room Rockville, MD 20852

HAND-CARRIED SUBMISSIONS WILL NOT BE ACCEPTED AT OTHER THAN THE ABOVE ADDRESS.

Note that the official receipt date for hand-delivered vouchers/invoices will be the date it is received by the official agency billing office in the Division of Contracts.

Agency Payment Office: Payment will continue to be made by the office designated in the contract in Block 12 of SF 26 or Block 25 of SF 33, whichever is applicable.

BILLING INSTRUCTIONS FOR COST REIMBURSEMENT TYPE CONTRACTS - (Page 2 of 10)

Frequency: The contractor shall submit claims for reimbursement once each month, unless otherwise authorized by the Contracting Officer.

Format: Claims should be submitted in the format depicted on the attached sample form entitled "Voucher/Invoice for Purchases and Services Other than Personal" (see Attachment 1). The sample format is provided for guidance only. The format is not required for submission of a voucher/invoice. Alternate formats are permissible provided all requirements of the billing instructions are addressed. The instructions for preparation and itemization of the voucher/invoice are included with the sample form.

Task Ordering Contracts: If the contractor bills for more than one task order under a voucher/invoice, detailed cost information for each individual task order shall be submitted, together with a cumulative summary of all charges billed on the voucher/invoice. This includes all applicable cost elements discussed in paragraphs (a) through (n) of the attached instructions.

Fee Recovery Billings: Pursuant to the provisions of 10 CFR Part 170 and 171 on license fees, the NRC must recover the cost of work performed. Accordingly, the contractor must provide the total amount of funds billed during the period, fiscal year to date and the cumulative total for each task or task assignment by facility or report. The fee recovery billing reports shall be on a separate page, and shall be in the format provided in Attachment 2. The billing period for fee recovery costs should be from the first day of each calendar month to the last day of the same month. Each separate fee billing report must be attached to the monthly invoice and cover the same period as the invoice.

Each report will contain a docket number or other unique identifier. The NRC will provide a unique identifier for all work performed. Costs should be reported as whole number to the nearest cent. For work that involves more than one facility at the same site, each facility should be listed separately and the costs should be split appropriately between the facilities. Common costs, as defined below, shall be identified as a separate line item in the fee recovery billing report each month.

Common costs are those costs that are not licensee unique and associated with the performance of an overall program that benefit all similar licensees covered under that program or that are required to satisfactorily carry out the program. Common costs include costs associated with the following: preparatory or start-up efforts to interpret and reach agreement on methodology, approach, acceptance criteria, regulatory position,

BILLING INSTRUCTIONS FOR COST REIMBURSEMENT TYPE CONTRACTS - (Page 3 of 10)

or technical reporting requirements; efforts associated with the "lead plant" concept that might be involved during the first one or two plant reviews; meetings and discussions involving the above efforts to provide orientation, background knowledge or guidance during the course of a program; any technical effort applied to a docket or other unique identifier; and project management. Common costs must be reporting monthly for each docket or unique identifier. Common costs must be computed based on the proportion of direct costs incurred against each docket or unique identifier for the billing period.

Billing of Cost After Expiration of Contract: If costs are incurred during the contract period and claimed after the contract has expired, the period during which these costs were incurred must be cited. To be considered a proper expiration voucher/invoice, the contractor shall clearly mark it "EXPIRATION VOUCHER" or "EXPIRATION INVOICE".

Final vouchers/invoices shall be marked "FINAL VOUCHER" or "FINAL INVOICE".

<u>Currency</u>: Billings may be expressed in the currency normally used by the contractor in maintaining his accounting records; payments will be made in that currency. However, the U.S. dollar equivalent for all vouchers/invoices paid under the contract may not exceed the total U.S. dollars authorized in the contract.

<u>Supersession</u>: These instructions supersede any previous billing instructions.

BILLING INSTRUCTIONS FOR COST REIMBURSEMENT TYPE CONTRACTS (Page 4 of 10) - ATTACHMENT

INVOICE/VOUCHER FOR PURCHASES AND SERVICES OTHER THAN PERSONAL

(SAMPLE FORMAT)

<u>Offi</u>	cial Agency Billing Offic	• •	Contract Number
Divi	Nuclear Regulatory Commission sion of Contracts MS: T-7-I-2		Task Order No. (If Applicable)
Wash Paye	ington, DC 20555-0001 e's Name and Address	(b)	Voucher/Invoice #
	•	(c)	Date of Voucher/Invoice
Indiv	vidual to Contact	(d)	Fixed Fee
	rding this Voucher :		
	No.:		
(e)	This voucher represents reimbu	ursable cost	s for the billing period for the billing per
			Amount Billed Current Period Cumulative
(f)	Direct Costs (1) Direct labor*		
	(3) Capitalized nonexpendable equipment (\$50,000 or see instructions)*	le more ·	
	(4) Non-capitalized equipmer materials, and supplie	nt, es	
	(5) Premium pay (NRC approve (6) Consultants*	ed overtime)	
	(7) Travel*		
	(9) Other costs*		
		Total Direc	t Costs
(g)	Indirect Costs (A) Overhead % of(Indi	cate Base).	
	(B) General & Administrativ	ts	
	Nos		
(h)	Fixed-Fee (Cite Formula):		ect Cosus
(i)	Total Amount Billed		
(j) (k)	Grand Totals		

^{* (}Requires Supporting Information -- See Attached)

BILLING INSTRUCTIONS FOR COST REIMBURSEMENT TYPE CONTRACTS (Page 5 of 10 (Cont.) - ATTACHY

SAMPLE SUPPORTING INFORMATION

1) Direct Labor - \$2400

Labor <u>Category</u> Senior Engineer I	Hours Billed 100	Rate \$14.00	Total \$1400	Cumulative Hrs. Billed 975
Engineer	50	\$10.00	\$ 500	465
Computer Analyst	100	\$5.00	\$500 \$2400	320

3) Capitalized Non-Expendable Equipment

Prototype Spectrometer - item number 1000-01 \$60,000

4) Non-capitalized Equipment, Materials, and Supplies

10 Radon tubes @ \$110.00 = \$1100.00

6 Pairs Electrostatic gloves @ \$150.00 = $\frac{$900.00}{$2000.00}$

5) Premium Pay

Walter Murphy - 10 hours @ \$10.00 Per Hour = \$100 (This was approved by NRC in letter dated 3/6/95).

6) Consultants' Fee

Dr. Carney - 1 hour @ \$100 = \$100

7) <u>Travel</u>

Start Date	<u>Destination</u>	<u>Costs</u>	
3/1/89	Wash., DC	\$200	

INSTRUCTIONS FOR PREPARING COST INFORMATION FOR NRC CONTRACT VOUCHERS/INVOICES

Preparation and Itemization of the Voucher/Invoice: In order to constitute a proper invoice, the contractor shall furnish all the information set forth below. These notes are keyed to the entries on the sample voucher/invoice.

Official Agency Billing Office: Address the original and 3 copies of the voucher/invoice, together with supporting documentation attached to each copy to: U.S. Nuclear Regulatory Commission, Division of Contracts, MS: T-7-I-2. Washington, DC 20555-0001.

Vouchers/invoices delivered by hand, including delivery by express mail or special delivery services which use a courier or other person to deliver the voucher/invoice in person to the NRC, should be addressed in accordance with the foregoing and delivered to: U. S. Nuclear Regulatory Commission, One White Flint North, 11555 Rockville Pike - Mail Room. Rockville, Maryland 20852. Hand-delivered vouchers/invoices will not be accepted at other than the above address. Note, however, that the official receipt date for hand-delivered vouchers/invoices will be the date it is received by the official agency billing office in the Division of Contracts.

Payee's Name and Address. Show the name of the contractor as it appears in the contract and its correct address. When an approved assignment has been made by the contractor, or a different payee or addressee has been designated, insert the name and address of the payee. Indicate the name and telephone number of the individual responsible for answering any questions that the NRC may have regarding the invoice. The following guidance corresponds to the entries required on the sample form.

- (a) Contract Number. Insert the NRC contract number.Task Order Number. if applicable. Insert the task order number.
- (b) Voucher/invoice number. The appropriate sequential number of the voucher/invoice, beginning with 001 should be designated. Contractors may also include an individual internal accounting number, if desired, in addition to the 3-digit sequential number.

BILLING INSTRUCTIONS FOR COST REIMBURSEMENT TYPE CONTRACTS (Page 7 of 10) - ATTACHMENT 1 (Cont.)

- (c) Date of Voucher/Invoice. Insert the date the voucher/invoice is prepared.
- (d) Fixed-Fee. Insert total fixed-fee. Include this information as it applies to individual task orders as well.
- (e) Billing Period. Insert the beginning and ending dates (day, month, year) of the period during which costs were incurred and for which reimbursement is claimed.
- (f) Direct Costs Insert the amount billed for the following cost elements, adjustments, suspensions, and total amounts, for both the current billing period and for the cumulative period (from contract inception to end date of this billing period).
 - (1) Direct Labor. This consists of salaries and wages paid (or accrued) for direct performance of the contract itemized as follows:

 Labor Hrs. Cumulative
 Category Billed Rate Total Hrs.Billed
 - (2) Fringe Benefits. This represents fringe benefits applicable to direct labor and billed as a direct cost. Where a rate is used indicate the rate. Fringe benefits included in direct labor or in other indirect cost pools should not be identified here.
 - (3) Capitalized Non Expendable Equipment. List each item costing \$50,000 or more and having a life expectancy of more than one year. List only those items of equipment for which reimbursement is requested. For each such item, list the following (as applicable): (a) the item number for the specific piece of equipment listed in the property schedule of the contract; or (b) the Contracting Officer's approval letter if the equipment is not covered by the property schedule.

BILLING INSTRUCTIONS FOR COST REIMBURSEMENT TYPE CONTRACTS (Page 8 of 10) - ATT/CHMENT 1 (C it.)

- (4) Non-capitalized Equipment, Materials, and Supplies. These are equipment other than that described in (3) above, plus consumable materials, supplies. List by category. List items valued at \$500 or more separately. Provide the item number for each piece of equipment valued at \$500 or more.
- (5) Premium Pay. This enumeration in excess of the basic hourly rate. (Requires written approval of the Contracting Officer.)
- (6) Consultants. The supporting information must include the name, hourly or daily rate of the consultant, and reference the NRC approval (if not specifically approved in the original contract).
- (7) Travel. Total costs associated with each trip must be shown in the following format:

	Start Date	Destination	<u>Costs</u>
From	To	From To	\$

- (8) Subcontracts. Include separate detailed breakdown of all costs paid to approved subcontractors during the billing period.
- (9) Other Costs. List all other direct costs by cost element and dollar amount separately.
- (g) Indirect Costs (Overhead and General and Administrative Expense). Cite the formula (rate and base) in effect in accordance with the terms of the contract, during the time the costs were incurred and for which reimbursement is claimed.
- (h) Fixed Fee. If the contract provides for a fixed fee, it must be claimed as provided for by the contract. Cite the formula or method of computation. The contractor may bill for fixed fee only up to 85% of total fee.
- (i) Total Amount Billed. Insert the total amounts claimed for the current and cumulative periods.

BILLING INSTRUCTIONS FOR COST REIMBURSEMENT TYPE CONTRACTS (Page 9 of 10)
ATTACHMENT 1 (Cont.)

- (j) Adjustments. For cumulative amount, include outstanding suspensions.
- (k) Grand Totals.

Further itemization of vouchers/invoices shall only be required for items having specific limitations set forth in the contract.

BILLING	INSTRUCTIONS	FOR	COST	REIMBURSEMENT	TYPE	CONTRACTS	(Page	10	of	10)
	ENT 2 (Cont.)									

FEE RECOVERY BILLING REPORT

FIN:		
Facility Name or Report Title:		
TAC or Inspection Report Number:	-	
(or other unique identifier)	-	
Docket Number (if applicable):		
Period Cost Categories Period Amt. Cost Incurred	Fiscal Year To Date Costs	Total Cumulative Costs
Labor		
Materials		
Subcontractor/ Consultant		
Travel		
Other (specify)		
Common Costs		
Total		
Remarks:		

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